

Unlocking a Stronger Open Access Ecosystem



A Report by the
Aspen Institute Science & Society Program





Credit: National Science Foundation



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Editors' Note

The concept and practice of 'Open Science' represent a broad, decades-long effort-turned-international movement to "make research products and processes available to all, while respecting diverse cultures, maintaining security and privacy, and fostering collaborations, reproducibility, and equity."¹ Often used as an umbrella term, Open Science is fundamentally an ecosystem brought to life and operationalized through components at each stage of the research lifecycle. Open scientific knowledge, open scientific infrastructure, open engagement of societal actors, and open dialogue with other knowledge systems are the four recommended pillars² that capture the many facets 'Open Science.'

Open Science has the potential to increase scientific collaborations and the sharing of information for the benefit of science and society; make multilingual scientific knowledge openly available, accessible, and reusable for everyone; and open the processes of scientific knowledge creation, evaluation, and communication to societal actors beyond the traditional scientific community.³ Recognizing the benefits of Open Science and the need for further investment, the Biden-Harris Administration named it a priority in January 2023, with the United States (U.S.) White House Office of Science and Technology Policy (OSTP) declaring 2023 as the 'Year of Open Science'⁴ in alignment with other parts of the world.

Thus, throughout 2023, a series of efforts within the U.S. and globally have taken place to increase awareness of the Open Science movement and to advance open and equitable research. Other organizations have been advocating for Open Science for years, with the United Nations holding its third Open Science Conference in February 2023 with the theme 'Accelerating the Sustainable Development Goals, Democratizing the Record of Science.'⁵

Among the multiple components of Open Science,⁶ open access, which falls under the open scientific knowledge pillar, is at the core of reform efforts. UNESCO defines open access as having "free access to information and unrestricted use of electronic resources for everyone," adding that "any kind of digital content can be open access from texts and data to software, audio, video, and multi-media."⁷ The broad nature of Open Science and open access gives room for complexity and controversy—requiring inputs and perspectives from diverse stakeholders within and outside of the scientific community.

Always working at the pulse of critical issues at the intersection of science and society, the Aspen Institute Science & Society Program convened a roundtable of experts from across six countries and multiple sectors to foster what might be considered a 'provocative' conversation on open access, in that participants could not always find common ground on aspects of a future model for open

1. [Science.gov](https://www.science.gov) (2023). Open Science Announcements from Federal Agencies.
2. United Nations Educational, Scientific and Cultural Organization ([UNESCO](https://www.unesco.org)) (n.d.). UNESCO recommendation on Open Science.
3. Ibid.
4. [White House](https://www.whitehouse.gov) (2023). FACT SHEET: Biden-Harris Administration Announces New Actions to Advance Open and Equitable Research.
5. [United Nations](https://www.un.org) (2023). 3rd Open Science Conference.
6. [Shulga, N.](https://www.shulga.net) (2023). The Open Science movement.
7. [UNESCO](https://www.unesco.org) (2023). UNESCO recommendation on Open Science.

access. This roundtable forms one piece of a constellation of Open Science activities within our program's [Global Science pillar](#).

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Four central questions guided the discussion:

1. *What are the obstacles or barriers to open access?*
2. *How can we overcome unequal country wealth, technology access, and education across countries to promote the benefits of scientific research toward solving societal issues?*
3. *What are financial models for open access to which most (even for-profit) publishers could agree?*
4. *How can political solutions (including legislation) help to promote the implementation of open access?*

This report, which is freely available to members of the scientific community, policymakers, and the public, represents a summary of the discussion.

We aim to synthesize and share perspectives from the roundtable rather than attribute any quotations or viewpoints to specific individuals. Participants and their affiliations are listed below (alphabetically by last name):

- **Ann Beynon, M.S.** – Lead Partnerships Manager, Institute for Scientific Information, *Clarivate* – USA
- **Nishant Chakravorty, M.Med. Sci & Tech, Ph.D.** – Associate Professor, *School of Medical Science and Technology, Indian Institute of Technology, Kharagpur* – India
- **Gareth Dyke, Ph.D.** – Director of Author Relations and Business Development, *Bentham Science* – Hungary
- **Michael Eisen, Ph.D.** – Professor of Genetics and Development, *University of California, Berkeley*; co-founder, *Public Library of Science (PLOS)* – USA
- **Martina Franzen, Ph.D.** – Research Fellow, *Kulturwissenschaftliches Institut Essen (KWI)* – Germany
- **Ann Gabriel, M.A.** – Senior Vice President, Global Strategic Networks, *Elsevier* – USA
- **Ewelina Pabjańczyk-Wlaziło, Ph.D., M.Sc.** – former President, *Eurodoc*; Faculty of Material Technologies and Textile Design, *Lodz University of Technology* – Poland
- **Erika Pastrana, Ph.D.** – Editorial Director, *Nature Portfolio* – USA
- **Kathleen Shearer, MLIS** – Executive Director, *Confederation of Open Access Repositories (COAR)* – Canada

The communication and dissemination of scientific knowledge are foundational aspects of the scientific endeavor. The advantages of open access are documented,⁸ with benefits for both researchers and broader society.⁹ The European Commission has expressed that “Nowadays, it is widely recognised that making research results more accessible contributes to better and more efficient science, and to innovation in the public and private sectors.”¹⁰

How and where research is communicated has significant implications for shaping future research and its application. Since open access is described as a model created in response to the “perceived limitations” of subscription-based dissemination of scholarly works propelled by the Internet,¹¹ discussions about the open access ecosystem often center on publishing practices.

Drawing together insights from across sectors, the questions offered during the roundtable elicited responses that overlapped and intersected. To help guide researchers, this report is organized along eight key themes:

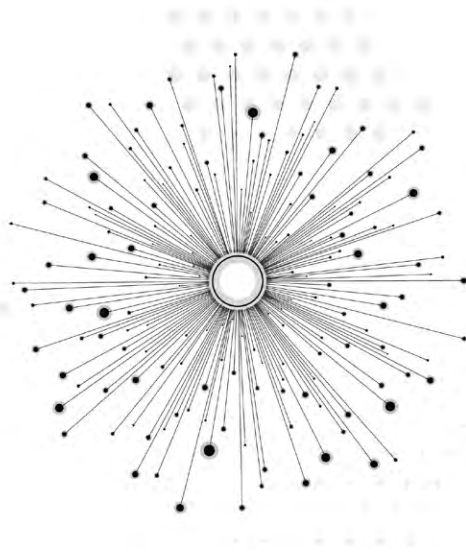
- 1. Prioritization of open access models among open access stakeholders**
- 2. Equity of publication costs and open access**
- 3. For-profit and nonprofit perspectives on open access publishing**
- 4. Academic barriers to open access**
- 5. Worldwide, cross-sector collaborations as a vital component to open access**
- 6. Extending open access transformations beyond developing new business and financial models**
- 7. Security and integrity in open access**
- 8. The role of governments, policy, and funding agencies**

8. [Björk B. C.](#) (2017). Open access to scientific articles: a review of benefits and challenges. *Internal and Emergency Medicine*, 12(2), 247–253.

9. [UNESCO](#) (n.d.). Open access.

10. [European Commission](#) (2020). Open access.

11. [Severin A.](#), Egger M., Eve M. P., & Hürlimann D. (2018). Discipline-specific open access publishing practices and barriers to change: an evidence-based review. *F1000Research*, 7.



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Prioritization of open access models among open access stakeholders

The discussion organically focused on the shared sentiment that science and society are better off if people share information openly, with the evolution of the Internet playing a critical role in overcoming previous physical barriers to information sharing.

Within the context of peer-reviewed publications, one participant reflected on their experience as a graduate student, when accessing information was considered a “practical” issue. They described a once non-digital society and said, “I hadn’t really thought about the fact that we weren’t sharing our papers openly before the Internet.... I had to go to a library. I had to get a book. Someone had to build a space to put that book and pay someone to print and ship it around the world. It was sort of obvious that it wasn’t possible to produce scientific knowledge and share it with everyone instantaneously. The second the Internet became a thing, however, that disappeared—and it should have been obvious to us, but sadly it wasn’t. We had this unbelievable opportunity to use this new technology to share scientific knowledge openly and freely.”

The participant went on to conclude that the lack of true open access today is a matter of collective unwillingness to prioritize the issue. Another attendee disagreed with this notion that the drive to advance doesn’t exist, citing that researchers have long used email as a peer-to-peer information-sharing strategy before the Internet that we know of today; for this participant, the high prices associated with open access publishing are the biggest obstacle to equitable access.

Like moving from email dissemination of research to the dissemination of research via the Internet, a participant from the publishing industry argued that barriers to open access are systemic. This notion aligns with scholarly works that call for systems-level coordination, collaboration, and a cultural shift across scientific communities and stakeholders to facilitate the development of an infrastructure for and transition toward Open Science.¹²

The participant suggested that if we collectively prioritize science, we could address the problems with the systems that create inequities in our transition to open access. They emphasized that open access is personally important to them and that a significant aspect of their job is to transform their business into a supportive and sustainable platform for Open Science. In positing further about open access prioritization and systems, they felt that Open Science is an ecosystem that will develop into various models, with publishing inevitably forming part of it. They explained that for-profit publishers “are fully committed to that transition. But obviously, the issues that we face in that transition will be different, perhaps, than other solutions that are brought up. And I think we are all on this call to bring [the publishing industry’s] perspective because it is an ecosystem. But I fully disagree that it’s not a priority. We have made it a priority.”

These sentiments around prioritization as a barrier to open access, along with stakeholders’ role and work within and outside the scientific community, ignited reactions from multiple participants. They were a continued theme throughout the roundtable discussion.

12. [Shaw L. C.](#), Errington T. M., & Mellor D. T. (2022). Toward Open Science: Contributing to research culture change. *Science Editor*, 45(1), 14–17.

Equity of publication costs and open access

The issue of publication costs emerged as a significant barrier. For one participant, the “exorbitant” costs associated with publishing were the biggest problem, with the current model posing equity challenges for researchers from less wealthy countries. Differences in article processing charges (APCs) were used as an example, with a participant saying, “They’re too high for the countries in the Global South. Researchers would probably like to use their resources on research experiments versus publishing. Even if we leave that part aside, this is more of a fundamental thought. I would say that if you look at people working on fictional art, they get money for their publications. Researchers are doing so much hard work, and after doing all that labor, they are asked to pay for their publication. That doesn’t sound appropriate to me.” While some countries have the option to publish at no cost or participate in incentive and waiver programs, the participant expressed their belief that these opportunities, along with others, were not adequately implemented.

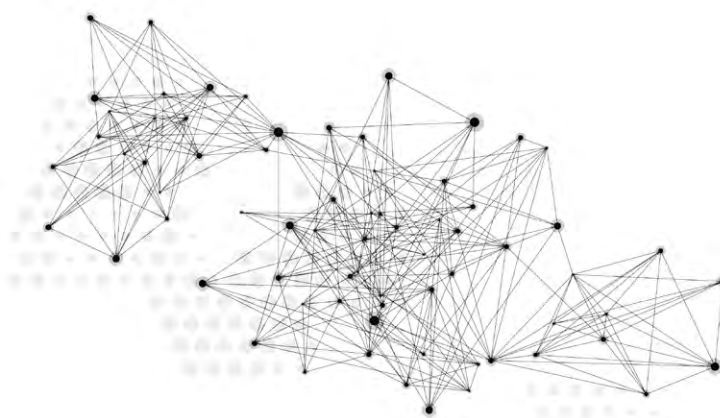
Attendees were advised to consider income disparities and gross domestic product (GDP) at the specific level of each country. The participant argued from personal experience that often, researchers in some low- and middle-income countries (LMICs) are charged the full APC by publishers. To account for factors such as country-level wealth, publishers have started using a tiered model, with that participant’s country being under consideration for such an approach.

Authorship and readership among individuals and institutions in LMICs remain persistent challenges to open access.¹³ Exploring existing efforts that allow low-income countries access to read articles was recommended. For example, [Research4Life](#), a platform that provides LMICs access to “improve teaching, research, and policymaking in health, agriculture, the environment and other life, physical and social sciences” across the world was referenced as a model to learn from.¹⁴

Another participant recommended taking the National Institute of Health (NIH)’s budget and subsidizing publishing costs for free as a benefit to people in the United States and, ultimately, the world—with the argument that it “would make science better, and would bring out all the talent that exists across the world [across researchers who are] currently being impaired in their ability to participate in science for economic reasons that don’t need to exist... A model that is fair to everyone is not just a micro-transition. It requires us to say that... ‘every scientist worldwide should be able to participate fully in science publishing without transaction costs. We have the money; we spend the money.... We don’t fight hard enough and don’t know what levers to push.” At the same time, they recognized that such an approach to leveling the international publishing playing field could mean a tradeoff for the current leadership that scientists in the United States hold in the production of knowledge.

13. [Harle J.](#) & Warne V. (2020). Open access: challenges and opportunities for low-and middle-income countries and the potential impact of U.K. policy. In: *Foreign, Commonwealth and Development Office*, editor. (INASP) INFASaP.

14. [Research4Life](#) (n.d.). Latest News.



For-profit and nonprofit perspectives on open access publishing

A sentiment was expressed—and agreed upon—that “as a scientific community, we should do what’s best for science.” With both for-profit and nonprofit entities participating, attendees were actively engaged and willing to share their unique perspectives. As such, the diversity of thought and experience within and across industries encouraged a candid, and at times contentious, discussion.

One participant explained that from their perspective, publishers are reluctant to embrace open access and that “it’s all about the money.” A call for more transparency from for-profit publishers echoed this sentiment, particularly around publishers’ profit margins. A participant responded that there has been “a collective goal to have an ecosystem that is more open and transparent, but also sustainable.” They shared data on the significant increase in their organization’s open access publications over the last ten years (from 6,000 to 150,000+) and the number of gold open access journals. At the same time, the publishing representative recognized that “amid the momentum and major strides, there is still more work to do.”

For context, gold open access includes articles and related content (e.g., data, protocols) available at no cost on the publisher’s website. Licensed under Creative Commons, they can be freely distributed and shared. While not raised directly in the roundtable, green open access articles, in contrast, enable authors to self-archive their scholarly works and related contents on a web platform managed by the author, funder, and/or an independent repository.¹⁵

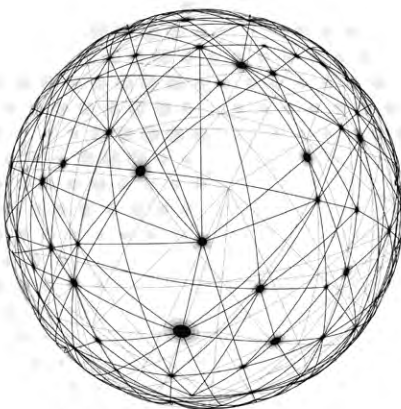
Two participants referenced diamond open access, a model without APCs for the author or reader.¹⁶ According to the participant, this model is gaining momentum in the Global South. The participant warned that it may be the way forward and that “if we look at the incentives available to researchers at Global North universities and take those incentives away—and allow people to publish open—then they’re going to go to diamond journals.”

While there was agreement among participants about inequities and high APCs, a for-profit publishing representative stated, “It is not something we take lightly. Putting a price tag on these papers has not been an easy decision. I can tell you that we don’t cover the cost of the paper with that APC, which is astonishing. But it is the reality.” This participant expressed the viewpoint that all open access stakeholders are dealing with similar issues by transitioning an existing business model, but affirmed that “we’re trying to make it such that science can be free, readable, and open for everybody.”

For-profit publishers highlighted the “body of work” that goes into an online publishing model. As one representative stressed, “We want these models to be inclusive and address issues related to global equity [but] publishing is not free, and standing up the bedrock of peer-review infrastructure

15. open-access.net (n.d.). Green and Gold.

16. [Plan S](#) (n.d.). Diamond open access.



is fundamental, and innovating around the infrastructure is important. It's not just about single-article publication anymore.”

Participants further elaborated on the evolution of the publisher's role, noting that in the past, publishers were seen as a final step in the research process. However, researchers now view the publisher's role as more hands-on and collaborative. Participants explained that researchers are actively seeking partnerships that leverage large-language models and machine learning to improve research collaborations and enhance outcomes.

Another recommendation was that greater effort should be put toward creating a publicly funded infrastructure to provide baseline support for scholarly publishing worldwide. Given the resource disparities across countries, “working together would enable us to move toward something that provides a little bit more inclusiveness and equity.” There was excitement around this idea, with one participant adding that this is where efforts should be concentrated.

Academic barriers to open access

A participant posited that “open-access publishing is in the middle of the scientific endeavor. It's what Robert Merton once called the ‘norm of communism,” where communism or communality is the belief that “the findings of science are common property to the scientific community and that scientific progress relies on open communication and sharing.”¹⁷ This reflection on Merton sparked a discussion on open access challenges at the university level, with participants going on to discuss various ‘publishing cultures.’

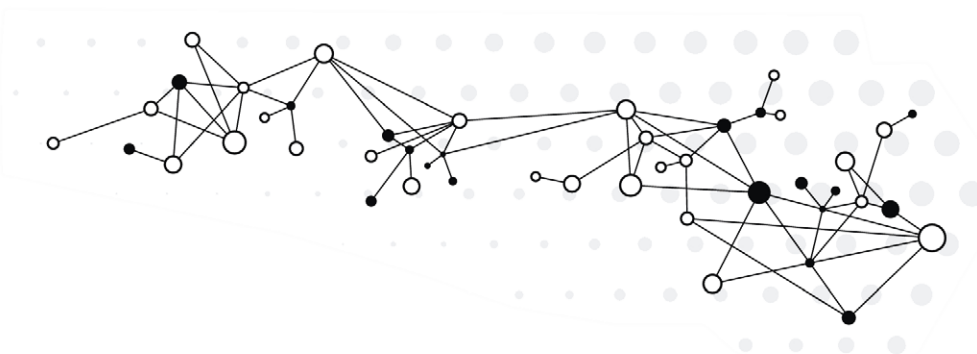
A discipline or institution's publishing culture can influence one's ability to publish open access, as there may be implications for tenure and promotion.¹⁸ Different academic disciplines have established research goals and practices of forming knowledge (e.g., data collection, analysis, interpretation), including publishing expectations.¹⁹ For example, publishing cultures may differ between the natural sciences and the social sciences. Moreover, a participant shared that their country has a point-based system that requires publishing in renowned, high-impact factor journals if a long-term academic career is desired.

A scientist-turned-publisher said, “There was never any incentive for me to publish my work open partly because of the field I worked in. We never had any funding from the government, so we were never forced down this road, although I published lots of papers in *Nature* and *Science*. My univer-

17. [Merton R. K.](#) (1973). *The Sociology of Science: Theoretical and Empirical Investigations*. University of Chicago Press.

18. [Wical S. H.](#) & Kocken G. J. (2017). Open access, promotion, and tenure evaluation plans at the University of Wisconsin–Eau Claire. *Serials Review*, 43(2), 111–119.

19. [Puuska, H.-M.](#) & Miettinen M. (2008). Julkaisukäytännöt eri tieteenaloilla (Disciplinary differences in publishing practices). Opetusministeriö / Undervisningsministeriet (Ministry of Education).



sities incentivized me to do high-impact factor publications. So now, we do training with a range of publishers, and people really want to publish their work through open access. They do. But that doesn't marry with the kinds of journals that their universities, governments, and funding agencies are pushing them toward." Other participants within and outside of the U.S. echoed challenges with the publishing culture in academia and what those challenges look like across countries.

During the discussion, a participant pointed out that unlike in other countries, the United States does not have a national research evaluation exercise. This absence means that there is less influence and control from the government side. Ultimately, the evaluation of researchers in the U.S. is left to the discretion of individual universities. The participant exclaimed that to change the culture, it would be interesting to have university administrators on a meeting similar to the present roundtable. They then argued that although conferences they attend often recommend that society stop using impact factors, doing so is "a cultural change made by the people that make the promotion and tenure decisions, and they're not often in these discussions. It's publishers talking to funders. There's nothing from the top down."

There was an active call for the reform of "research assessment processes related to career advancement at research institutions."²⁰ In one study, Pontika and colleagues studied institutions across seven countries (Austria, Brazil, Germany, India, Portugal, the United Kingdom, and the United States), finding that a barrier to the uptake of open access was "productivity as determined by quantity and individual achievements" relative to "collaborative open research practices, and the socioeconomic impact of research."²¹ While more research needs to be conducted on this topic, the study highlights the fact that a university-level adoption of open and responsible research practices requires a shift in research assessment criteria.

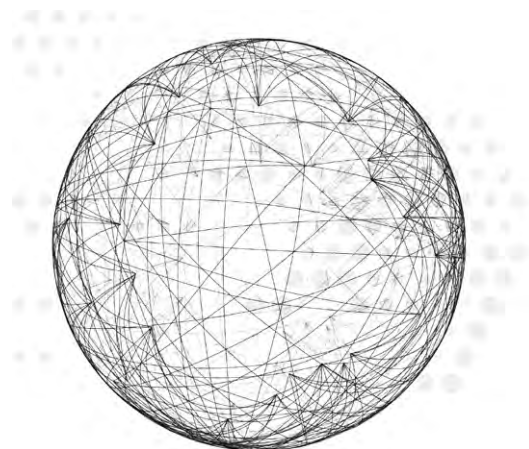
Other participants agreed, citing that the overemphasis on impact factors should be eliminated, as it can create challenges for researchers who find themselves stuck in a "Gordian knot," where the need to advance their careers and to publish open access are in conflict.

Worldwide, cross-sector collaborations as a vital component to open access

Global and cross-sector collaborations are core principles of Open Science, and by proxy, open access. A solution recommended by attendees was to advocate for the creation of global research networks, such as consortiums, to address the high cost of APCs. As one researcher explained, this

20. [Pontika N.](#), Klebel T., Correia A., Metzler H., Knoth P., & Ross-Hellauer T. (2022). Indicators of research quality, quantity, openness, and responsibility in institutional review, promotion, and tenure policies across seven countries. *Quantitative Science Studies*, 3(4), 888–911.

21. *Ibid.*



collaboration model could bring awareness about open access and provide researchers at a country and/or global level with resources (funding, submission support, etc.).

The same participant noted that most of the research community is aware of the need and call for open access but that the non-research community must be made aware as well. Engagement with the non-research community was paramount in this recommendation. The participant further stated, “These are the people who are essentially helping the policymakers make their decisions. Entire communities must understand the need to share scientific knowledge through scientific outreach programs, which most countries do through their academies. However, support, resources, and outreach can be done at a much larger scale.” Additionally, a participant emphasized the significance of incorporating citizen science into our discussions. They highlighted that all scientific endeavors should ultimately serve the needs and interests of the people.

The principle of open information sharing also extends to the role of the publisher. A participant pointed to the value that their organization’s data has provided in times of international crisis. For example, after the 2022 Russian invasion of Ukraine, the National Academies sought to support and relocate Ukrainian researchers. The publisher was able to provide data on areas in which scientists worldwide were researching, where and with whom they were working and collaborating, and on what topics and questions to investigate and solve. These critical insights enabled Ukrainian researchers to move across borders and continue their research.

During the discussion, several participants emphasized that open access extends beyond the boundaries of the journal article itself or the subscription models. It encompasses a wider scope. For one of the publishing representatives, “It’s how we can work with other data sets, for example, around the Sustainable Development Goals.” They continued, adding that they hoped to articulate an “elevated vision of what it could be like beyond the publication of a single article, and [to] look at the scientific ecosystem at large. There’s so much to be gained by [the] more partnerships that we can have in an open ecosystem.”

Extending open access transformations beyond developing new business and financial models

During the roundtable, there were discussions about new business and finance models. However, multiple participants argued that the “transition” or “transformation” to open access should be seen as just one element within a broader context. They emphasized that there are many other important factors and considerations that need to be taken into account. “We should stop thinking about the transformation of existing models and think about what we need to do to create the infrastructure and services to support widespread sharing and no barriers for researchers to publish their content,” said one participant.



A participant added, “Increasingly, as the world moves to open [access], we’re looking at ways in which the new set of inequities regarding paying to publish gets solved.”

The attendees discussed established and emerging approaches and novel ideas that, if implemented, may expand access to readers and authors globally.

Geographical pricing

A geographical pricing model to make open-access APCs more affordable for researchers residing in LMICs was introduced as an equity-focused, viable approach for consideration. After the roundtable, Elsevier announced the January 2024 launch of a geographical pricing pilot to structure APCs for gold open access journals based on a country’s Gross National Income (GNI) per capita.²²

Transformative agreements

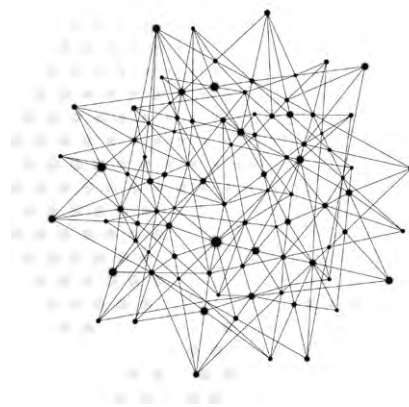
During the discussion, the importance of close collaboration with libraries on transformative agreements was emphasized. These agreements are contracts between institutions and publishers that facilitate the transition from a subscription-based model to open access while ensuring continuous content access. They are generally categorized as ‘read-and-publish’ or ‘publish-and-read’ agreements. In read-and-publish agreements, payment covers both reading and publishing, while in publish-and-read agreements, publishers are paid solely for publishing, with reading included in the costs.²³

One participant mentioned that Elsevier recently implemented these agreements at a country-level in Germany, following successful implementations in the United Kingdom and Sweden. This move highlights the growing interest and adoption of transformative agreements as a way to facilitate the transition to open access.

Later in the roundtable, the discussion on transformative agreements resurfaced with comments about the labor-intensive nature of transformative agreements. A participant posited, “If we can find a more global model that is easy to extrapolate, let’s say from one to another so that we could standardize these agreements, and regulate in them in some way, that’s something I’d be curious about. How can we make that an easier process with colleges, Historically Black Colleges and Universities (HBCUs), and other small institutions in the U.S.? This idea of a transformative agreement for them is attractive. But again, at this small scale, these colleges [don’t] have a lot of people to think about what that agreement should be, how they should position it, and what things they need to worry about.... Creating a model that standardizes the way institutions and publishers can come to agreement could be interesting.”

22. [Elsevier](#) (2023). Elsevier Policies: pricing.

23. [Hinchliffe L.J.](#) (2019). Transformative agreements: a primer. *The Scholarly Kitchen*.



Pay-by-article models

In highlighting another challenge, a participant argued that it can become costly when subscription-based models for research institutions, universities, and public libraries are locked, resulting in a pay-by-article model (anywhere from \$25–\$50 per article) to read the full text. This model was said to be the most popular in Central and Eastern Europe and was described as problematic given its high cost. There are discussions around joint financing efforts to achieve some level of funding uniformity across universities and libraries, acknowledging that the government also plays a role.

The pay-by-article model was not well-received by roundtable participants. A participant explained that prohibitive access fee models are “a path to avoid at all costs” and reflected on a past “movement” where a meter-based system that capped and monitored article usage. The participant shared, “Sometimes I get interested in new topics. So, I’d start reading about things that are outside of my field and my department. But now the Molecular Biology Department, for example, is paying for me to read papers on engineering.” This approach, as argued by the participant, became a way to control how people use information.

Echoing the sentiment that this model is not advised, a participant expressed, “This idea of ‘micro-payments’ for articles, or almost anything seen at an article level, is almost counterintuitive.... At this level, it doesn’t really speak to the future of the corpus, and we should be thinking on a larger scale, looking for synergies and inter-linkages and ways to accelerate science and scientific discovery. Even as elements of open access are taken to scale, equity must remain at the forefront.”

Other models

In addition to the recommendations above, a participant noted that an increasing number of libraries are repurposing funds to take care of the process by which publishing costs are addressed and paid for. They explained that in the European Union (E.U.), universal financial schemes with limits and the idea of funding institutions are being discussed. For example, grant applications might include an additional budget for publishing costs.

An alternative model was proposed during the discussion, suggesting financial incentives for reviewers and individuals involved in editorial work, which is not commonly practiced. Additionally, every two to three reviews conducted would result in waiving the APC, with greater incentives for those involved in editorial work. The participant argued, “This would differ from the current model where a reviewer completes 20 to 30 articles and may receive a discount voucher or coupon for one article—eventually.”

Given the consensus that research is unequally distributed and high APCs are a concern, it is crucial to consider several factors when developing new business and financial models for open access. As an example, there are different workforces and standards across countries, and that some journals use specific technologies that may be less accessible depending on the context and/or geography.



And operationally, there should also be consideration of how data, code, and protocols are made accessible. As one participant noted, “Who has read a scientific paper and tried to replicate the experiments based on the method section, with it being completely insufficient to relate to somebody else in the digital world? When we only had print journals, and it was expensive to print, it was the best we could do. But surely now, there are much better ways to share a protocol, just like there are much better ways to share code and data versus putting it as a link in an article at best.”

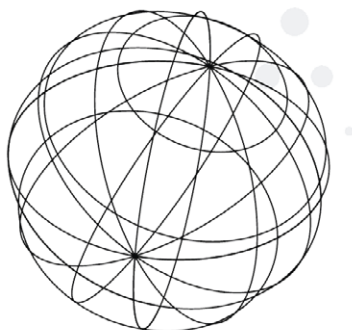
The participant continued, “As publishers, we think about the value we add as supporters of the article in that space and of supporting authors with other elements of sharing. We’ve integrated full data and code sharing as part of the submission experience of an article. So, it’s one click away for the author, free of charge, completely subsidized, to deposit their data and share their code. We also subsidize the reviewers having running time to check that code before it’s published. So, we have embraced that, in the sense of making it easy for authors to share...That is potentially the biggest transformation for science—the availability of all these different elements and not just the article.” The above examples speak to and demonstrate how the “impending” transformation to open access can completely change how science is shared and carried out.

Security and integrity in open access

The ‘Year of Open Science’ showed the far-reaching scope of Open Science and called on key players within and outside the scientific community that may not have been previously engaged. A participant highlighted that open access goes beyond publishing outputs and that we must consider security and integrity. They voiced that new regulations are coming into effect in response to concerns about who is collaborating with whom and interference from foreign governments. The participant framed both sides of the debate: “So, everyone’s saying, ‘Open Science is great and has lots of benefits,’ but there are also forces that say, ‘You know, we need to be more careful, and we need to be maybe not so open.’ Security impacts researchers’ ability to do everything they want to do. Then, there’s the integrity side of it due to an increase in unethical behavior.” They stressed that “the more things are open, the more we have to think about maintaining integrity in our ecosystem.” Nationalism is another obstacle to the sharing of funds and information for open access.

In 2022 the U.S. Office of Science and Technology Policy’s (OSTP) released a memo titled ‘Ensuring Free, Immediate, and Equitable Access to Federally Funded Research,’²⁴ which is often referred to as ‘The Nelson Memo,’ (because it was issued by Dr. Alondra Nelson, former Deputy Assistant to the President and Deputy Director for Science and Society, and at the time acting director of OSTP). The memo provided guidance mandating immediate equitable access to federally funded research for free. This guidance was designed to strengthen U.S. policies by bringing them in closer alignment with non-U.S. governments that have established open access policies to promote their national

24. [Nelson A.](#) (2022). Memorandum for the heads of executive departments and agencies: Ensuring free, immediate, and equitable access to federally funded research.



innovation agenda. As part of this guidance, the Biden-Harris Administration has taken heed to concerns around open access and emphasized through the memo that security is essential, and that freedom and integrity are crucial.

The role of governments, policy, and funding agencies

Given the changing landscape of the Open Access movement, the political culture of open access was inherently embedded throughout the roundtable discussion. As evidenced by the diversity of thought expressed by participants, open access does not exist in a technological or policy bubble. Instead, there are complex, multilevel social, political, cultural, philosophical, organizational, and economic implications for open access research.

A U.S.-based participant commented: “The government’s participation in discussions such as this is critically important as they hold the purse strings. The participant added that “If there will be a revolution, or evolution as some might also call it, government action is needed through, for example, policy or direct funding. Companies will not put themselves out of business, so governments must make these decisions.” It was recommended that “large initiatives should come from the top down. Otherwise, change will be very incremental, which has been observed in other industries,” said a participant, likening this to the top-down action needed in industries like healthcare and fossil fuels.

Further emphasizing the role of the government, a participant whose work focuses on collecting and aggregating publishing data into meaningful insights, stressed “from the reader side to the publisher side, the inequities will continue, I think, and unless something big happens. Plan S²⁵ has even said that APCs are not the answer. If this is the case, then someone must pay for the publishing services. So, again, it comes back to a matter of what role our government is going to play in making any meaningful change here.”

Multiple participants recognized that the U.S. is in essence behind other countries as it relates to open access. A participant acknowledged “that there are a lot of question marks in my mind about how the U.S. will play out. I don’t see them making a lot of movement towards CC-BY (creative commons-BY)²⁶ Open Access the way Plan S did. I sense it’s going to be up to the authors and the individual funders to decide how they want to require the free public sharing of the research.”

As expressed in the Nelson Memo, the U.S. government made their stance on open access clear by stating “Financial means and privileged access must never be the pre-requisites to realizing the benefits of federally funded research that the American public deserves.”²⁷ The aim of federal public access policies are to ensure that investments are directed toward ensuring that U.S. taxpayers have access to, and benefit from, federally funded research.²⁸

25. [Else H.](#) (2021). A guide to Plan S: the open-access initiative shaking up science publishing. *Nature*.

26. [open access.nl](#) (n.d.). Creative commons licenses.

27. [OSTP](#) (2022). Ensuring free, immediate, and equitable access to federally funded research.

28. [OSTP](#) (2023). Report to the U.S. Congress on financing mechanisms for open access publishing of federally funded research.



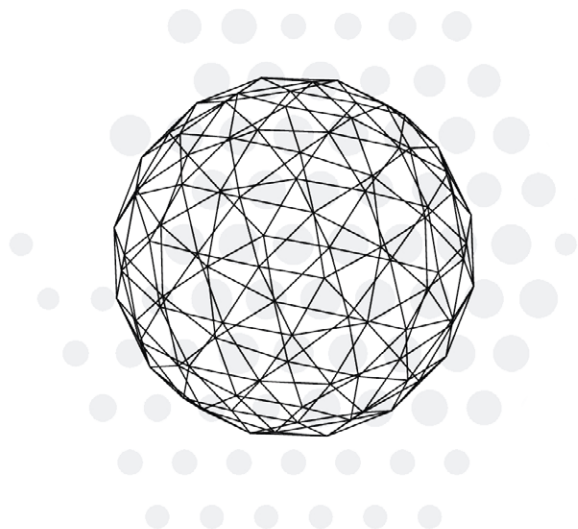
Conclusions

The roundtable discussion brought to light cross-industry perspectives on open access. Additionally, important areas of concern were revealed with recommendations for further action put forward. Overarching points and areas for continued exploration and discussion include:

1. Promote equitable publishing for researchers with limited resources by implementing inclusive and fair finance and business models and policies to, benefit LMICs and small institutions, and organizations.
2. Recognize that governments should not be expected to figure out all the details required for an open access (r)evolution, for instance, in the case of the Nelson Memo. The expectation should also not fall on the shoulders of authors who have an ever-growing researcher 'to-do' list.
3. Reduce the risk of science counterproductivity and duplication by understanding that whether it's the publishing industry as it exists today or the new iteration associated with the impending (r)evolution, there is a need to simplify the methods in which authors share research published materials and readers access them.
4. Establish a more defined role for Open Science and open access publication in university promotion and tenure evaluation criteria.
5. Value the inclusion of researchers and scientists in decision-making spaces, like government, as a critical way to ensure informed and evidence-based decisions.
6. Build on the Open Science principle of collaboration by utilizing citizen science as a methodology to bridge the gap between science and the public.

There was a noticeable shift in the level of understanding among the participants over the course of the discussion. By the end, attendees had gained more insight into each other's perspectives, work, intentions, and challenges. This increased sense of "understanding" played a critical role in facilitating a more meaningful and in-depth conversation.

A participant eloquently shared that "to catalyze change we need more voices at the table so that we can continue to speak and have forums like this. Bringing us all together is something that I think happens far too seldom. Here we have this variety of stakeholders in a room talking about how better off we will be in terms of meeting the policy goals, but more importantly, the goals of science and the researchers themselves."



Appendix: Reading List

- [Berezko O.](#), et al. (2021). Perspectives on Open Science and Scholarly Publishing: A Survey Study Focusing on Early Career Researchers in Europe. *F1000Research*, 10(1306), 1306.
- [Koley M.](#) & Lala K. (2022). Changing dynamics of scholarly publication: a perspective towards open access publishing and the proposed one nation, one subscription policy of India. *Scientometrics*, 127(6), 3383–3411.
- [Mudditt A.](#), et al. (2021). What’s wrong with paying for peer-review? *The Scholarly Kitchen*.
- [National Academies](#) (2023). Stakeholder Actions to Implement Open Scholarship: Proceedings of a Workshop—in Brief.
- [National Academies](#) (2022). Open Scholarship Priorities and Next Steps: Proceedings of a Workshop—in Brief.
- [National Academies](#) (2021). Developing a Toolkit for Fostering Open Science Practices: Proceedings of a Workshop Developing a Toolkit for Fostering Open Science Practices.
- [Open Research Funders Group](#) (2023). Accelerating the Adoption of Open Science: Closing Statement Release and a Call to Action.
- [Open Research Funders Group](#) (2023). Reading list.

