AFTER THE "NELSON MEMO": KEY CONSIDERATIONS FOR DELIVERING ON THE PROMISE OF OPEN & EQUITABLE SCHOLARSHIP

A BRIEFING TO THE NATIONAL ACADEMY OF SCIENCES, ENGINEERING, AND MEDICINE'S ROUNDTABLE ON ALIGNING INCENTIVES FOR OPEN SCHOLARSHIP

ABOUT THE ROUNDTABLE

The National Academy of Sciences, Engineering, and Medicine's Roundtable on Aligning Incentives for Open Scholarship convenes critical voices to discuss the effectiveness of incentives for adopting open science practices and ways to align incentives that support common missions. To learn more about the Roundtable's activities, or to join the hundreds of universities, departments, foundations, government agencies, and professional societies that are collaborating to align research practices, values, and incentives, contact the Roundtable secretariat.

ABOUT THIS RESOURCE

WHAT IS THE IMPETUS FOR THIS BRIEFING?

In June 2023, the National Academies of Sciences, Engineering, and Medicine's Roundtable on Aligning Incentives for Open Scholarship hosted a public workshop to hear from key members of the research ecosystem whose work will be directly impacted by the 2022 White House Office of Science and Technology Policy (OSTP) memorandum titled "Ensuring Free, Immediate, and Equitable Access to Federally Funded Research". By the end of 2025, all articles and data resulting from the U.S.'s $90 billion annual investment in research will be required to be made immediately publicly available. By the end of 2027, additional requirements for enhanced metadata and Persistent Digital Identifiers (PIDs) will present new opportunities for diverse research outputs to be made more discoverable and more easily assigned credit. Given these imminent inflection points, it was timely to convene a diverse panel of speakers to provide perspectives on what the Roundtable, its members, and the broader research community can do to proactively align reward systems to take advantage of the OSTP directive. In the aftermath of the June 2023 public workshop, the Roundtable convened an ad hoc working group to draft this brief. It enumerates important considerations pertaining to the "post-Nelson" world that require careful, coordinated attention.

HOW CAN THIS BRIEFING BE USED?

This resource details practical steps that individuals and organizations can take to ensure that the emerging open-centric research ecosystem is optimized for equity, inclusivity, efficiency, replicability, transparency, trust, and engagement. It provides guidance to colleges and universities, public and private funders, professional societies, and others for aligning their processes and their incentive structures with open scholarship values. Additionally, it highlights a range of organizations that are exhibiting good practices in the field.

CONTRIBUTORS

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ALTERNATIVE JOURNAL BUSINESS MODELS

WHY IS THIS CRITICAL TO AN OPEN & EQUITABLE ECOSYSTEM?

- Non-APC open access journals remove financial barriers, allowing authors from diverse backgrounds and institutions to publish their research without the burden of high costs while simultaneously ensuring readership access for anyone anywhere in the world.
- Equity in scholarly publishing means that all researchers should have an equal opportunity to disseminate their work and have it recognized within the academic community. Non-APC open access journals ensure that publication decisions are based on the quality of research rather than the ability to pay, promoting a level playing field for authors.
- Many researchers (including but not limited to those early in their careers) often lack the financial support needed to cover APCs, making it difficult for them to publish in certain journals. Non-APC open access journals empower all researchers to contribute to the scientific discourse without being held back by financial constraints.
- By removing the financial barriers, non-APC open access journals encourage a broader range of researchers to participate in publishing. This leads to diverse perspectives and a richer academic discourse that expands canonical structures and benefits the global research community.
- APC waivers don't address the root issue of socioeconomic disparities in academia. Instead of rectifying the financial barriers that hinder researchers' ability to publish, fee waivers can further entrench these disparities by not challenging the underlying financial model of scholarly publishing.
- Waivers might not be a sustainable long-term solution for researchers who cannot afford APCs. They might provide temporary relief but do not address the larger issue of establishing a publishing system that is equitable and accessible for all researchers, regardless of their financial situation.
- APC models may create perverse incentives for journal publishers to focus on volume of articles published at the possible cost of quality.
- APC models create conditions for predatory publishers to exploit the publish-or-perish culture of academia for profit.

WHAT DO WE MEAN BY "ALTERNATIVE JOURNAL BUSINESS MODELS"?

Traditionally, the dominant journal business model has been subscriptions, primarily via academic libraries. As open access has grown in prominence, some publishers have increasingly relied on article processing charges (APCs). This is a fee paid by or on behalf of authors before publication. These articles are then typically free to read, but not necessarily reuse. Alternatives journal business models eschew both subscriptions and APCs, typically in a manner that centers equity.

PRACTICAL WAYS TO ADVANCE ALTERNATIVE JOURNAL BUSINESS MODELS

- Colleges and universities, funders, agencies, and inter- and intra-sector coalitions can allocate institutional funds to directly support non-APC open access journals. This could include grants, subsidies, or direct funding to cover the operational costs of these journals, helping them maintain quality and sustainability without relying on APCs or subscriptions.
- Colleges and universities, funders, and agencies can provide training and resources for faculty to understand the benefits of non-APC open access journals, encompassing the perspectives of authoring, reviewing, and editing. This can involve workshops on open access publishing, copyright, and licensing issues.
- Funders and agencies can build or provide supportive publishing and repository infrastructure that will scale and reduce operational costs across the board.
- Funders, agencies, and libraries can nurture partnerships with scholarly societies that are working towards sustainability operations that are fair and equitable.

> **"OPEN SCIENCE SHOULD PLAY A SIGNIFICANT ROLE IN ENSURING EQUITY AMONG RESEARCHERS FROM DEVELOPED AND DEVELOPING COUNTRIES, ENABLING FAIR AND RECIPROCAL SHARING OF SCIENTIFIC INPUTS AND OUTPUTS AND EQUAL ACCESS TO SCIENTIFIC KNOWLEDGE TO BOTH PRODUCERS AND CONSUMERS OF KNOWLEDGE REGARDLESS OF LOCATION, NATIONALITY, RACE, AGE, GENDER, INCOME, SOCIO-ECONOMIC CIRCUMSTANCES, CAREER STAGE, DISCIPLINE, LANGUAGE, RELIGION, DISABILITY, ETHNICITY OR MIGRATORY STATUS, OR ANY OTHER GROUNDS."**
>
> **UNESCO RECOMMENDATION ON OPEN SCIENCE**

GOOD PRACTICES IN THE FIELD

There are a number of models for disseminating scholarly content that do not rely on either subscription or APC fees, including:

- Science Europe's Diamond Open Access Collaborative
- Subscribe to Open Community of Practice
- Open Library of the Humanities

AUTHOR RIGHTS RETENTION

WHY IS THIS CRITICAL TO AN OPEN & EQUITABLE ECOSYSTEM?

- Rights retention empowers authors to maintain control over their scholarly works and make informed decisions about how and when their research is disseminated, shared, and reused. This includes empowering authors to determine how their research can be reused for educational purposes, derivative works, and collaborations, and ensures proper attribution.
- Clear licensing terms makes it easier for users to know the circumstances under which they are allowed to reuse research.
- Rights retention gives authors and their institutions greater control over how their research is used by generative AI and other emerging technologies.

PRACTICAL WAYS TO ADVANCE AUTHOR RIGHTS RETENTION

- Institutions and research funders can enact policies that encourage or require authors to retain their copyright and all rights therein when publishing. This could be integrated into institutional open access policies or grant agreements.
- Institutions and funders can develop resources and templates that provide researchers with clear explanations of copyright terms, Creative Commons license options, and how they can retain their rights.
- Institutions and funders can implement rights retention policies that explicitly enumerate how the copyrights associated with the work they support can be assigned. This reduces the burden on individual authors to understand the nuances and complexities of copyright law.
- Institutions and research funders can engage with publishers to amend their Basic Copyright Transfer Agreement to ensure the author maintains a basic set of reuse and sharing rights.
- Libraries can include rights retention in the required terms for contracts they sign with publishers (including, but not limited to journal subscription and transformation agreements), so that authors are required to grant only “limited” or “non-exclusive” licenses to publishers.
- Libraries can negotiate with publishers to change the terms of the license-to-publish contracts authors have to sign when publishing, ensuring these agreements only restrict what end users may do under the license and not what the licensor (rights holder) can do.

GOOD PRACTICES IN THE FIELD

Among the community-driven initiatives to support author rights retention are the following:

- Authors Alliance
- cOAlition S Rights Retention Campaign
- University of Californiia Statement on Retention of Author Rights in License to Publish Agreements

ENGAGING THE PUBLIC IN RESEARCH RESULTS

WHY IS THIS CRITICAL TO AN OPEN & EQUITABLE ECOSYSTEM?

- Being able to communicate complex scientific findings in a manner that the general public understands can promote transparency, engagement, and informed decision-making.
- Clear and accessible communication helps the public comprehend the significance of research and its implications for society. It fosters trust, encourages public participation, and promotes a sense of engagement with scientific advancements.
- When the public is well-informed about scientific research, they can make informed decisions on matters that impact their lives, such as health, environment, and policy issues.
- Increased engagement with and understanding of scientific developments can combat both misinformation and disinformation.

PRACTICAL WAYS TO IMPROVE COMMUNICATION WITH THE PUBLIC

- Universities and professional societies can offer funding, workshops, and training sessions for researchers on effective science communication techniques, emphasizing the importance of clear language, storytelling, and engagement.
- Universities, professional societies, funders, and research institutions can recognize and reward researchers who excel in science communication. This can be considered in promotion, tenure, awards, and grant funding decisions.
- Research funders can require grant recipients to include a science communication plan as part of their grant proposals.
- Explore and support research dissemination through diverse modalities (videos, podcasts, social media, etc.) and a range of outlets (in-person events, livestreams, makerspaces, etc.).
- Support and fund repositories that provide research data and information in formats that local and regional communities and decision makers can access and use.

GOOD PRACTICES IN THE FIELD

There are a host of emerging initiatives focusing on stimulating and rewarding public engagement, such as:

- University of Arizona's Inclusive View of Scholarship
- Civic Science Fellows Network

TRANSPARENCY OF PROCESSES AND DATA AS REMEDIES AGAINST MISINFORMATION

WHY IS THIS CRITICAL TO AN OPEN & EQUITABLE ECOSYSTEM?

- How research is designed, executed, and disseminated can be critical in ensuring that impacted communities and populations have a sense of equity in both processes and outcomes.
- Sharing not just research findings but also the code, protocols, data, and other building blocks on which these findings are based allows others to verify the work, detect errors, and build upon the research, improving accuracy and reducing the potential for misinformation.

PRACTICAL WAYS TO IMPROVE TRANSPARENCY OF PROCESSES AND DATA

- Institutions and funders can recognize and reward transparent research and reporting practices, such as study preregistration, protocol sharing, data sharing, etc.
- Institutions, societies, publishers, and funders can implement data ethics and reproducibility review practices.
- Institutions, societies, and funders can recognize and promote those publishers that are aligned to these characteristics through policy and practice such as requiring datasets supporting research to be preserved in a community-accepted trusted repository, described, and cited in the paper.
- Publishers should review not just the submitted manuscript, but also apply dedicated expertise to reviewing the underlying data.
- Funders, institutions, and societies can encourage researchers to select digital preservation repositories that provide services to researchers to improve documentation, interoperability, and other elements of the FAIR Principles.

GOOD PRACTICES IN THE FIELD

Examples of organizations working to improve and incentivize the transparency of research processes and data include the following:

- Data Curation Network
- FASEB/NIH DataWorks! Prize
- American Heart Association Open Science Policy

CONFERRAL OF CREDIT TO REFLECT FULL RANGE OF CONTRIBUTIONS

WHY IS THIS CRITICAL TO AN OPEN & EQUITABLE ECOSYSTEM?

- Full and accurate credit conferral recognizes the diverse roles individuals play in research projects, promotes collaboration, and prevents the marginalization of certain contributors.
- It promotes equity by valuing the input of all team members, regardless of their titles or seniority.
- It recognizes alternative career tracks that are increasingly common and central to the research endeavor (e.g., data stewards, research software engineers).
- Full and accurate credit facilitates research transparency by clearly denoting the roles of each contributor.

PRACTICAL WAYS TO IMPROVE CONFERRAL OF CREDIT

- Develop guidance and training for researchers and project leaders on acknowledging various contributions. This could include authorship guidelines, data contributor acknowledgments, and more.
- Establish clear guidelines for authorship that reflect specific contributions. Encourage the use of contributor roles (e.g., "data analysis," "experimental design") to acknowledge different aspects of research work.
- Support the implementation and recognition of the CRediT taxonomy, which can be used to granularly detail the roles played by contributors to research outputs.
- Funders can require research teams to articulate each member's contributions in grant proposals and progress reports.
- Redefine metrics of success beyond publication count. Recognize other contributions, such as software development, data management, and public engagement.
- Create visible platforms for more diverse research team members to present their findings, not just summary results presented by principal investigators.

GOOD PRACTICES IN THE FIELD

Projects in this area include the following:

- CRediT Contributor Role Taxonomy
- University of North Carolina Tips for Highlighting Team-Based Research and Scholarship in Appointment, Promotion and Tenure Packages
- Royal Society's Résumé for Researchers

INCLUSION OF DIVERSE COMMUNITIES AND VOICES IN DESIGNING AN OPEN RESEARCH ECOSYSTEM

WHY IS THIS CRITICAL TO AN OPEN & EQUITABLE ECOSYSTEM?

- Diverse participation brings in a variety of viewpoints, enhancing the depth and breadth of research discussions and outcomes.
- Research outcomes are more likely to address real-world challenges and conditions when diverse voices contribute, making the research relevant and impactful.
- Engaging with impacted communities and populations during a project's early stages, rather than just communicating the end results, can foster a spirit of co-creation and co-ownership that ultimately benefits all parties.
- "Nothing about us without us" - remaking the research ecosystem to be more equitable without the active engagement of traditionally marginalized voices is self-defeating.
- By incorporating historically marginalized communities, we not only rectify past exclusions but also ensure that the benefits of open knowledge dissemination extend to all.

PRACTICAL WAYS TO INCLUDE DIVERSE COMMUNITIES IN DESIGNING AN OPEN RESEARCH ECOSYSTEM

- Ensure diverse representation in grant review panels to prevent biases and increase sensitivity to projects involving marginalized voices.
- Include statements on public websites, application/review material, annual reports, etc., that highlight the value of including diverse experiences and perspectives.
- Provide implicit bias training for researchers, program officers, graduate students, and other contributors to the research ecosystem.
- Collaborate with marginalized communities to co-design research projects, ensuring local expertise and priorities are integrated.
- Fund and empower research among a broader set of principal investigators across geographies, institution types, and backgrounds.

GOOD PRACTICES IN THE FIELD

The array of activity in this space includes the following:

- Collaboratory for Indigenous Data Governance
- Project Pathways
- Wellcome Trust's Equitable Funding Practices Library