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SCIENCE EDITOR



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PREVENT DISEASE



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SPITTING, COUGHING, SNEEZING,
SPREAD INFLUENZA
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SCIENCE EDITOR

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On the cover: Frederic Edwin Church, *Aurora Borealis*, 1865, oil on canvas (Credit: Smithsonian American Art Museum <https://americanart.si.edu/artwork/aurora-borealis-4806>). Thank you to the Public Domain Review (<https://publicdomainreview.org/>) for highlighting this public domain image, and a donation has been made to support their work.



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Where Do We Go From Here?

Jonathan Schultz

In the end, 2020—the year that lasted forever—will likely be an accelerant. The lasting changes to scientific publishing and communication will be those that have been simmering for a while, but only came to a boil because of this turbulent year. One of the clearest examples of this is the likely permanence of the remote workplace for information workers, such as those in scholarly publishing. A look through the CSE Annual Meeting report archive will find a decade's worth of articles on how to support a remote team, but many organizations remained hesitant or only allowed staff to work a few days from home. Now with everyone forced out of offices for what will likely be at least a year, many of those office spaces may not reopen, or when they do, they'll shift focus to meeting spaces and shared desks for staff to use as needed. The full implication of this move is unknown, but one certain positive of the remote workforce is the pool of applicants for any position expands from a few dozen locals to literally thousands of potentially talented individuals.

That change will be important as organizations attempt to address inequities brought to light (again) during the racial reckoning of this summer. The Coalition for Diversity and Inclusion in Scholarly Communications (C4DISC)¹ was created in 2018 to specifically raise the issue of the importance of diversity in the publishing community, and this year pushed many organizations and publishers to proclaim that they will be making systematic changes to increase racial diversity, both internally (e.g., staff and editors) and externally (e.g., invited reviewers and authors). There's hope this will be a lasting change, and if so, they will benefit from the resources Taryn Dollings describes in her meeting report on the session "Antiracism Toolkits for Developing Equitable Workplaces" from the CSE Fall Symposium in October. *Science Editor* has a topic collection devoted to Diversity & Inclusion (<https://www.csescienceeditor.org/topic/diversity/>) and we will continue to invite and encourage submissions on this essential topic.

Likewise, reviewing the articles in this Winter 2020 issue of *Science Editor* and thinking over this past year, I've collected a few thoughts on where we're heading and what will likely, or at least should, change. I profess to have no unique knowledge of all that is transpiring in the scientific publishing enterprise, so if you happen to be tackling these issues and wish to share your experiences and insights,

I encourage you to submit an article to *Science Editor* to educate myself and our readers.

We're in This Together

The email and website messages began appearing in mid-March as the virus spread across the world: "We're trying to be as flexible as possible during this pandemic, so if you need more time to submit, review, or revise, just let us know because we're in this together." While there had been localized events or disasters that led to accommodations for specific areas, the COVID-19 pandemic was the first disaster, at least in my professional memory, where we all were being affected at the same time. For some it was abrupt changes in childcare and support networks, for others it was closing labs and workplaces, and for those in the medical fields, it was long stressful hospital shifts. Author, editor, reviewer, and staff time were all at a premium, so journals and publishers were looking for ways to make their processes as easy as possible. Was every requirement truly a requirement? Were all those suggested revisions absolutely necessary for publication? Can a step be eliminated that saves everyone's time?

As we move into 2021 and deployment of vaccines gives hope that this too shall pass, it will be important to keep asking those questions, or at least this question: If you made a change to your process or requirements during pandemic times, why revert during normal times? In some cases, there may be a legitimate reason to go back, but I suspect those will be fewer than expected. Instead, if the quality of the submission, review, or publication is not negatively impacted, why not keep the simpler, more flexible approach?

As you reconsider your requirements, it will also save everyone time if you ensure that your journal's expectations for both authors and reviewers are "well-documented, easy to understand, and transparent" as advocated by Brittany Sutherland in her article "Train Up an Author in the Way They Should Go: The Role of Societies and Journals in Teaching the Review and Publication Process." A streamlined, simplified process is easier to document, and Brittany provides 20 questions to guide journals as they consider their standards and documentation. Although I advocate for being flexible, that's still a vague term, and outlining your expectations can go a long way to reducing stress on authors and reviewers, and ultimately, editors and staff too.

Of course, author and reviewer time is rarely spent only at 1 journal, as manuscripts typically travel between multiple journals at multiple publishers before finding a home. This

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is sometimes described as a time waste for authors and reviewers as they are asked to start over at each journal, but the same could be argued for the editors and staff handling each seemingly *de novo* manuscript. The increasing emphasis on editorial cascade at publishers and the development of cross-publisher initiatives such as Review Commons (<https://www.reviewcommons.org/>) is a step the right direction, as is the MECA recommendation described by Tony Alves in his article *Manuscript Exchange Common Approach (MECA): Why We Need It, What Is It, and What's Next?* As Tony explains, the purpose of MECA is "to establish a common, easy-to-implement protocol for transferring research articles from one system to another ... to benefit researchers by removing friction in the research evaluation process and making the flow of scholarly knowledge smoother and faster." As we build systems using common standards and increased interoperability, collaboration will be easier, reducing redundancy and allowing for more flexibility for everyone involved.

Articles Are Just the Beginning

For the first few months of the COVID-19 pandemic, scientific consensus was being established quickly and in full view of the public. Debates about possible transmission vectors and disease treatments played out across dozens of articles in a matter of weeks. Because of this speed, articles that should have referenced each other did not as their authors were all working and publishing simultaneously, and information became out-of-date much quicker than usual. What this made clear is that an article cannot be an endpoint in, and of, itself. In addition, while there may be exceptions, most articles are effectively single data points to be built upon, not definitive answers. Over time a consensus emerges, at which point broad conclusions can be drawn. The hydroxychloroquine saga is a good example here: although there was some fraud and sloppy science, many of the conflicting early reports were simply preliminary or narrowly focused.² Throughout the year, as more robust trials were published, it became clear that hydroxychloroquine is not an effective treatment for COVID-19.

However, if you go back to those early articles on a journal site, you will have no idea of the current consensus. When the typical article is being written and reviewed, there is the expectation that the authors have properly cited all relevant literature, have a comprehensive view of the field, and any work that is being built upon is cited. But once published, all this stops, and the article is frozen in time. When visiting an older article, how easy is it to find out what has happened since? Has it been replicated or refuted? Where does the consensus seem to stand on this topic? You can tell if an article itself has been corrected or retracted, but what about key references in the article? If it's a clinical trial, is it still ongoing?

Was it suspended? There are browser plugins and other services that attempt to answer some of these questions, but they require readers to actively install and use them.

Maybe when a reader visits an article it should be the journal's responsibility to provide that further context. I'm not suggesting that the text or figures of an article need to be constantly updated, which can be confusing and hard to maintain, but articles could have sidebars that update with links to new developments as they publish. The "cited by" section provided by many journals is a start, but those tend to be less helpful as citations pile up without context. One approach that may be promising is alluded to by Christian Grubak and Martin Jagerhorn of ChronosHub in their article, "The Forgotten Open Access Challenge: What Happened to the Author Experience?" The authors push for using many of the tools and standards of research openness and transparency, such as persistent identifiers, to reduce the burden on authors during the submission and publication process, but this metadata could also likely be used to build tools that provide more context to published articles. We're likely only at the beginning of what can be accomplished with persistent IDs, integrations, and data exchange, and I hope that articles of the future use these to improve context and replicability. In turn, this additional context may help increase the apparent trustworthiness of scientific articles.

Science in the Spotlight

This brings us to possibly the most significant development of 2020: The prominence of science, and scientific publishing, in the minds of the general public. With most COVID-19 articles being published free or Open Access, the public has had unprecedented access to original scientific research and seemingly everyone³ was sharing these articles online. At the same time, the COVID-19 pandemic accelerated trends toward rapid dissemination of research, with significantly more rapid peer review, and increased the use and prominence of preprint servers such as BioRxiv and MedRxiv.⁴ Preprints and their use are now regularly discussed and highlighted in the media such as *The New York Times* and *The Guardian*, as are some prominent withdrawals and retractions of COVID-19 articles.⁵

All of this is happening against a backdrop where public trust in science has potentially life or death consequences. Although polls show a relatively steady trust in science,⁶ a distrust of science-based recommendations for addressing the pandemic among a vocal minority of Americans and politicians has led to a fair amount of handwringing from scientists and science communicators as to the drivers of this distrust. Those skeptical of preprints and Open Access will point to them as the root of this problem, while those disdainful of traditional scientific publishing will highlight lapses in peer review and retractions as the primary cause.

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In my opinion, I'm not so sure that any of this mistrust can be blamed on peer review, preprints, retractions, or anything related to science because people believe what they want to believe and backfill from there. With their identity tied up in a political party, ideology, or personal preference, they embrace evidence that supports their identity and reject anything that doesn't. Science being a messy, complicated process above anything else makes for a convenient foil as there is always something that can be latched onto. Especially in my personal life, I'm not immune to this and my guess is you aren't either; for example, I'm more likely to remember and quote back a study showing a food I already like is healthy than one that says the opposite. The burden falls to institutions, politicians, and those making policy, guidelines, and laws to ensure they are following the scientific consensus and not simply making choices that are politically expedient or personally and professionally advantageous. For the rest of us, the burden is in how we choose to respond.

As we start 2021, it's important to remember that we don't fully know where we go from here, but it's still possible to help push us in the direction we should be heading.

This Winter 2020 issue of *Science Editor* continues with a recap of the worthy recipients of CSE's 2020 Awards and Honors. Plus, Barbara Gastel and co-authors provide highlights for editors from the recent virtual ScienceWriters2020 meeting and we have CSE Meeting Reports from Andrea Kunz on "Publishing Chinese Research," Duanduan Han on "Three New Style Manuals in the Sciences," and Beverly Lindeen on "The Expanded use of DOI and Content Citation Granularity." Kelly Fleshman and coauthors share their experience with Workflow and Team Optimization for Editorial Services within the United States Pharmacopeia, and in a new interview, Karen Stanwood discusses "Staying Curious and Taking Chances." We finish out the issue with 3 of our excellent regular columns, Stacy Christiansen on "What Do/Does the Data Show?"; Jennifer

Regala on "Amplifying Your Message 101: Social Media to Promote Yourself and Others"; and Barbara Meyers Ford on "Gatherings of an Infovore: Open to the World. Really?"

Optimism

The cover of this Winter issue is a detail from *Aurora Borealis* by the American landscape painter Frederic Edwin Church. Painted in 1865 from sketches given to him by an arctic explorer, it depicts a desperate scene as the ship is trapped in the arctic ice. However, the approaching dogsled offers a glimmer of hope and the beauty of the northern lights keeps it from feeling dreary, and is almost optimistic. As auroras were usually a northern phenomenon, when Church painted this landscape during the American Civil War, it was likely seen as a sign "of God's displeasure with the Confederacy for advocating slavery, and of the high moral stakes attached to a Union victory." It is likely the aurora represents the uncertainty of the time, ominous yet hopeful.

This painting is on display in the Smithsonian American Art Museum in Washington DC,⁷ a museum I have frequented many times. I haven't been to this, or any museum, since the pandemic reached these shores earlier this year. I'm hopeful that will change in 2021.

Special thanks to the Science Editor Editorial Board for helpful discussions that led to this article.

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Manuscript Exchange Common Approach: Why We Need It, What Is It, and What's Next?

Tony Alves

A straightforward description of the Manuscript Exchange Common Approach (MECA) recommendation is that it is a documented methodology describing how to create a package of computer files, and how to transfer the contents of that package in an automated, machine-readable way. The magic of MECA is that it lays out an easy-to-follow map to accomplish this. The MECA specification fully describes how a software system should structure the files, assemble, and then transmit them. However, the *what* and the *how* of MECA is not what is most important. The most important thing is the *why*. The purpose of MECA is to establish a common, easy-to-implement protocol for transferring research articles from one system to another, so that these different systems do not have to develop multiple pairwise solutions for each and every system that they need to talk to.

Having worked on this initiative for the past few years, first as a founding member representing Aries Systems, then as co-chair of the National Information Standards Organization (NISO), Working Group, along with my colleague Stephen Laverick of Green Fifteen Publishing Consultancy, I will describe in this article the genesis of the MECA project and what drove the collaboration, as well as define the components of the MECA protocol and specification. I will also look toward the future and speculate how MECA might evolve.

How and Why It Began

Near the end of 2016, John Sack from HighWire Press contacted Lyndon Holmes, CEO and Founder of Aries Systems, and asked if Aries would be interested in collaborating with other submission system vendors to come up with a common methodology for transferring manuscripts between their varied systems. This wasn't a surprise considering I had recently seen Sack's presentation at the STM Frankfurt meeting entitled "Friction in the

Workflow: Where Are We Generating More Heat Than Light?"¹ where he discussed the frustration faced by authors who find themselves repeating tasks and duplicating efforts during the research evaluation process.

Sack stated, "For one article, authors need to prepare separate submissions with separate rules, forms, formats, and files for each journal they submit to." He went on to describe how format-neutral submissions is one answer, and how The Genetics Society of America in their journal *GENETICS* receives submissions. They welcome submissions in any format, and then ask the researcher to follow the submission requirements once they are sure the research will be moving forward.^{2,3}

Sack suggested that a second solution might be an industry-wide adoption of a common submission protocol, much like the "Common App" used by students applying to universities and colleges in the United States, where the student completes a single online form, and then chooses which schools to send it to.⁴ This would require the development of a central controlling body or clearinghouse for research articles, which would require a large coordination across hundreds of publishers, and is perhaps impractical considering the vast differences in requirements and methodologies for different fields of research. Since most scholarly research flows through 1 of 5 online submission systems, it seemed more practical for those organizations to work together on solving this challenge.

Along with author frustration, reviewer frustration was also cited as a major concern, and something that was a driving force behind the early discussions around the need for a common approach for transferring manuscripts. In a 2016 study published in *PLOS ONE*,⁵ it was found that 20% of biomedical researchers performed between 69% and 94% of reviews. The study noted, "Alternative systems of peer review proposed to improve the peer-review system and reduce the burden include 'cascade' or 'portable' peer review, which would forward the reviews to subsequent journals when papers are resubmitted after being rejected, thus reducing the number of required reviews."⁵ Another analysis published in *AJE Scholar* concluded that "nearly 15 million hours is spent on reviewing rejected papers

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each year,” and suggests that an “industry standard for portable peer review would reduce the amount of time busy researchers spend reviewing and re-reviewing the same paper.”⁶ Although there are some good reasons why peer reviews should not be shared (e.g., different journals have different review criteria and different academic focus), there is a desire to have the capability of transferring reviews, and leaving it to the different constituents to determine when it is useful and appropriate.

As the Director of Product Management at Aries Systems at that time, I was quite interested in developing a common approach for transferring manuscripts. Many of Aries’ customers use multiple submission systems, and Aries was already working on several different projects to enable cascading workflows across those systems. In addition, Aries had recently developed a protocol for ingesting manuscripts from preprint servers and authoring systems, which is a similar process with very similar requirements. There were also increasing calls from journals to include aspects of the completed peer review in transferred articles, including the review comments, the editor decision letters, and the authors’ responses to the reviews. We were eager and ready to consider Sack’s request and embark on what turned out to be a very useful and successful initiative.

Details of MECA

The project kicked off with representatives from HighWire Press, Aries Systems, Clarivate, eJournalPress and the Public Library of Science (which was building a submission system at the time). We named the initiative “Manuscript Exchange Common Approach” (MECA). The first thing we did was define our principles and identify the use cases we would be addressing.

The first principle was to let journals and authors set the rules on what is transferred. The MECA team would define what data and files *could* be transferred, but only minimal data needed to start a submission record would be required. A second principle was to define a minimal viable product in order to get the project off the ground quickly, and to be sure it could be expanded for future use cases. A third principle was to design a protocol based on best practices and industry standards so that there would be a low barrier to entry to use MECA. The fourth principle was that MECA was a technical recommendation or specification, not code or software, not a central hub or service like Crossref or ORCID, and it would not be used to trace the path of a manuscript.

With these principles to guide us, we defined 3 primary use cases: 1) Submission System to Submission System (for cascading workflows and cross-publisher transfers); 2) Preprint System to/from Submission System (in response to author enthusiasm for pre-review distribution of their research); and 3) Authoring System to Submission System

(to make it easy for authors to push their research to the journal of their choice). A secondary use case, very broad in scope, was also defined: Submission System to Various Other Systems, such as artificial intelligence/machine learning services, production services, taxonomy services, etc.

The MECA team began to work on a specification to define what a common transfer protocol would look like. The project was broken down into several parts: vocabulary, packaging, manifest, transfer metadata, submission metadata, review metadata, identity, and transmission. These are described below in more detail.

Vocabulary

The goal was to identify a standard nomenclature that provided us with a baseline understanding of how each system uses the language of peer review, and so that any specification would use a common lexicon. For example, the use of *referee* versus *reviewer*. The vocabulary list had 70+ terms and included definitions, synonyms, “often-confused-with” alternatives, as well as specific examples of usage. Both publishing terms, like *author*, *reviewer*, *article*, and *abstract*, and technical terminology, like *document type definition (DTD)*, *extensible markup language (XML)*, *interoperability*, and *mime type*, were included. There was an understanding that this list could be updated over time as new terms were introduced.

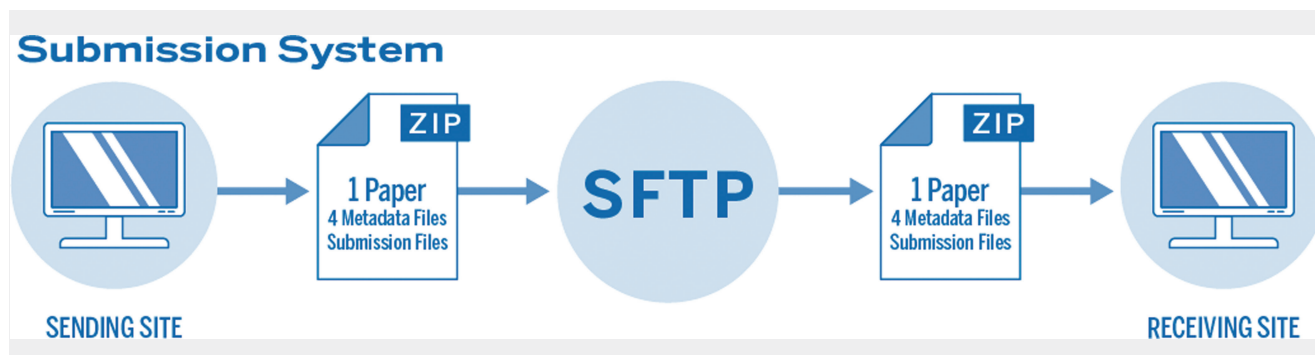
Packaging

The entire group of files to be transferred are wrapped up into a zip file, as this is a simple, flexible, and well-understood way to assemble files for transmission. There is one zip file per manuscript, and the package contains the following files: Manifest.xml (a new DTD for file manifest), Transfer.xml (new DTD identifying the source of the package, the destination of the package, contact and security information), Article.xml (DTD, based on journal article tag suite [JATS], containing information about the article), PeerReview.xml (DTD, based on JATS, containing information about the peer review), and any source files (manuscript, figures, tables, etc.). Only the PeerReview.xml and source files are optional.

Manifest Information

This is an XML file that serves as an inventory of the objects, files, and other data included in the transmission package. As mentioned above, the entire transmission package is a zip file. Each item in the zip package must have an entry in the Manifest.xml file. The manifest file might also include entries for items not in the zip file, such as a URL/URI (a pathway to a dataset or video held at a repository). The MECA specification has an example of the Manifest DTD and the Manifest XML file.

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The sending site creates a package of files and transmits that package to a receiving site.

Transfer Information

This XML file is used to identify who is sending and who is receiving the package. Typical information to be included in the Transfer.xml are the service provider (submission system, preprint server, etc.), contact information (first name, last name, email address, etc.), and publication information (journal title, etc.). The transfer file may also include security information, such as an authentication code. The MECA specification contains examples of the transfer DTD and XML files as well.

Submission Metadata

Information about the submission itself is contained in the Article.xml file. This XML file is compliant with the JATS Green DTD. The minimum required data are article title and corresponding author; however, the sender can include as much data as they would like, as long as the data complies with the JATS schema. It is up to the receiver to decide how much of the provided data they wish to ingest. For example, the sender might include the required fields plus an abstract, keywords, and funding information. However, if the receiver does not have a corresponding “funding information” field in their system, they would simply ignore that bit of data, or deposit that data in a general use field. It is important to note that only the most recent revision of the submission is written into the Article.xml file.

Peer Review Data

Because the JATS DTD is optimized for conveying article information, it does not currently include any data about the peer review process. This is being addressed by initiatives like JATS for Reuse (JATS4R), but since that is a possible future expansion of JATS, the MECA team had to define a new DTD to convey peer review information. The Reviews.xml file is based on JATS, and can contain peer review data such as questions and answers, comments, ratings, marked up files, and decision letters. Multiple reviews from multiple

revisions can be included in 1 file. Because peer review is often anonymized, there is an accommodation to redact reviewer names and contact information based on the sending journal's privacy policy. One question that has come up often is, “why not include the peer review information in the Article.xml?” The MECA team felt that it would be best to keep the Article.xml file fully JATS compliant.

Identity

It was realized early on that a manuscript might be transferred multiple times, and that it would be useful if the package had a consistent identity across systems so that a system would know if it had been transferred or received by that system in the past. Multiple identifiers exist today, such as manuscript number and digital object identifier (DOI), but those identifiers already have specific uses. Therefore, the MECA team decided that a universally unique identifier (UUID) methodology should be used. The UUID is a 128-bit number that when generated, will, for all practical purposes, be unique. It does not require any central controlling authority and has no semantic meaning.

Transmission

Perhaps the most controversial of the decisions made by the MECA team was to use secure file transfer protocol (SFTP) to transmit the package from system to system. SFTP is a longstanding and very common way for computer servers to send and receive files over the Internet. SFTP was chosen because it is well established, and most systems will be able to utilize it. Another benefit is that SFTP works well when sending large files (such as image and data files), and if interrupted, it can easily resume the file transfer. However, it is also recognized that supporting an application programming interface (API) transmission (such as REST or SWORD) is likely to be one of the first improvements because API technology is widespread and has additional advantages, such as real time status messaging.

NISO Gets Involved

As the specification was being written, members of the MECA team began to promote the concept throughout the scholarly publishing community. There were articles in the *Scholarly Kitchen*⁷ and in the *Naturejobs* blog.⁸ There were also presentations at meetings such as the Society for Scholarly Publishing,⁹ Council of Science Editors, Force11, STM Week, and JATS Con. This captured the attention of the National Information Standards Organization (NISO), who invited MECA to form a NISO Working Group¹⁰ in order to make the MECA protocols an official NISO Recommended Practice.

Along with the original MECA members, the Working Group was expanded to include the following representatives from across scholarly publishing: the American Chemical Society, the American Physical Society, Cold Spring Harbor, eLife Sciences, Green Fifeen Publishing Consultancy, IEEE, Jisc, the National Library of Medicine, Springer Nature, and Taylor & Francis. The Working Group spent several months revisiting and revising the original specification, building on the work that had already been done.

The MECA Recommended Practice was approved on June 26, 2020, and published on July 6, 2020.^{11,12} A NISO Recommended Practice is defined as a “recommended ‘best practice’ or ‘guideline’ for methods, materials, or practices in order to give guidance to the user. Such documents usually represent a leading edge, exceptional model, or proven industry practice. All elements of Recommended Practices are discretionary and may be used as stated or modified by the user to meet specific needs.”

Ultimately the MECA Recommended Practice can be seen as a successful collaboration with stakeholders from various areas of the publishing ecosystem, which provides a framework for manuscript exchange with low barriers to entry. As with the initial recommendations, the Working Group recognized that there is still work to do, and as such, many of the participants have committed to working together to evolve the recommended practice. A NISO Standing Committee has been formed and includes the following participants: the American Chemical Society, the American Diabetes Association, Apex, Aries Systems, California Digital Library, Clarivate, Cold Spring Harbor, eLife Sciences, Green Fifeen, IEEE, the National Library of Medicine, Overleaf, Public Knowledge Project, Public Library of Science, River Valley, Scholastica, and Taylor & Francis.

The NISO MECA Standing Committee meets monthly and will take up the following activities: promotion and education of the current Recommended Practice; evolution of the specification to include updated protocols and technology; non-English language support; integration with efforts by JATS4R, STM Review Taxonomy, and DocMaps initiatives; and support of additional use cases.

As a founding member, and then as co-chair of both the Working Group and the Standing Committee, it has been an honor and a privilege to work with so many amazing and talented people from across the scholarly publishing industry. What started out as an initiative to help commercially-focused submission system vendors collaborate more efficiently, has turned into a cross-industry effort of commercial, nonprofit, professional society, and governmental agency cooperation that will benefit researchers by removing friction in the research evaluation process and making the flow of scholarly knowledge smoother and faster. In order for MECA to be fully effective it needs widespread adoption, and to that end I request that editors and publishers ask their system vendors if they have already adopted MECA or if they plan to adopt it. If the answer is no, then point them to the MECA website (<https://www.manuscriptexchange.org>) and to the NISO Recommended Practice (<https://www.niso.org/publications/rp-30-2020-meca>).

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The Forgotten Open Access Challenge: What Happened to the Author Experience?

Christian Grubak and Martin Jagerhorn

Publishers face multiple challenges due to the growth of Open Access publishing, and no one masters them all. Knowing how to prioritize these challenges and choosing the right approach and strategy to address them is not easy. Somehow, many still make the bold claim that they have it under control and forget that they placed the burden on the authors: paying publishing fees, ensuring everything is compliant with their funder's and institution's policies, and manually reporting data back in all directions. At ChronosHub,¹ we embrace the complexities and believe in a collaborative approach to streamline the workflow. But what have we learned from working with publishers, institutions, funders, and directly with the authors?

In order to make new research discoveries more accessible and to accelerate the research process, funders are increasingly adopting Open Access (OA) publishing policies for their funded research. Plan S will soon become a reality for many researchers, institutions, and publishers, and Open Science is quickly shaping academic publishing's digital future by changing the current practices. To put it simply, the industry calls for clear communication of high-level information to everyone involved in the research publishing process.

Authors and editors are overwhelmed by funder requirements, while funders have a hard time enforcing their policies and track the output of funding. At the same time, institutions struggle with the cost of OA, and publishers are looking for a streamlined workflow. How do we all take the first step to support researchers in the right direction, and how do we simplify these operational complexities so policies live up to their promises?

At ChronosHub, an online OA management platform, we work with all types of stakeholders daily, including Plan S funders like the Luxembourg National Research Fund

and the Bill & Melinda Gates Foundation, publishers like Bentham Science and Emerald Publishing, and institutions like the University of Copenhagen and the National Library Consortium in Luxembourg. We see the challenges from different perspectives and have gathered some lessons learned through these collaborations, and we want to share a few examples of how we have put them into practice.

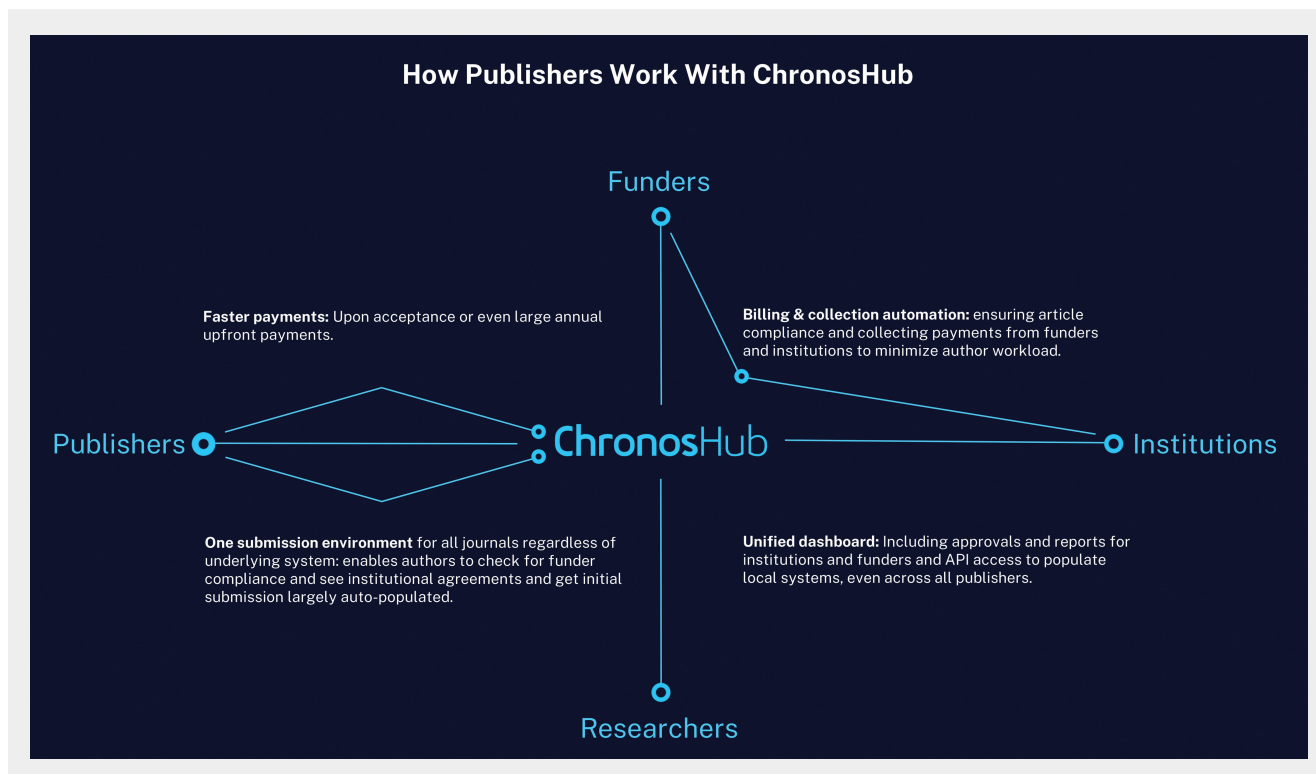
Compliance with FAIR Principles for All Associated Article Data Is Essential

Today's research ecosystem is very fragmented, with enormous data collection costs, storage, and exchange. How does the industry deal with publishing fees, transformative agreements, underlying research data, access to the author accepted version of the manuscript, embargoes, hybrids, vouchers, waivers, and so much more? It is complex, and the plethora of management systems developed does not make it less complicated. The problem often is that these systems do not meet the FAIR (Findable, Accessible, Identifiable, and Reusable) principles, making it difficult to connect them for seamless exchange and reuse of data. However, because globally unique identifiers for all required entities (authors, affiliations, funders, grants, journals, articles, datasets, etc.) are available, the processes can be automated when they are provided. For example, we can automate compliance checks and approvals based on funders' and institutions' policies. For the National Library Consortium of Luxembourg, this means that authors no longer need to manually report back to the funder and claim reimbursement of their publishing fees. Instead, ChronosHub processes the accepted articles and pays the publishing fees directly on behalf of the funder or institution, who then have access to all data and reports on the platform.

A Researcher-Centric Approach Is Key

Everyone can agree that researchers should focus on their research—and not on the process of publishing research. It is vital to put the researcher first and give the author a fast and seamless experience to reduce the administrative overhead.

CHRISTIAN GRUBAK (<https://orcid.org/0000-0001-8179-5703>) is CEO and Founder and MARTIN JAGERHORN (<https://orcid.org/0000-0001-5442-5838>) is Head of Business Development at ChronosHub.



How publishers work with ChronosHub.

But authors increasingly need guidance navigating the journal selection process. As a result of both complex funding policies and a rise in institutional agreements, authors no longer know where to publish their work in compliance with their funder's and institution's policies. They also do not know what the conditions are or if there is a publishing fee, voucher, waiver, read-and-publish agreement, or something similar. Guidance is necessary for authors to quickly locate which journals offer a compliant route based on their funding and institutional affiliation. Auto-completing submission forms with FAIR data on the authors, grants, funders, etc., lowers the threshold for the initial submission and enables a direct submission through the system to thousands of journal titles.

At Emerald Publishing, the focus is on the author experience. In collaboration with ChronosHub, they are implementing a workflow for easy submission. Dealing with compliance, approvals, and reporting back to funders/institution is replaced with a seamless process including signage of license agreements and, when possible, obtaining publishing fees paid for directly by the funder or their institution. When an author submits a manuscript through ChronosHub into ScholarOne (the underlying submission system), full automation is

possible by establishing FAIR data. The author's funders and institution can access data directly from the system for their approvals, reporting, and auto-populating their repositories, without the need for time-consuming data collection.

Simplify the Submission Process with Integrations

Integrating systems and processes and giving authors a single point of contact to help them through the submission process is crucial. Publishers need to take advantage of integrations already in place to support the author experience. In that way, authors can see all the publisher's journals in one place and enable a seamless submission, regardless of how many different submission systems a publisher has.

For example, the American Society of Microbiology (ASM) recently activated the integration between EJPress and ChronosHub, making it possible for authors to submit directly to their journals through the platform. The submission form is largely prepopulated with the author's profile information regarding coauthors, affiliations, grants, and funders, using ROR IDs, ORCID IDs, and Grant DOIs. At the same time, they can easily see which of ASM's journals are compliant with different funders' policies.

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Make Institutional Agreements Transparent

The cost of OA adds another level of complexity. As subscription revenues decrease, publishers have developed a variety of OA business models. One of the most common models is based on paying an article processing charge (APC) in order for the article to be published. However, institutions already spend a significant amount on APCs every year, a cost many universities cannot afford to increase. It is also not always transparent what type of OA, license, price, etc., each journal offers. Additionally, more and more universities have institutional agreements and sometimes national consortium agreements with some publishers, giving them other conditions than what the publisher usually offers.

When publishers, funders, and institutions use ChronosHub, the Journal Finder² is customized for each organization and its strategy. In some cases, like for the University of Copenhagen, there is a clear path towards green OA to meet the cost challenge as green OA does not require any APCs to be paid. They use the Journal Finder to guide their authors to publish in journals that offer green OA.

In cases where the APCs cannot be avoided, all the institution's agreements and national consortium deals with

publishers have been made transparent to the researchers through the Journal Finder. For each journal, it is now clear what these agreements include. The researchers can see who will pay and how much, taking discounts, vouchers, and read-and-publish agreements into account.

Collaboration Is the Only Way

No one can solve all these challenges alone. The only way to move forward is to collaborate and jointly mend the research ecosystem. Communication needs to be streamlined between all the key stakeholders: researchers, publishers, funders, and institutions. If we encourage collaboration, we can build bridges, break down barriers, and focus on a successful author experience, which will ultimately benefit all stakeholders. Therefore, we call upon all publishers to reach out to their partners and providers of their submission and production systems to activate further integrations and data exchange with industry initiatives like the OA Switchboard, the Plan S Journal Checker Tool, Sherpa, ChronosHub, and others.

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Train Up an Author in the Way They Should Go: The Role of Societies and Journals in Teaching the Review and Publication Process

Brittany L Sutherland

When writing an academic manuscript, authors pay close attention to the guidelines and formats specified by their target journal; however, for much of the review and publication process, journal guidelines can be vague, incomplete, or unavailable to the author or reviewer. This commentary advocates for journals and societies to make their expectations for both authors and reviewers well-documented, easy to understand, and transparent, and for these groups to take a more active role in training the next generation of scientists.

Research is a challenging enterprise, especially for students and trainees. Studying the theory and history of one's discipline, perfecting bench and field skills, and learning the mathematical and computational tools for rigorous analysis all take effort, dedication, and effective instruction. For most researchers, well-established programs of education and training exist to teach students the competencies they need to be successful. When it comes to communicating one's findings, most graduate programs teach the fundamentals of writing a scientific paper, including which information needs to be included, how a manuscript should be formatted, and how to permanently and transparently archive raw data and analyses.

However, professional training becomes much more nebulous when navigating peer review and publication. Trainees often encounter a confusing system of official and unofficial mentors who help them navigate the review process. Ideally, trainees have mentors who are skilled writers with plenty of peer-review and publication experience and who have the time to shepherd their students through this gauntlet. Often, trainees must cobble together a network of more experienced trainees and online resources, and then

learn through trial and error. The largely unwritten rules of peer review and publication also affect seasoned researchers; for example, those puzzled by the differing conventions of a new field, or who simply have become a bit lax with their reviewer responses and may need a refresher. A more formalized system for training researchers to negotiate the review and publication process would be a welcome complement to the current mentorship system, and societies and journals are an obvious choice to play a supportive role. Journals administer the peer-review process that forms part of the foundation of the trust society has placed in science. As these crucial gatekeepers, journals have their own standards of quality. Who better to communicate the standards by which manuscripts are judged than those who make the rules?

Clearer expectations and guidelines coupled with more complete documentation and more active training would reap benefits for all stakeholders in the publishing process. For new authors, clearer guidelines for manuscript writing will improve the quality of early drafts, which may result in more favorable first-draft editorial decisions. Better documentation of the typical review timeline and explicit guidelines for responding to review comments will alleviate stress in new authors, and may result in not only more favorable decisions on revised manuscripts, but also fewer rounds of revision. For graduate students and postdocs at a critical, time-sensitive stage of their careers, quicker turnaround of manuscripts is especially important. For reviewers, clearer guidelines for writing peer-review reports will help ensure authors thoroughly address all points in the first revision, thereby reducing time spent on, or even obviating the need for, subsequent rounds of review. For editors and production staff, cleaner manuscripts require less editing, and complete responses to reviews decrease revision time per manuscript.

Likewise, agreed-upon a priori standards, improved documentation, and active training of reviewers will pay dividends throughout the academic community. Increased training for reviewers will improve the quality of reviews

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written by novice peer reviewers. Although practice varies considerably by field, for many biological disciplines, authors are considered potential reviewers once they have published at least one first-author paper. This means that many later-year graduate students and most postdocs are serving as reviewers. While some journals require reviewers at this career stage to coauthor reviews with a more experienced mentor, many do not. This can sometimes lead to reviews that are overly critical from new reviewers trying to establish their “serious scientist” bona-fides, or reviews that focus more on minutiae than on deeper issues with a manuscript. Even established reviewers could use the occasional reminder that the goal of their review is to help make a paper stronger. Written guidelines and additional training resources from a journal, in addition to cowriting reviews, can help new reviewers give more helpful feedback more quickly. Reviews that are more consistent and more focused on strengthening the science will let authors focus on the most pressing concerns of their manuscripts, speed the review process, and decrease editors’ workloads.

For journals and societies that wish to take a more active role in the training process, I propose the following three broad steps:

First, evaluate your expectations for authors and reviewers. Have editorial teams and any other interested parties examine and articulate the journal’s standards. All journals have already determined many of the standards they value. Look for the gaps. Is there anything that could help make submissions more consistent, like requiring specific questions that need to be answered in a cover letter? Consider writing up expectations for the author regarding the timeline of revision. On average, how long from submission to editorial decision? How many reviewers look at most manuscripts? How many rounds of revision do most manuscripts go through? Showing authors some of the difficulties on the editorial side could go a long way toward engendering patience and buy-in. Does the editor routinely have to email 12 people to get 1 reviewer? Let authors know! They might accept more reviews in the future or make more reviewer suggestions.

Second, document your expectations. Look over your current author guidelines and add any of the new expectations you have developed. Revise your guidelines for clarity, signposting, and ease of navigation. Can someone unfamiliar with the journal find information quickly? Are important topics in bold or in bullet point format instead of embedded in paragraph-form prose? Are reviewer guidelines published on the website and are they as easy to navigate as the author guidelines?

Lastly, disseminate your expectations. Make sure your announcement of guideline changes has pride of place in the next email or newsletter. Add a link to author and reviewer guidelines to every correspondence with authors

and reviewers. A sample library of manuscripts and reviews from the journal would go a long way toward helping new reviewers gauge appropriate depth and tone. For journals affiliated with societies, workshops offered at a society’s annual meeting would allow graduate students and postdocs to learn submission and review procedures first-hand, and help them be more invested in their societies and associated journals. Consider advertising these workshops on relevant social media and listservs; this could help increase name-recognition among upcoming professionals in your field.

Before I became a scientist, I was a high school teacher. In that role, I saw just how critical it was to set up one’s expectations beforehand and to develop lesson plans based on those expectations. To help journals and societies think about their standards and documentation, I pose the following twenty questions to start the conversation:

Determine your expectations for authors and reviewers

1. Does your journal have a preferred cover letter format and clear expectations on what it should contain?
2. Does your journal have a preferred review format?
3. Does your journal have specific requirements or preferences for what reviewers consider?
4. Does your journal specifically advise reviewers on purpose, audience, and tone?
5. How transparent is the peer-review process; for example, do you allow/encourage reviewers to sign their reviews and/or peer review reports posted with accepted articles?
6. Is there an option for referring manuscripts to a secondary journal along with peer reviews (including identifying information)?
7. Does your journal have a preferred response letter format when submitting revisions?
8. Does your journal require authors to respond to all reviewer comments?
9. Does your journal have a rebuttal/appeal policy?

Document your expectations

10. Are the author guidelines written in plain language and in a logical order?
11. Are they signposted with typography or color, or better yet, clickable?
12. Are common and easily understood terms used to make the document more searchable?
13. Are reviewer expectations available in written format on the journal website?

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14. Are expectations for cost sharing (page charges, open access charges) stated in the author guidelines?
15. Are interpretations of review decisions included in plain language? What is meant by "reject," "encourage resubmission," and so on?
16. Are metrics such as average time from submission to publication, acceptance rate, reviewer acceptance rate, and impact factor available on the journal website?

Disseminate your expectations

17. Are sample manuscripts with reviews and response letters available on the website?
18. Does your society host a workshop on journal policies and author and reviewer best practices at your society meeting?
19. Do you highlight changes to author and reviewer guidelines in monthly newsletters and via social media?
20. Do you include links to reviewer guidelines in reviewer requests and author guidelines in author correspondence?

In proposing an increased role for societies and journals in the training of new authors, I do not seek to devalue the

role of mentorship. The importance of good mentorship in guiding new authors through peer review and publication cannot be overstated. Advisors have a more complete and nuanced understanding of their trainee's needs, and as such, will always have an essential role to play. Rather, societies and journals can supplement the training of new authors and reviewers. These organizations are also especially well-suited to refreshing the skills of established researchers. While journals can support training and refreshing skills through development, documentation, and dissemination of a wide range of standards, each society and journal must decide what approach works best for them, and how subtly or radically they wish to get involved in training. For journals that wish to take a more active role in training authors and reviewers, there will be nontrivial commitment on the front end. Time, energy, and resources will need to be invested in reviewing and updating guidelines, redesigning websites, and building and administering training workshops. Those efforts will pay dividends in improved author and reviewer experiences, faster turnaround times, and most importantly, improved peer review and better science.

ScienceWriters2020: Highlights for Editors Too

Christina B Sumners, Ava English, September V Martin, Chi-Hsuan Sung, Jennifer Reiley, Melissa Espinoza, and Barbara Gastel

As professional societies continued holding gatherings electronically because of the coronavirus pandemic, October 2020 brought an abundance of online offerings for science editors and others working in the communication of science. There were the Council of Science Editors Fall Virtual Symposium and the American Medical Writers Association 2020 Medical Writing and Communication Conference. And also, there was ScienceWriters2020.

Held jointly by the National Association of Science Writers (NASW) and the Council for the Advancement of Science Writing (CASW), the annual ScienceWriters meeting includes workshops on the communication of science and briefings on current scientific research. The current report presents highlights of several ScienceWriters2020 science communication workshops, with emphasis on content that may especially interest science editors and those in related realms.

How Does Your Institution #scicomm?

By Christina B Sumners

The impetus for this session was a survey Kelly Tyrrell and Sara Zaske, two NASW members, sent journalists and institutional science writers. One major issue they explored was the relative effectiveness of a centralized versus decentralized approach to science communication: in other words, whether each unit in an organization had a communications person or all communications were run top-down from one office. They found that either structure can work and there is little relationship to the institution's effectiveness at sharing science stories with reporters. However, about 40% of science writers working at institutions said their organization can do better at sharing information with the public and news media.

Sciencewriters at 3 universities shared how their institutions' communications function. Each emphasized communicating between units, regardless of structure, and noted pros and cons of centralized and decentralized approaches.

CHRISTINA B SUMNERS, AVA ENGLISH, SEPTEMBER V. MARTIN, CHI-HSUAN SUNG, JENNIFER REILEY, and MELISSA ESPINOZA are graduate students, and BARBARA GASTEL is a professor, at Texas A&M University.

Michele Berger at the University of Pennsylvania said their system is decentralized, with a communications person at each school within the university.

Andy Fell at the University of California, Davis explained they used a more centralized system, although individual colleges have communicators focusing on specific audiences such as alumni, donors, or prospective students, while the central office produces communications for the general public. The 2 groups can reuse content for the different audiences.

Reba Hernandez at the University of Florida Engineering School of Sustainable Infrastructure & Environment said she has found it important to communicate what is occurring in her unit to the university's central communications office. Doing so helps share resources and avoid duplication of efforts.

The Art of the Interview: Getting Sources to Bring Stories to Life

By Ava English

This session, which focused largely on overcoming challenges in journalistic interviewing, started with a video of the moderator, Christie Wilcox, interviewing the panelists: Sarah McQuate, a public information officer at the University of Washington; Adriana Gallardo, a reporter at ProPublica; and Stephanie Lee, a reporter at BuzzFeed News.

McQuate said that although her role differs from that of a journalist, each writer has the same goal: to connect with the researchers and communicate engaging stories. McQuate's work includes educating researchers on what to expect when working with journalists.

Gallardo writes mainly long-form investigative pieces; she covers sensitive topics, including maternal mortality and sexual assault. Sometimes she must therefore adjust her interview style. For example, for an article about maternal mortality among African Americans, Gallardo sat in on conversations between mothers and daughters instead of conducting interviews herself.

Gallardo recommended having a designated space for sensitive interviews, avoiding over-apologizing if an interviewee shares difficult information, and, to protect one's own mental health, not scheduling too many difficult interviews consecutively.

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Lee also has experience with challenging interviews, such as those with people accused of sexual misconduct. She emphasized “doing your homework” beforehand. She also suggested offering to talk to people on background or off the record in the early stages of research.

Wilcox asked each panelist how COVID-19 had influenced her reporting. Lee said she missed in-person interviews. McQuate agreed, saying it is easier to catch animated moments in person. Gallardo said her biggest current challenge is collaborating on projects virtually.

The session concluded with a question-and-answer segment.

Telling Stories That Include Indigenous Perspectives

By September V Martin

Panelists at this session discussed various aspects of including Indigenous perspectives in science writing. These aspects included building relationships, respecting boundaries, avoiding problematic language, navigating differences in world view, and recognizing how science can marginalize Indigenous ways of knowing.

Dina Gilio-Whitaker, lecturer in Indian studies at California State University San Marcos, addressed “decolonizing science.” Her points included the following: U.S. history was shaped by settler colonialism, a process of invasion and violence toward Indigenous people. Science also has evolved in this context and has been used as a tool against Indigenous people throughout its history. Science is considered superior to other ways of knowing, thus marginalizing Indigenous knowledge. This concept of science should be dismantled.

Lenzy Krehbiel-Burton, freelance journalist and vice president of the Native American Journalists Association, explained that it takes time and patience to build relationships with Indigenous communities. She emphasized listening and showing up regularly, not just when something is needed. She also highlighted that stories from members of the community are a good source of information. Jodi Rave Spotted Bear, executive director of the Indigenous Media Freedom Alliance, added that getting to know the community and letting elders and cultural leaders share and speak on their own terms are important.

Christine Weeber, an editor at *SAPIENS* magazine, discussed problematic terms, including *artifact*. Using *artifact* to refer to objects from Indigenous societies isolates these items from their true purposes by making them seem historical or obsolete.

The panel also recommended several resources to help journalists understand and represent Indigenous perspectives.

Institutional Storytelling: Navigating the Scientist’s Review

By Chi-Hsuan Sung

When a news release or other institutional writing for the public features a scientist’s work, the scientist normally reviews it for accuracy before posting or publication. Sometimes, however, difficulties arise, for example when a scientist wants to convert lay language to jargon. Speakers at this session shared advice for obtaining suitable review.

Ann Brody Guy, a freelancer whose clients include the University of California, Berkeley, emphasized managing scientists’ expectations, for instance by supplying an introductory message. When inappropriate changes are requested, she sometimes invokes the need to follow best practices for writing and publishing or says, “Let me talk it over with my editor.”

Lisa Chiu, of BrainFacts.org and the Society for Neuroscience, described competing interests of journalists and scientists and characterized her team as being in the middle. She recommended sending copy as PDFs, so as not to invite editing. She also said to remind scientists of the audience and goals.

Ken Kostel, of the Woods Hole Oceanographic Institution, emphasized cultivating good relationships with scientists. Because he works in a small town, he often sees scientists from his institution at the store or elsewhere. He said this day-to-day interaction helps build rapport. “Collaborate with them,” Kostel said. He and others also recommended finding teachable moments.

Ariel Bleicher, of *UCSF Magazine*, provided additional tips. These included writing comments on copy to indicate which items to focus on in reviewing, providing explanations, and offering compromises.

Breakout sessions followed. A desk manual providing points from the presentations and breakout sessions has been prepared.

Taking Care of Yourself: Mental Health and Science Journalism

By Jennifer Reiley

This session addressed educating science journalists on the importance of self-care, especially during the COVID-19 pandemic. “Whether you work in journalism or communications, the work that we do is really stressful,” said moderator Erin Ross. “It’s high-paced, and dealing with that and struggling with that is absolutely legitimate.”

The panelists gave tips on integrating self-care practices into the workday. Ideas included taking half-hour walks, scheduling

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time to meditate, and taking breaks on days off and between tasks. "Activities that provide support, that strengthen you, that help with relaxation, that give you a challenge different than work, that recharge you, or that change how you think about work are the kinds of things that are really good," said Elana Newman, a clinical psychologist and research director at the DART Center on Journalism and Trauma.

Luisa Ortiz Pérez, executive director and founder of Vita Activa, a peer support network, said COVID-19 has introduced problems such as Zoom fatigue. But she said practicing self-care tactics can help mitigate them.

April Reese, freelance science and environment journalist, acknowledged that approaching an editor about issues is intimidating but pointed out that editors also struggle.

Joanne Griffith, managing editor of NPR's California newsroom collaboration, said she now includes mental health check-ins with her staff. "There is a duty of care and responsibility that we have to our audience," Griffith said, "but we are not going to be any use to our audience if we're not taking care of our staff."

Making Connections: SEO and Writing for K-12 Audiences

By Melissa Espinoza

Easily accessible high-quality educational writing about science, technology, engineering, and mathematics (STEM) can spark curiosity and attract students to STEM careers. This session addressed producing such writing for audiences at the kindergarten-through-12th-grade (K-12) level.

Readability is key for educational writing. Accordingly, speakers Emily Rhode and Jocelyn Solis-Moreira, of Science

Connected, noted the following: Science communicators should write for the appropriate age group and, in the United States, address the Next Generation Science Standards for each topic. The writing should be relevant and recent. It should help kids connect to the topic and motivate them to keep learning. Funny headlines, pop culture references, metaphors, and imagery can enliven content. Also helpful are asking questions kids might ask, challenging beliefs and norms, telling stories, and invoking the senses. Writers can use free websites to score readability based on average lengths of words, sentences, and paragraphs.

Once readable and relatable STEM content is created, writers can use search engine optimization (SEO) to increase the visibility and accessibility of their work. Kate Stone, founder and CEO of Science Connected, explained that, like a filing system, SEO helps search engine algorithms label and sort content, helping educators find what they need. She recommended the following: Have a good, descriptive title with keywords (especially nouns, verbs, and adjectives) near the beginning. Include keywords in captions, alt text, meta-descriptions, and subheadings, and use them 5 or 6 times in the body. However, avoid overusing keywords, as doing so can cause content to be flagged as spam or click bait.

Video recordings of most ScienceWriters2020 sessions are available online. Registrants for the conference can access them until April 23, 2021. In addition, others can purchase access to the set of videos; information in this regard appears at <https://sciencewriters.regfox.com/sciencewriters2020-video-access>.

Workflow and Team Optimization for Editorial Services Within the United States Pharmacopeia

Ashley Nusraty, Kaitlyn Watkins, and Kelly Fleshman

Abstract

The Editorial Services Team at the United States Pharmacopeia (USP) supports the mission of USP by partnering with in-house scientific liaisons (SLs) to publish the highest quality documentary standards. We provide developmental reviews, copyediting and proofreading, quality checks, print and online production reviews, and quality and workload tracking for the general chapters, monographs, and reagents that comprise USP publications. Editorial Services management conducted a longitudinal study with the hypothesis that if substantive editorial reviews are performed earlier in the process, this would result in higher quality, less workload variability, and a reduction of deferrals and errata. This study evaluated the optimization of the team along a task-based staffing model, replacing the previous publication-based model, and identified methods to continuously improve author support. A series of qualitative surveys were conducted to aggregate staff skills and engagement with specific segments of the editorial process. We reviewed the results, then piloted and implemented several new processes. In addition, we removed duplicate steps in the workflow and created more focused workflow stages, such as developmental review and quality control. The results of this study are impactful for both internal and external stakeholders. The workflow is more streamlined and accurate, with more robust, specific work instructions and checklists to ensure that we consistently publish high quality content. This new workflow strengthens ties with authors by providing more support during early monograph development and streamlines file handoff. It also allows for more focused scientific peer review, removing the correction of minor grammatical errors and structural questions from the reviewer's responsibilities.

ASHLEY NUSRATY is Senior Manager, Editorial Services, KAITLYN WATKINS is Manager, Editorial Department, and KELLY FLESHMAN is Manager, Editorial Quality Control, at United States Pharmacopeia.

Introduction

Our team edits and reviews content that publishes in the *USP-NF*, *Pharmacopeial Forum* (PF); *Food Chemical Codex* (FCC), *Dietary Supplements Compendium* (DSC); as well as monthly Accelerated Revisions and Errata; and several other publications for USP. This content primarily consists of documentary standards, which contain the necessary tests, procedures, acceptance criteria, and other requirements necessary for developing the drug and for storing it. The documentary standards help to assess the quality, strength, identity, and purity of chemical medicines, biologics, excipients, food chemicals and ingredients, dietary supplements, and other items. Our content is unique compared with other scientific publications, because many of USP's published standards are enforceable by federal law under the Federal Food, Drug and Cosmetic Act of 1938.

In order to effectively manage the increasing workload of submissions by the authors in our Science Division, we had to think of new and inventive ways to improve the way we work. We conducted significant background research, piloted several new processes over a 2.5-year period, and ultimately implemented a new team structure, improved editorial workflow stages, and a better mechanism for measuring quality and the ultimate impact of our publications. Our previous editorial workflow and team structure was based on processing our 2 largest publications, PF and USP-NF. Editorial staff worked primarily on their assigned publication with little overlap in resources, and the workflow had redundancies and inaccurate task identifiers.

Methods

Background Research

Staff surveys. In December 2018, scientific editors were asked to complete a survey and rate the various tasks performed in their roles. This information helped guide editorial leadership in their decisions about how to structure the Editorial Services Team to better align staff expertise and skills with job function.

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Task-based staffing model. In February 2019, the Editorial Services Team met to discuss the survey results and align on a proposed “future state” for the team structure. Team leads and managers led the discussion and outlined a detailed staffing model to be implemented. This staffing model was piloted over several months and eventually implemented at the beginning of fiscal year 2020.

Publishing industry best practices. We researched publishing industry best practices and discovered that earlier editorial participation has a positive impact on the overall quality of a publication. This approach was later supported by the recommendations of KWF Consulting, who independently evaluated the USP publication workflow.¹ We modeled our task definitions on standard workflows for scientific and technical publications that we felt met the requirements of USP’s specific needs.^{2–4}

Pilot Implementation

The original pilot began in July 2017 when the Editorial Services Team conducted “functional reviews” of new and revised general chapters proposed for *PF*. This effort was instituted to improve the quality of content prior to submission, reducing rework performed by both the production and editorial teams. Starting in July 2018, this review expanded to a selection of complex monographs and was renamed “pre-submission review.” Scientific editors were asked to track turnaround time factors such as meetings, rounds of queries, and time spent incorporating changes.

After continued research into publishing industry best practices, incorporating feedback from stakeholders, and lessons learned from turnaround tracking, we officially kicked off the “developmental review” pilot in January 2019. This new pilot was shared with Science Division stakeholders and leadership to ensure the smooth transition of work from each department. We provided in-depth training and coaching to our authors (SLs) to ensure they understood the benefits of this new workflow step. Editorial staff were cross-trained, beginning in March 2019, and the pilot was conducted over a 10-month period.

We hypothesized that this new step would satisfy the need for more editorial oversight early in the documentary standards development process and would optimize the team along a task-based staffing model.

Transparency and Process Updates

To support the implementation of our new process and teams, and to provide greater transparency during proposal hand off, it was necessary to clarify the tasks and steps being performed. In addition to implementing a developmental review, we removed duplicate steps in the workflow and added and/or renamed the current workflow stages as follows:

- Editorial Staging (new)
- Dev Review (formerly 1st Read, available at 4 pre-submission steps)
- Copyedit (formerly 2nd read)
- Proofread (formerly Editorial Review)
- QC (added to more stages of the workflows)

We created a QC team responsible for upholding the quality of all content by conducting critical QC reviews on all products to ensure that publication content is consistent and accurate.

Results

Editorial Turnaround

A major goal of this study was to improve workflow efficiency without compromising publication quality (see Discussion for more). Therefore, while each task was more clearly defined and redundancies removed, each workflow still required a minimum level of review and QC to ensure adherence to quality standards and SOPs. These steps include Submission Review, Dev Review, Copyedit, and QC for most file types. From this controlled state, we analyzed the variables of team structure (by task) and number of days to complete each task before and after the workflow transition.

In the previous publication-centered structure, the average turnaround time from “Submission Review” to “SL Review” was approximately 28 days. Since transitioning to task-based teams and modifying the editorial workflow to allow for Dev Review before submission to the publications department, this timeframe has decreased to approximately 18 days.

Figure 1 shows the turnaround time improvement for the QC step. In the previous workflow, scientific editors were performing all editorial tasks, with assignments centered on specific products. Because of this, *PF* QCs took nearly 3 days to be completed. The redistribution of tasks to the newly created Editorial Development and Quality Control teams allows work to move seamlessly through the editorial process and has improved turnaround times for *PF* by 1 day.

SL Galley Review

Under the previous workflow, which required all editorial reviews to take place after submission to the publications

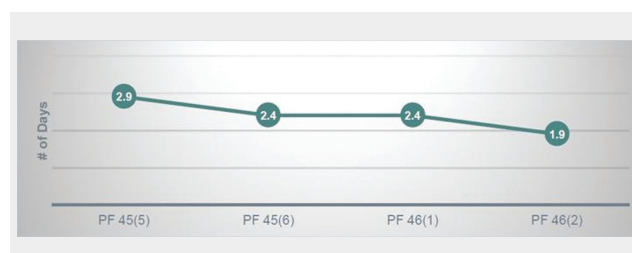


Figure 1. Editorial QC turnaround times.

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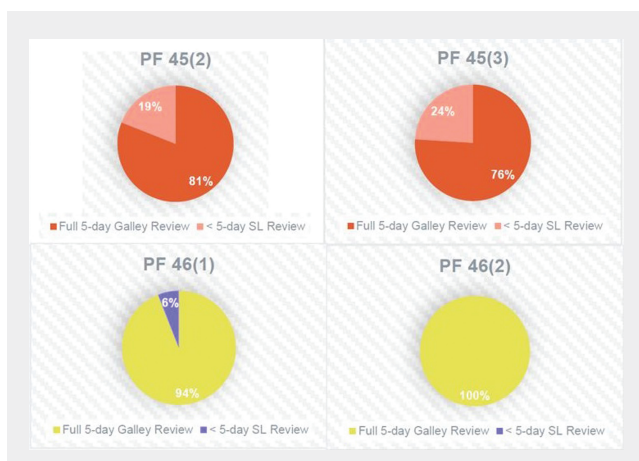


Figure 2. *Pharmacopeial Forum* (PF) galleys receiving 5-day scientific liaison (SL) review.

department, a segment of the galleys for each issue of *PF* were at risk of receiving less than a 5-day review from SLs at the end of the process. This was a result of variable submission numbers. In the new workflow, substantive work can be completed before submission, which greatly improves the speed at which galleys are delivered for final review. Figure 2 shows 2 issues of *PF* under the former workflow (orange), and 2 issues under the new workflow (yellow).

Employee Satisfaction

Throughout the restructuring process, editorial leadership ensured that individual contributors were included in the decision-making process. We conducted initial surveys to collect information about how to improve editorial processes. After transitioning to the new task-based team structure, we conducted a survey to assess the level of satisfaction of scientific editors in their new roles. The scientific editors rated their level of satisfaction at a 4.4 (5 = very satisfied).

Discussion

Analysis of Editorial Process

After aggregating staff skills, we dissected specific segments of the editorial process to determine areas for efficiency and improvement. We analyzed publication quality, workload, and turnaround times, and discovered significant workload variability across volumes of *PF*. This workload variability significantly impacts quality due to resource constraints during peak periods. Based on staff feedback and observed trends, we determined that reducing task variability could improve efficiency and staff satisfaction.

Specialized, high-impact tasks like Dev Review and QC became the cornerstones for each team, with lower-impact tasks like Copyedit and SL Corrections available for either

team depending on workload. The distribution of high-impact tasks ensures that staff maintain an equitable and tailored portfolio of work while meeting overlapping production deadlines.

Quality

A key control factor during these experiments was editorial quality, which has been internally measured against a documented set of standards for several years. Since implementing the new workflow, editorial quality for *PF* is starting to show a decreasing trend in the number of critical and major errors corrected at QC, along with a reduction in the number of files that require QC corrections.

The task-based workflow now allows us to measure impact on quality at each stage in the editorial workflow, due to task-specific checklists and clear lanes of responsibility. By categorizing and aggregating the number of corrections made to *PF* submissions during the Dev Review, we hope to provide feedback and insights to our Science Division colleagues, with the goal of further aligning expectations and refining hand-off processes. The measurement model is adapted from similar studies in the literature.²

Figure 3 shows a preliminary heat map of developmental edits made for *PF* volume 45, issue 5, categorized by type of catch and classified according to historical editorial quality standards. For example, most “critical” edits were made during the “Verification” portion of the review, and the highest frequency corrections were “Revision Tagging,” “Content-Missing,” and “Content-Wrong.”

Conclusions

Support for Science

This new workflow strengthens ties with our Science Division counterparts by providing more support during early standards development, and streamlines the hand off of work. Improved turnaround times and close collaboration with Science stakeholders lead to the implementation of several options for earlier editorial support. Additionally, the development of new quality feedback mechanisms may become beneficial for optimizing technical reviews of *PF* proposals, allowing scientists to focus on science.

Workload Balance

These data-driven optimizations allow the Editorial Services Team to effectively balance the increasing workload of content submitted to the publications department, while also giving the SLs sufficient editorial support throughout the standards development process. We completed editorial reviews for several publications ahead of schedule, at higher quality, and turnaround times for QC have improved. These improvements can be attributed to

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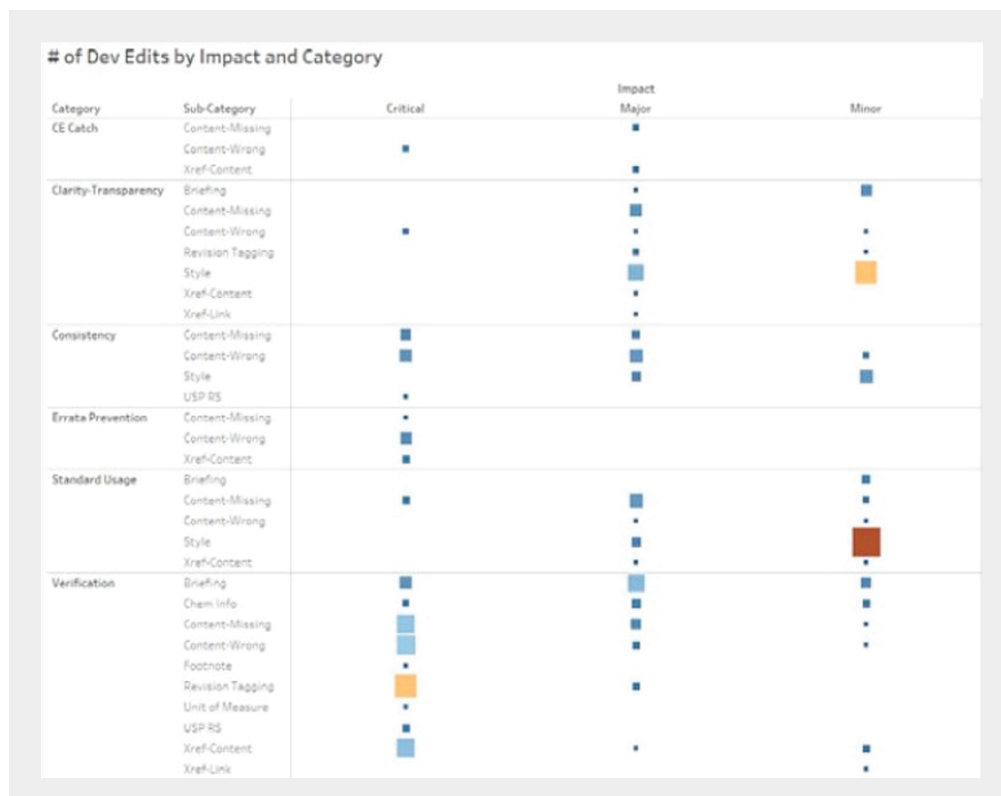


Figure 3. Developmental edits made in *Pharmacopeial Forum* 45(5).

several factors: 1) Staff skills and strengths are now aligned with specific tasks in the editorial process. 2) The previously existing workflow was made more efficient by removing duplicate steps and bolstering established checks at points in the process. 3) The more balanced workload allows each editor to focus on their specific task and enhance their editorial expertise.

Future Planning

In the coming fiscal years, we plan to collaborate with lab scientists and other staff to assess how these workflow improvements have impacted testing, material waste, prioritization, etc. Initial interviews around these topics indicate that the early correction of editorial errors could provide an estimated 10%–15% turnaround improvement for early procedure evaluation lab projects.

We are also working with the authors and our Portfolio Management Team to analyze the publication pipelines to more accurately predict anticipated workloads. This collaboration is essential to ensuring that adequate resources in the publications department are in place to help meet the necessary publication targets.

As we continue functioning in this new workflow we will assess and report further quality findings.

Recommendations

For other organizations anticipating altering their existing publication workflow, we recommend the following based on our experience optimizing the workflow within Editorial Services.

1. Identify any existing bottlenecks in the workflow.
2. Remove or simplify redundant steps based on quantifiable data.
3. Include staff in conversations to gain their input and align their expertise with specific tasks.
4. Pilot and implement on a smaller scale first to ensure any modifications are feasible and efficient.
5. After full implementation, continually monitor the workflow to confirm the new process is working as it should and make necessary adjustments.

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Karen Stanwood: Staying Curious and Taking Chances

Jonathan Schultz

Karen Stanwood understands the value of mentorship and professional development. Whether it's navigating the twisty world of scientific publishing or lying on a bed of nails (keep reading), being curious and taking risks is much easier when you have a steady, experienced hand to guide you. As Director of Electronic Publishing and Production at SLACK Incorporated, a publisher of health care books and journals in the Wyanoke Group along with Healio and Vindico Medical Education, Karen has weathered many industry changes. In this interview, we discuss those changes, the value of professional development, and the importance of organizations like CSE.

Science Editor: How did you get started with scientific editing and publishing?

Karen Stanwood: Like a lot of people, I kind of stumbled into it. When I first went to college, I thought I wanted to be a psychologist. I liked talking to people and helping them. My first course, though, was a research course and I was like, "No, thank you." That wasn't what I wanted to do. I wanted to talk to people and help them with their problems. I transferred to what was then Glassboro State College, which then became Rowan University of New Jersey (the Rowan gift came while I was there). My father had been a teacher, so I was looking to go into teaching. I graduated with a dual major in elementary education and English, and I tried for a little while to get a teaching job.

Not that I didn't like it, but it was very difficult to find a job. I did some substitute teaching and worked in a daycare center, which made me question if I ever wanted to have children. I was very focused on getting a job that would lead to a career, and it was suggested I look into an editorial position. I did that, and as soon as I started, I realized this is where I'm meant to be. I love to sweat the small stuff. I love that attention to detail, that finished product of having a journal in your hand, having your name on the masthead. It was the perfect fit. Thank you to my first manager for taking a chance on me.

JONATHAN SCHULTZ is Editor-in-Chief, *Science Editor*, and Director, Journal Operations, American Heart Association.



I started as an assistant editor and moved up the ladder in journals at SLACK. Over time, my purview has expanded so I currently focus more on the systems that support our journals, whether that's our production system, content management system, or peer review system.

Science Editor: Do you find that the initial desire to help and talk to people that led you to psychology originally is being met by your job?

Karen Stanwood: It really is. I've always been attracted to jobs that I think will make things better, such as psychology, teaching, or scientific publishing. Being a manager falls into that category, too. Supporting my staff with sensitive issues, especially in this pandemic situation, and making sure that people within our department feel like they're part of a group, fulfilled in their job, and meeting their own personal goals hits on many of the same elements as the other careers I've been attracted to.

Science Editor: What would you say you enjoy most about this career?

Karen Stanwood: I'd have to say the variety. The way that it has always functioned at SLACK is that our editorial staff do both editorial and production work. They're doing both copy editing and proofing, sending to the printer, doing layout, and working in our content management system to

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get the issues online. So you're learning a wide variety of tasks. As I moved up, I learned more about management, bigger initiatives, strategy, budgeting, and all those higher level things within the organization. I'm the type of person who always want to learn more; I always want to do more. All these different, random tasks over the years just taught me so much more about the industry or about things that I didn't know, and that put me in a good position. The rest was serendipitous: The trajectory of my career and the trajectory of publishing are kind of following the same path. When I started, we didn't have email on our computers. For our meeting program, we worked on giant pages with the abstracts, cutting and pasting them so pictures could be taken and shrunk down. For peer review, I remember stacks and stacks of folders and papers with decision letters that needed to be typed out onto letterhead to be mailed to authors. But then we got layout software followed by electronic peer review systems and content management systems. I've had to learn, and train others on, XML and HTML and other pieces of technology that have become more prevalent. The technological advances have been the biggest change during my career, and provided me with new things to learn and ways to advance in my career.

Science Editor: That's a good segue to mention that you are the co-chair for CSE's Professional Development Committee. What is your approach to professional development? When someone is coming into your organization now, starting from a place you were years ago, how do you think about training them or bringing them up?

Karen Stanwood: I would say that mentorship is a passion of mine. I feel really strongly about leading by example and having professional goals that are not necessarily related to your direct job. For example, for me, it was learning more about XML and our content management system. It's important to have a network for career development, throughout your career, as I always think that there's something to learn and someone to learn from.

That's why I'm drawn to the professional development community—to have a place to network with like-minded people and develop programs that are helpful for others; for example, within CSE, helping members find someone who they connect with, to hear about opportunities, or to learn skills they may not have learned in their workplace. I think the Professional Development Committee already has a strong foundation of great programs, and to be able to contribute to that is really exciting. I'm succeeding Jasmine Wallace, who has done an amazing job. I'm so excited to be moving into that position and working with Carolyn DeCourt. It's an exciting time for opportunities that are not necessarily linked to an annual meeting or a regional event—to not have those geographical barriers and the financial costs for travel.

I think there's an opportunity to reach a lot more people who maybe were not able to participate in some of the activities prior to our current pandemic situation.

Science Editor: That is a side benefit in a way as there are people who wouldn't normally be able to come to the annual meeting who are now able to be more involved. That brings us to our current socially distanced reality: How are you staying connected with both your coworkers and others during this time?

Karen Stanwood: So, Zoom is the main platform, lately, in terms of my workplace. We have some standing staff meetings, for example, with our journal managers, and I have one with my supervisors once a week just to spend a little bit of time on personal things and see how everyone's doing or if anyone needs anything. It's a very stressful and difficult time as well. It's not your typical work-from-home situation, so I think it's important to make sure that everyone feels supported besides just getting their work done. We also do some fun things: Once a month, we have a birthday party Zoom to celebrate the birthdays that month. It's not mandatory, but it's a nice opportunity to see people in other parts of the department, people you would typically have seen in the hallway.

I am also involved in a number of organizations, CSE being one of those. We have monthly meetings with the Professional Development Committee where we discuss the initiatives, but also just network and form connections with people outside of our immediate workplace. I'm also involved in SSP as deputy co-chair of the career development committee, working primarily on the mentorship program and on a virtual networking pilot. It's good to get to know people outside of your workplace and be able to talk about confidential things, as well as big industry initiatives and how different people handle certain situations. I am also the chair of the membership and marketing committee of the Board of Editors in the Life Sciences. I have a lot of activities that I'm working on with different groups that I feel keeps me well-rounded and knowledgeable about different issues while connecting me to amazing groups of people.

Science Editor: With all that, do you have any time management tips?

Karen Stanwood: Probably not very good ones. Because my daughter is 18, I do have the luxury of not having to cook for her, and she is pretty self-sufficient. I know that not everyone has that level of free time. I am also a hardcore list-maker. I try to carve out time for specific activities; I can't say I'm perfect at not multitasking, but I do try to make time where I specifically dedicate time for one task. For example, for meetings, I set aside time beforehand to make notes and time afterward for follow-up emails.

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Science Editor: Are you a paper and pen list-maker?

Karen Stanwood: I am a *pencil* and paper list-maker, generally because it does change a lot. This is funny because I read a book recently called *Between You and Me* by Mary Norris, who was a long-time copyeditor at *The New Yorker*. It's a fabulous book, only 200 pages—super great read. Mary is very funny, and she liked my tweet about her book (my 2 seconds of fame). She has a chapter about pencils, covering her favorite pencils and how pencils are made. My inner nerd was just in heaven. She mentioned a brand of pencils, which I ordered and I'm loving. So yeah, I am definitely a pencil and paper list-maker.

Science Editor: You've talked a couple of times about the importance of mentorship. Was there somebody that was mentoring you at the beginning?

Karen Stanwood: That was my first manager who hired me, Kaye Coraluzzo. Unfortunately, she passed away not too long ago. At the beginning, she was very kind to me and very, very knowledgeable. She had been at the company for about 20 years when I started; she had a lot of institutional knowledge to pass on to me and was not shy about doing so. She knew a lot of people both inside and outside of our department within the company. She showed me that was important: that you don't just need to know the people who work directly with you. You need to know all of the other departments because you need to know what they do and who to ask when you need help. She was just a very nurturing person. When I first started, she made me feel supported and helped me feel like I could grow and learn.

As I moved up in the company, the person I would probably cite next is my current supervisor, Jennifer Kilpatrick. She has always been supportive of me wanting to do more, and learn more, and ask questions. She's never not given me an answer to a question that I've asked. She has been both directly supportive and has also given me the space to do the things that I asked to do or became interested in.

Science Editor: I guess the proof is that you've been there for a long time and seem to be enjoying it. It's a tricky balance as you say, between being supportive and also allowing people to grow on their own.

Karen Stanwood: Exactly. It's not a formal mentorship situation, but it's definitely an informal mentorship. Jennifer has taught me things that she knows and also given me space to learn things that maybe she doesn't know about. And then I've come back to her and shared what I know. It's very collegial in that way, and hopefully it's meant that we can both grow and learn more together.

Science Editor: What is something that you think would be surprising to somebody who maybe only knows you professionally through CSE?

Karen Stanwood: Very few people would know this about me, but I once laid on a bed of nails. The story behind it is about 20 years ago my husband worked at the College of Physicians of Philadelphia and housed within that building is the Mütter Museum. He was very good friends with the then director of the museum, Gretchen Worden, who sadly is also deceased, but she was a fabulous woman. The Mütter Museum, for lack of a better description, is a museum of medical oddities. It's truly fascinating. One of the perks of my husband and Gretchen being good friends was that I got to see what's not in the museum, the things behind closed doors. Everything from things people have swallowed to skeletons with different medical conditions. It's an incredibly cool place.

I'm not sure if they still do it, but every year they would do a calendar with professional photographs of all the fabulous displays. One year for the calendar launch promotional event, Gretchen's idea was to have some folks come in who had some unusual talents. We got to witness these performers and afterwards we got to interact with them. There was a sword swallower, and of course, someone with a bed of nails. At the end of their presentation, they asked if anyone wanted to lay on it. They told us the trick is you have to be lowered straight horizontally onto it. Obviously, that takes a lot of skill to do by yourself, but if someone's helping you, holding your hands and steadying you, it's fairly safe. It was definitely not comfortable, and I didn't last very long, but it wasn't painful or anything like that. When you're in a room and someone offers to let you lay on the bed of nails, what went through my brain was: I feel like I kind of have to do that. When am I going to get that chance again? Isn't that a story for your grandkids or *Science Editor*?

Science Editor: I've been to the Mütter Museum a couple of times. I'm jealous that you got behind-the-scenes access.

Karen Stanwood: It's a great place. You know, I've taken my daughter, and they have a beautiful portrait now of Gretchen in the museum to honor her.

Science Editor: Is there anything that we haven't talked about that you wanted to discuss?

Karen Stanwood: I want to share a little bit of advice. Some of this ties into two things that I've already talked about in terms of involving yourself with different organizations: Whether someone is early career, mid-career, anytime in your career, remember to ask questions and be curious about things. I feel like anyone you can talk to, there's something you can learn from them. To a certain extent,

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that's why I've involved myself in the organizations I have. There are just incredible people in all of these publishing and editorial organizations who are very willing to share, who are very open to questions. I've become less shy at asking those questions or going up and introducing myself. I would definitely recommend that if you're interested in someone's career trajectory, or the topic of the talk they just gave, or a tweet of theirs that you saw, don't be afraid to reach out to them. Reach out even if you have imposter syndrome or feel like the person is so many levels above you that you

couldn't possibly bother them with a question. I have never had a situation where I felt like I was bothering someone, and everyone I've met is very passionate about publishing and about sharing that knowledge. CSE a great place to do that. It's a great group of professionals who are always willing to talk about what they do, how they got there, and things they might've done differently. I feel like there is a benefit to just asking those questions, being curious about people, being curious about their careers and what they do, and learning as much as you can.

Publishing Chinese Research: A Look at the Evolving Requirements and Experiences of Editors and Scientists

CSE 2020 Fall Symposium

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The CSE 2020 Annual Meeting session “Publishing Chinese Research: A Look at the Evolving Requirements and Experiences of Editors and Scientists” explained the evolution of the research assessment system in China relative to scientific articles and academic journals, discussed what qualifies an article to be considered “high-quality,” and shared the experiences of medical scientists navigating the research environment in China.

Dr Hua (Selin) He opened the session with a look at the evolving research assessment system in China and the roles that are changing in response to its evolution. The system was presented through 3 eras: the Pre-SCI Era (prior to 1990), the SCI Era (1990–2016), and the SCI Plus Era (2016 to present), with “SCI” referring to “Science Citation Index” (aka, Web of Science) focus. During the Pre-SCI Era, administrative officials made all decisions regarding career advancement. Within the SCI Era—particularly from 1990–2010—a focus on Journal Impact Factors (JIF) created a shift of how and where researchers published as it tied directly to their ability to reach the next step in their career paths. It was determined that a researcher needed to publish in a journal with a JIF greater than 5 to receive a research grant, and a journal with a JIF greater than 10 to receive a promotion prize and title. With more publications in journals with a JIF greater than 10, researchers could reach their ultimate career goal of academician status within the Chinese Academy of Sciences/Engineering.

Though the JIF continues to be a strong motivator, the SCI Plus Era has introduced more assessment indicators that could change research behaviors in China in the future. Some of these changes have already begun to be introduced through scientific research reform proposals released in February 2020 by the Ministry of Science and Technology and the Ministry of Education.^{1,2} These proposals redefined what makes an article “high-quality” by emphasizing publication in Chinese academic journals with international influence, publication in top internationally recognized academic journals, and presentations at top international academic conferences. They also support an action plan for the Excellence of Chinese STM Journals that was launched in 2019. “The Action Plan” consists of a 5-year cycle with over ¥200 million to support Chinese academic journals. There are currently 280 academic journals included in this plan. Though the proposals are still evolving and being interpreted, expected changes include a requirement for more articles in Chinese academic journals (no less than 1/3 of a researcher’s articles), no requirement of publication of scientific articles in such fields as applied research and technology innovation, rapid development of Chinese academic journals selected into the “Action Plan,” and more academic journals sponsored by Chinese institutions (likely in collaboration with international publishers).

Lei Pei and Clark Holdsworth went on to explain the state of scientific research in China. With 20.6% of all science and engineering articles coming from China in 2018, China became the largest producer of such content through their researchers.³ With this, China became the country with the highest citation numbers per author. Spending on scientific research has also increased substantially in China over the past decade, quickly closing in on the lead the United States currently holds.⁴ Though the combination of this large researcher workforce and growing scientific funding support have the potential to lead to greater research influence throughout the globe, there has also been an increase in the numbers of retractions and other misconduct. As of 2018, China grew to rank seventh in the world in number of retractions (5 out of 10,000 articles).⁵ Such concerns for wanting to maintain quality while also supporting China’s

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own publishing system are much of what contributed to the proposals that were released in February 2020.

Pei reported that, through the reform, national science and technology (S&T) funding programs were reorganized into 5 new funding pillars: National Natural Science Fund, Major S&T Projects (Megaprojects), National Key R&D Programs (NKPs), Technology Innovation Guidance Fund, and the Bases and Talents Program. Due to the reformed application process, researchers can be disqualified from research funding opportunities that can potentially lead to difficulty in furthering one's career.

Career paths and employment structures were also part of the SCI Plus Era reform. What was once a 4-rank hierarchy for advancing in an academic post system has since evolved into a 13-rank system. Primary posts of Teaching Assistant, Assistant Professor, Associate Professor, and Professor remain, but there are now 3–4 ranks built into each area, bringing with it greater competition. The 3 main categories of academic posts were identified as research track, teaching track, and research-teaching track (combined).

For young Chinese researchers, academic posts are considered high-stature positions. To obtain them, though, many identify with such challenges as working long hours, balancing work and personal life, securing limited research opportunities, and managing heavy teaching loads. In a 2017 survey of 1,066 young Chinese researchers at universities, 14.63% were considering moving overseas for greater opportunities. Institutions continue to work toward improving working conditions, providing adequate financial support, providing systematic on-the-job training, and fully supporting young academics' research ideas and innovation with the hope of building the next generation of strong research leaders in China.

Advice was provided for young scientists. Though encouraged to follow one's own interests, it was advised also to be open to new ideas and link up with national strategic demands. Young scientists are expected to publish to advance, but they should not lose sight of their own personal development in the process. They should learn to manage time in order to support a balance between work and life responsibilities. Networking, collaborating, and having the right attitude of optimism and resiliency were noted as key ingredients to thriving in the reformed SCI Plus Era as well. Pei summarized the following guidance:

- **Early career researchers:** SCI-indexed journals are still an ideal publishing outlet. JIF is an objective and reliable indicator.
- **Senior and tenured professors:** They strive for the top outlets and international journals published in China. Newly-launched Open Access (OA) journals and academic social media can be used as alternative outlets to widely disseminate works.

- **Scientists in applied research:** They will focus on the actual contribution of their studies in real life, not on the number of papers published by the researcher.

Holdsworth further emphasized the need for journals to focus on clear communication with Chinese authors. The review process can be confusing enough for native English speakers, so focusing on how each step is communicated is especially important when working with English as a second language (ESL) authors. If a rejected paper is "outside of scope," make sure it really is, or provide clear feedback on what specifically did not align with the journal. Editors need to give realistic expectations of whether a paper will be acceptable if revised, as ESL-authors may read such phrases as, "editors find your paper potentially acceptable if you make these changes," as a guarantee of acceptance upon revision. Additionally, ESL-authors often require clarification of reviewer comments from ESL-reviewers, a systemized editorial decision on language issues, and language review by native English-speaking reviewers.

The presenters responded to a few attendee questions at the end that allowed them the opportunity to emphasize that the policy documents were only just released in February 2020, meaning that they are still in an early stage. It is unknown exactly how far these measures will go at this time. In general, though, international journals continue to remain first choice for researchers looking to publish and the JIF is still very important for young researchers.

The policy's stance on article processing charges (APCs) was thought by the presenters to have the greatest influence on journals with low JIFs. Though researchers will more likely try Gold OA journals when they are further in their careers, early career researchers with limited funding will need to prioritize journals with no or very low APCs. Through the funding reforms, it was also noted that there is a blacklist of journals where APCs would not be paid through funding.

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The Expanded Use of DOI and Content Citation Granularity

CSE 2020 Virtual Annual Meeting

MODERATORS:

Nancy R Gough

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SPEAKERS:

Midori Baer

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PLOS
Washington, DC

Stacy Konkiel

Director Research Relations
Almetrics & Dimensions, Digital
Science
Minneapolis, Minnesota

Daniella Lowenberg

Dryad Product Manager & Make
Data Count Lead
California Digital Library
San Francisco, California

REPORTER:

Beverly Lindeen

Senior Managing Editor
Allen Press, Inc.
Lawrence, Kansas

It is pretty well known that DOIs (digital object identifiers) are used for articles that are published in an online format. However, they are also necessary for the various parts of an article, such as preprints, figures, tables, databases, data, methods, etc. Nancy Gough moderated this session looking at how DOIs for these items is used by publishers and indexing services.

In her presentation entitled “Expanded Use of DOIs at PLOS,” Midori Baer, Director Publishing Operations at PLOS, reviewed the ways in which PLOS uses DOIs as part of their larger organizational mission of “empowering researchers to accelerate progress in science and medicine by leading a transformation in research communication.” The continuum of research is important, as is the ability of the authors to tell the stories of their science.

Research needs to be discoverable. Article assets (supplementary information and datasets, tables, figures, peer-review reports, etc.) are assigned DOIs and are registered as component DOIs with Crossref. A link to the DOI appears in both the html and PDF views of all the article assets.

There are currently limitations. On the PLOS website, it would be beneficial to display contextualizing information, article details, and how-to-cite information. On Crossref, there should be information about the assets’ relationship to the parent article, as well as the titles of the assets. And, regarding peer-review reports, it would be best to update the schema so that PLOS can provide more robust metadata.

With preprint servers, the preprint version should be linked to the published article. Likewise, PLOS links to the preprint version of the paper.

Regarding data, PLOS requires authors to make all data available to the public without restriction at the time of publication. They have processes to manage compliance, and require that all data have persistent identifiers (PIDs).

PLOS also uses DOIs to facilitate access to laboratory methodology as part of their partnership with protocols.io. Researchers are encouraged to deposit lab protocols on protocols.io where DOIs are provided for the methods that will be included in the article itself.

To close her presentation, Baer listed some things that PLOS would like to do in the future: 1) Enhance and increase compliance for data and software citations. 2) Update DOI schema for peer-review reports. 3) Add contextualizing metadata to asset landing pages.

The second presentation, “From Idea to Impact: The Next Evolution in Linked Scholarly Information,” was from Stacy Konkiel with Dimensions. She discussed the Dimensions data approach.

Dimensions is a linked research discovery platform. It is an abstracting and indexing-like service with a broader information landscape. Data is pulled from many sources and carefully curated. Articles and all related data, preprints, grants, citations, patents, clinical trials, etc., are presented together. This makes tracing content types easier for the user. The general approach to data in Dimensions is inclusivity: They do not decide what information is relevant; rather, they enable publishers to include what they want with the article publication.

How does this citation granularity affect journal citations? Data shows that, in general, it is not negatively impacting article citations.

The final presentation was from Daniella Lowenberg with California Digital Library. In her presentation, “Make Data Count, Citing Dataset DOIs—A Revolution!” Lowenberg discusses data publishing. First, she indicates that storing data in supporting information files is not data publishing. Data publication consists of a few elements: 1) It must be citable with a PID that comes from the repository where it is stored. 2) There could be FAIR and data-specific metadata associated with the data themselves. 3) Data is much larger in size than articles, and repositories are equipped to handle these large files.

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Lowenberg then went on to talk about Make Data Count. This is an initiative started in 2014 by PLOS, the California Digital Library, and DataONE. It looked at what researchers value about their published data. In 2017, it transitioned to a project funded by the Sloan Foundation between DataCite, California Digital Library, and DataONE. They built the infrastructure for data use and data citation and wrote the COUNTER Code of Practice for Research Data.

Data citation is one of the components of making data count. In a recent blog post by Force11, Rachael Lammey and Helena Cousijn pointed out that “[d]ata citation needs to be a standard component of publication so that links from other research outputs to the data that supports them are comprehensive and helps the transparency and

reproducibility of research.” Examples of data citation are an article that cites a dataset, a dataset is derived from 2 other datasets, and then subsets of a dataset are generated.

There are concerns about making data citation possible. Lowenberg then shared an example of an article where the author cited data as a reference, which then caused the number of citations of that data to be 0 because it was not formatted correctly. Publishers need to play a role in indexing the citations properly. Scholix is a framework that helps with this.

How can publishers support the framework?

- Support FAIR data repositories and data curation
- Implement best practices for data citation indexing
- Educate authors on how to cite data in references

Antiracism Toolkits for Developing Equitable Workplaces

CSE 2020 Fall Symposium

MODERATORS:

Melanie Dolechek

Society for Scholarly Publishing
Mount Laurel, New Jersey

SPEAKERS:

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University of Virginia Press
Charlottesville, Virginia

Randy Townsend

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REPORTER:

Taryn Dollings

American Society of Civil
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Racism and discrimination have been at the forefront of the U.S. national conversation this year, but prominent scholarly publishing professionals have been calling for change in our industry for much longer. This presentation brought together 3 members of the Toolkits for Equity Project to discuss a new resource to address racism, discrimination, and bias in scholarly publishing.

“Antiracism Toolkits for Developing Equitable Workplaces,” moderated by Melanie Dolechek and jointly presented by Randy Townsend and Niccole Coggins, gave an overview of the *Antiracism Toolkit for Allies*.¹ The toolkit is intended to help White scholarly publishing professionals recognize and address internal and external bias against Black, Indigenous, and People of Color (BIPOC), with the goal of becoming better allies to BIPOC and working to create more equitable workplaces.

Melanie Dolechek introduced the presentation by referencing 2 *Scholarly Kitchen* posts detailing personal experiences of people of color in scholarly publishing, as well as a survey on diversity in publishing, published by Lee & Low Books. The blog posts highlighted examples of BIPOC’s experiences of racism in the workplace, and the survey identified, statistically, the homogeneity of publishing professionals, who are mostly White.²⁻⁴ Dolechek emphasized that change in our workplaces is clearly needed, and that equity must be built from top-down, bottom-up, and interpersonally in order to create change.

To that end, Randy Townsend introduced the *Antiracism Toolkit for Allies*, pointing out that since White workers are the majority, their participation in building equity is

critical for meaningful change. The toolkit was inspired by the work of the American Alliance of Museums’ LGBTQ+ Alliance and their guides for transgender inclusion as well as the Racial Equity Institute, and attempts to create a common framework, language, and best practices for allies’ involvement in antiracist work. One critical aspect of this is the toolkit’s appendix outlining the history of white supremacy in the United States, which connects that history to U.S. economic history, and gives allies a common starting point for discussing racism, past and present.

Niccole Coggins gave an overview of the 5 steps to becoming a better ally, which are outlined in detail in the toolkit:

- **Step 1.** Become conscious of White advantage. Focus on the advantage that dominant groups hold rather than the disadvantage that marginalized groups hold. Coggins encouraged attendees to use Peggy McIntosh’s “White Privilege: Unpacking the Invisible Knapsack” as a resource.
- **Step 2.** Listen to Black, Indigenous, and People of Color without judgment or defensiveness. Use the L.A.R.A. approach to **L**isten with empathy, **A**ffirm to build connection, **R**eplay to address the speaker’s concerns, and **A**sk questions or add information to further affirm. Coggins encouraged attendees to follow the advice of Franchesca Ramsey: Acknowledge your mistake, thank the person, don’t just apologize—change your behavior, and mitigate the impact of your action.
- **Step 3.** Move out of social segregation and develop truth-telling relationships of accountability with diverse groups of people. Take steps to reach out to a wider range of vendors and potential hires. Check in with your coworkers if you see or commit a microaggression; listen to and amplify BIPOC concerns in the workplace.

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- **Step 4.** Take action to interrupt racism and White advantage at all levels. You can disrupt racism by giving the affected individual a chance to respond, addressing the offender, and checking in with the individual afterward to ask what you can do to help. Coggins encouraged attendees to visit <https://www.ihollaback.org/> for more bystander intervention tactics.
- **Step 5.** Create work communities where everyone thrives. Replace cultures of perfectionism with cultures of appreciation and growth. Perfectionism is a characteristic of White supremacy culture; for more on this topic, Coggins encouraged attendees to look up Tema Okun's writing on White supremacy culture. Develop a learning organization where mistakes are opportunities to learn.

The *Antiracism Toolkit for Allies* is the first in a series of toolkits intended to address multiple aspects of antiracist work. Subsequent toolkits will address antiracism for organizations and antiracism for BIPOC, and the projects will be managed by the Coalition for Diversity and Inclusion in Scholarly Communications (C4DISC).⁵ Both Coggins and Townsend stressed that the toolkit is only a starting point for publishing professionals, one tool in

many that can help scholarly publishers address racism in their work. Using the strategies outlined in the toolkit might require some uncomfortable conversations, but like any tool, Townsend said, using it becomes more comfortable with practice.

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Three New Style Manuals in the Sciences: What Went Into Them, What to Get Out of Them

CSE 2020 Fall Symposium

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American Psychological
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Washington, DC

Stacy L Christiansen

Managing Editor, JAMA, and
Chair, AMA Manual of Style
Committee
American Medical Association
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Sara Tenney

Publisher, New Product
Innovation, Publications
Division
American Chemical Society
Washington, DC

REPORTER:

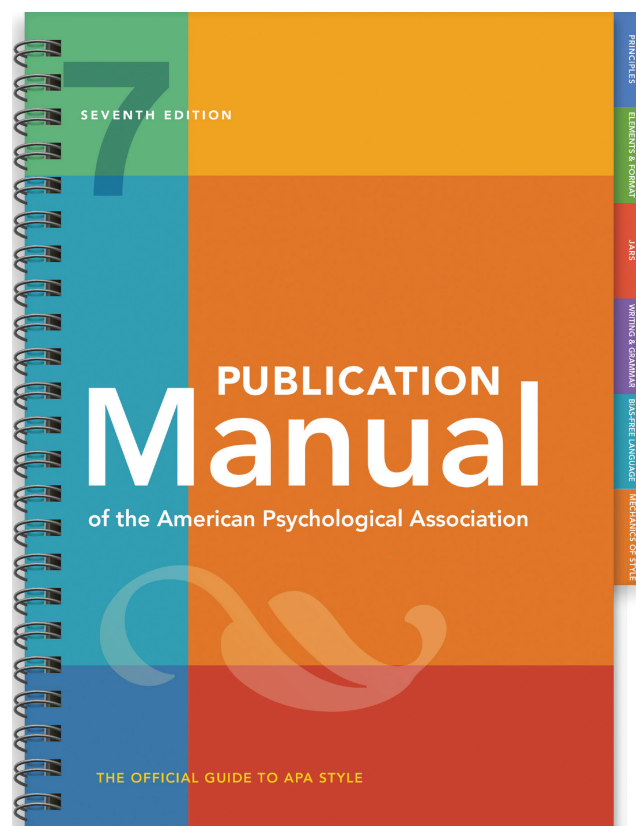
Duanduan Han

Editing Associate
College Station, Texas

The years 2019 and 2020 witnessed the release of new editions of 3 style manuals: the *Publication Manual of the American Psychological Association* (7th edition), *AMA Manual of Style* (11th edition), and the *ACS Guide to Scholarly Communication* (replacing *The ACS Style Guide: Effective Communication of Scientific Information*). As the session moderator, Barbara Gastel, professor at Texas A&M University, noted, this session was for style manual enthusiasts. Style manual insiders, who led the writing and publishing of these manuals, gathered virtually to share the behind-the-scenes stories of creating these must-have reference works.

Publication Manual of the American Psychological Association

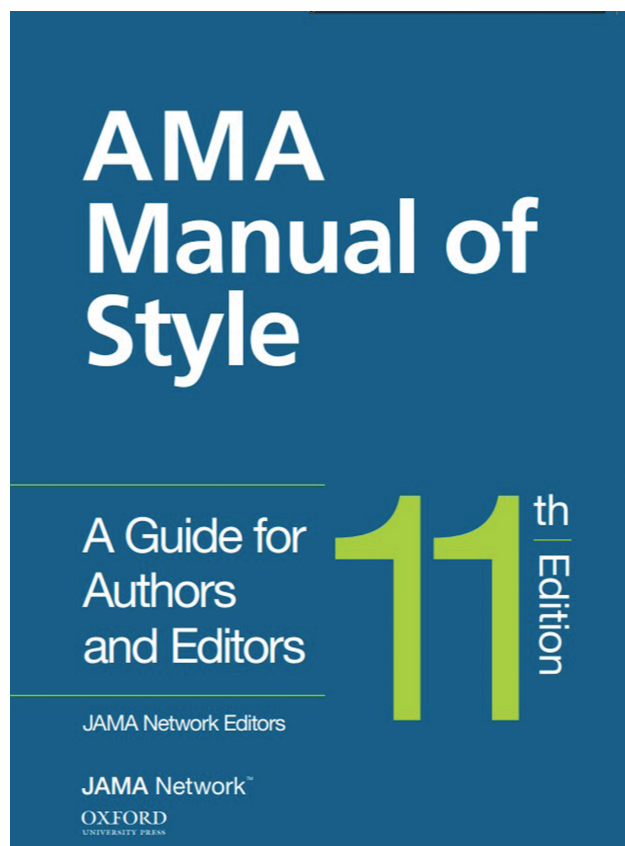
Emily Ayubi, Director of APA Style, first introduced the newest edition of the APA style manual. This edition has undergone the most extensive revision since the publication of its earliest predecessor, a 7-page writer's guide, in 1929. After the launch of the 6th edition in 2009, more than 30,000 messages were collected from focus groups, surveys, interviews, emails, social media, blog comments, and web forms. These readers' feedback was carefully reviewed and considered for potential updates. Peer reviewers representing multiple disciplines were invited to provide



feedback and comments. An APA style manual team was formed to actively write new content and revise old entries. Ayubi noted that the primary challenge of updating a style manual is to "meet the needs of a diverse global community across disciplines and professional and educational levels." The committee made tremendous efforts to find a balance between being prescriptive and flexible, accommodating both students and professionals, and covering psychology and other disciplines. Ayubi's experience of growing up overseas provided her insights in supporting international users in this new edition.

The ebook and print versions are in full color. The front and back inside cover flaps have quick guides for

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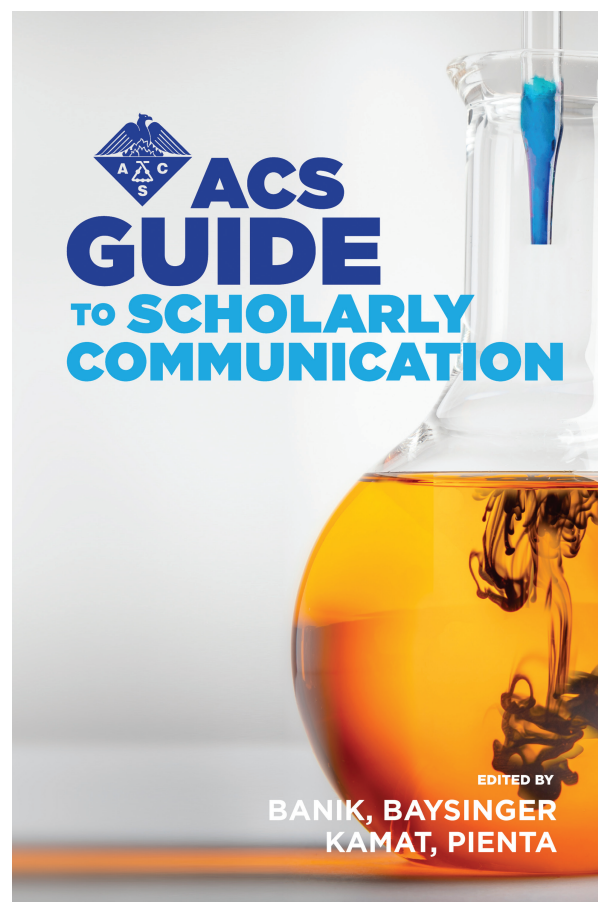


Credit: JAMA Network and Oxford University Press.

easy referencing. Compared to the previous edition, more examples are provided including 100 references, 40 table and figure samples, and 2 sample papers. Another substantive content revision is the APA style journal article reporting standards (JARS) in a dedicated Chapter 3. JARS has “expanded coverage on quantitative research and reporting standards and new coverage on qualitative and mixed methods research.” Chapter 5 is devoted to bias-free language with insights from 6 committees of expert advocacy organizations. A new website¹ has been launched and provides style and grammar guidelines, handouts, and checklists for all levels. Style experts can be reached at StyleExpert@apa.org. Readers’ feedback is very welcome and may give editors ideas for the next edition.

AMA Manual of Style

Stacy Christiansen, Managing Editor at JAMA and Chair of the AMA Manual of Style Committee, started her presentation with a brief history of the manual. The manual has come a long way, from a 68-page booklet in 1962 to a 1227-page book now. The current edition is the first revision that has the hardcopy and the online version released simultaneously. All chapters from the previous edition were kept, with 2 exceptions: The chapter on indexing



was removed because of easy access to digital searching, and the chapters about editing, proofreading, design, and workflow were combined. Each of 10 JAMA Network staff “conducted independent research, wrote, edited, and circulated the content for internal critique,” then chapters were sent out to external expert reviewers for at least 2 rounds of revision. As Christiansen mentioned, the whole editing process took 4 years from planning to publishing. This edition was released in February 2020.

A few key policy changes include the dropping of fellowships in the byline, permitting the use of “US” and “UK” as nouns, and not listing publisher locations in references. Revisions to apply bias-free language included capitalizing all racial and ethnic classifications, avoiding labeling people, and encouraging person-first language. The previous edition offered 70 quizzes with examples from real publications for readers to test their understanding, and all these quizzes will be updated gradually in keeping with the revised guidance.² JAMA Network runs an official blog at [AMA Style Insider](http://AMAStyleInsider.com),³ with articles featuring interviews and reflections on punctuation, usage, and style. A daily dose of the AMA style manual can be found via Twitter @AMAManual.

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ACS Guide to Scholarly Communication

Sara Tenney, publisher at the American Chemical Society, addressed that the new ACS manual has changed its name to the *ACS Guide to Scholarly Communication* because the coverage has expanded beyond just style to include all aspects of scholarly communication, such as open access, preprints, and preparing one's data for publication. The planning committee surveyed over 600 chemists with "a fairly global representation" to get initial feedback on the previous version. Then 4 external editors (1 industrial chemist, 2 university professors, and 1 chemistry/chemical engineering librarian) were added to the editing team. Over 20 external authors were trained and commissioned to write individual chapters. The draft was peer-reviewed, and art and media content were incorporated. The final draft was copyedited by in-house copyeditors for quality control.

Tenney especially noted that art and media development was a major focus of this new edition, as reflected in a consistent style across the work and a large number of graphic elements. The manual was published digitally first⁴ in January 2020 and updated in August 2020, and it will be updated twice a year. The digital publishing proved to be challenging for the publishers and authors as they adapted to special requirements unique to the digital version. The effort was rewarded by the final digital version, which can

be frequently updated with ease and features multimedia content. For example, the digital manual includes short video tutorials. A 45-second video gives step-by-step instructions to redesign a table for a clear and concise presentation.⁵ Another noteworthy change is the first chapter, titled "Different Ways Scientists Communicate," which includes guidance on posters, presentations, social media, and videos.

Through this session, audiences heard about the newly added features of style manuals from 3 high-impact publishers. The efforts presented by Ayubi, Christiansen, and Tenney painted a full picture of the process of updating a style manual to incorporate new publishing genres, accommodate digital publishing, and promote bias-free language. The hard work of updating style manuals keeps them as ever-evolving and never-out-of-fashion resources.

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CSE's 2020 Awards and Honors

Each spring at the CSE Annual Meeting, attendees gather in a hotel ballroom for its annual Awards and Honors Luncheon to laud CSE members for their service and their contributions to the council. In addition, the CSE Award for Meritorious Achievement is presented to an individual or organization committed to improving scientific communication while prioritizing the high standards in editing; contributions that are in precise alignment with CSE's own mission.

On May 2, 2020, Dana Compton, CSE president (2019–2020), on behalf of Awards and Honors Committee Chair and CSE past president (2017–2018) Sarah Tegen, announced the awardees to attendees of the virtual meeting.

There was no lunch in the ballroom with friends and colleagues, and we missed the opportunity to congratulate and thank the awardees in person for their contributions and their impressive achievements. Nonetheless, they were a bright spot in a year in which editors faced unprecedented challenges, both personal and professional. It is fitting to acknowledge and celebrate them again here in the pages of *Science Editor*.

CSE Certificates of Appreciation

The purpose of the Certificates of Appreciation are to commend members who have made laudable contributions to CSE.



Sonja Krane

Previously as co-chair, and this year as chair of the Development Committee, Sonja's efforts to identify new sponsorship and funding opportunities for the annual meeting were impressive and highly valued. Under Sonja's leadership, the committee increased the number of sponsors and donors, and offered new and exciting branding opportunities for CSE's corporate partners and society sponsors. Sonja took on the role of sole chairperson in 2019–2020 and CSE happily recognized her for her impressive work.



Jennifer Mahar

CSE's Editorial Policy Committee members, and attendees of the Ethics Clinic at CSE's in person annual meeting, know that Jen Mahar has coordinated the Ethics Clinic's cases over many years. (Ask Jen whether it has been 8 or 9 years of this important service to CSE.) Nominated for a Certificate of Appreciation for her tireless work, Jennifer Mahar's efforts have benefitted the council and the participants in the Ethics Clinic since she came on board.



Brittany Swett

Brittany Swett took on the role of subcommittee chair of CSE's Short Courses on the Road program in 2018, assuming leadership responsibilities and promptly mounting short courses on the road in Durham, North Carolina, Washington, DC, and in Brazil in conjunction with ABEC, the Brazilian Association of Science Editors. Brittany Swett was acknowledged for her vision and her commitment to delivering CSE's highly valued education programs to members, conference attendees, and certificate enrollees.

CSE Distinguished Service Award

The CSE Distinguished Service Award recognizes excellence in the performance of specific tasks by CSE members.

CONTINUED

*Patty Baskin*

Patty Baskin received the 2020 CSE Distinguished Service Award for her dedication to CSE's mission and vision.

Patty worked on the establishment of the Short Courses program, coordinating and teaching in 4 different Short Courses—sometimes juggling presentations in more than one course in a single annual meeting. She coordinated the Publication Management course for 10 years of the 15 years during which she was presenter, and she worked to outline and propose the advanced Publication Management Short Course, mounted in person in 2019 and as a virtual program at the May 2020 annual meeting. Patty established the Publications Ethics course, which she coordinated for 5 years. She also coordinated and taught in the first Short Course on the Road (Publication Ethics) in Washington, DC in 2017. She was a faculty presenter in 2017 and 2018 at the ABEC meetings in Brazil and was Director of CSE Short Courses for 2 years.

Patty is an integral part of CSE's annual meetings, chairing the CSE Annual Meeting in 2007 in Austin, TX, and has served as a moderator at 18 annual meetings. She has served for many years on the Program Committee, the Editorial Policy committee, and the Education Committee. For the past 2 years, she has been CSE's representative to C4DISC, the Coalition for Diversity and Inclusion in Scholarly Communications.

Many members know Patty served as Editor in Chief of *Science Editor* at a critical time, taking on the editorship as a weekend job for 2-1/2 years, contacting authors to recruit papers and editing manuscripts to produce quality articles relevant to CSE members. She led the task force that revitalized the journal, reimagining the online and print publication. Patty took a Board seat in 2015, and when serving as CSE president she started the Mentorship Committee, tapping CSE past presidents and board members to mentor editors at different points in their careers.

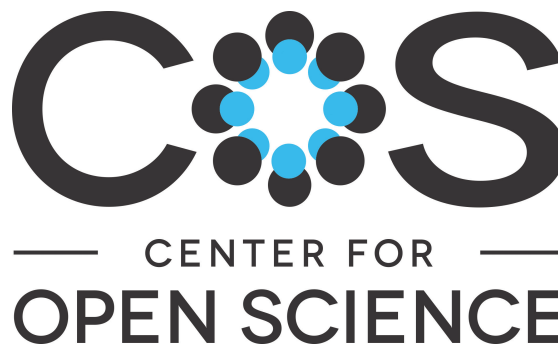
Patty has a day job as Executive Editor, *Neurology*® Journals at the American Academy of Neurology. CSE is grateful that Patty's roots inside CSE, and across scientific publishing, are deep and CSE proudly presented her with its 2020 Distinguished Service Award.

**CSE Award for Meritorious Achievement***Center for Open Science*

This Award for Meritorious Achievement highlights the goal of CSE, namely the improvement of scientific communication through the pursuit of high standards in all activities connected with editing, and honors those who have made significant contributions toward this goal.

Recognized for their long-standing, successful efforts to increase openness, integrity, and reproducibility of research, The Center for Open Science's (COS) vision is to ensure that the process, content, and outcomes are openly accessible by default, dovetailing with CSE's own vision to be indispensable in the communication of science. The work of the COS brought the scientific publishing community the TOP guidelines, made registered reports mainstream, and incentivized researchers to share their work by providing publicly available Open Science Badges. By championing open science, COS helps ensure integrity, access, and FAIR use of research data. The scholarly communications community is indebted to the COS for its service.

The COS's co-founder and executive director, Brian Nosek, accepted the CSE 2020 Award for Meritorious Achievement of behalf of the organization.



What Do/Does the Data Show?

Stacy L Christiansen

You're editing a document when you come across this sentence: "Follow-up data from a large sample was used to estimate the incidence of carcinoma." Sounds good. Right? Wait, should it be "Follow-up data from a large sample *were*..." instead? Is the word *data* a singular or plural noun? Yes.

There are generally 2 approaches when it comes to words such as *data* and *bacteria*, common terms that are of Latin origin and appear often in scientific documents. One is more of a "purist" approach, treating these words as the plural nouns they are in Latin (singular forms would be *datum* and *bacterium*). The other is a more contemporary-language approach, recognizing that modern English speakers would rarely if ever use the word *datum* in common parlance, and perhaps not even in formal scientific writing.

So which is it? Well, reference sources themselves vary in their recommendations. The Plurals chapter (chapter 9) in the *AMA Manual of Style*, 11th edition, notes: "A few nouns are usually used in the plural form; however, the distinction between plural and singular should be retained where appropriate" and gives the following examples: *data/datum*, *criteria/criterion*, *media/medium*, and *phenomena/phenomenon*.¹ Ok makes sense: "The data are what they are."

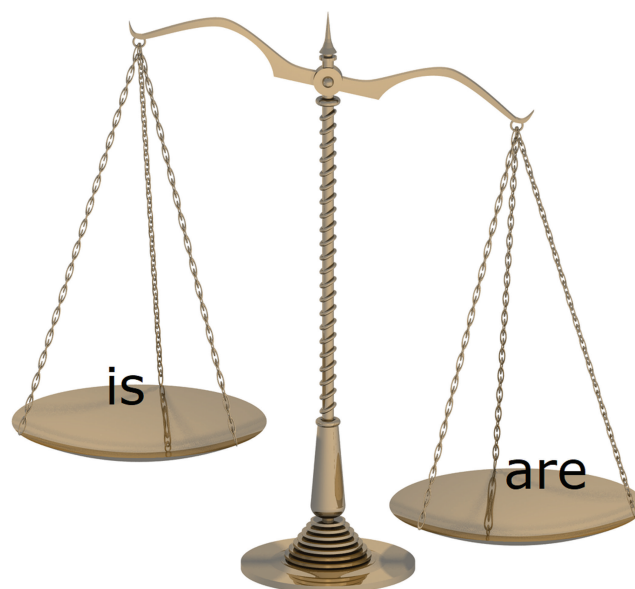
But wait, there is a footnote on that page:

Exception: when referring to social media, news media, or the media, use a singular verb. The same applies when referring to big data as a term for extremely large, often unstructured data sets that can be mined for business or social uses.

So if you follow AMA style, *data* would indeed be considered a plural in most contexts, with the caveat above. The same is true for those who follow APA style, which also recommends observing the distinction between singular and plural forms.²

In checking with *Merriam-Webster's* dictionary regarding the term *data*, the ambivalence in usage is pronounced: both singular and plural constructions are considered standard.³ I note with slight amusement the last sentence of the dictionary's usage guide: "The plural construction is more common in print, evidently because the house style of several publishers mandates it."

The *AP Stylebook* echoes the dual approaches: *data* as singular for lay audiences and plural for scientific and academic writing.⁴ The *Chicago Manual of Style*, 17th



edition, also acknowledges both approaches, but similar to those mentioned above, points out that in the sciences and other formal contexts, the term *data* is usually plural.⁵

A variety of other blog entries, podcasts, and articles on grammar and usage echo these sentiments; essentially, the plural construction of *data* is still widely used in scientific communication. The singular form is embraced for most other contexts. In this usage, *data* is thought of as a collective noun and, when considered as a unit rather than as the individual items of data that compose it, it takes the singular verb.

But whichever approach you take, heed the *Chicago Manual's* recommendation: "[M]ake your play and be consistent—vacillating will not win the admiration of readers and listeners." Which of course is sound advice for any editing decision.

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STACY L CHRISTIANSEN, MA, Managing Editor, JAMA, and Chair, AMA Manual of Style committee.

Amplifying Your Message 101: Social Media to Promote Yourself and Others

Jennifer Regala

For scholarly publishing professionals, social media is one of the most valuable tools we have to promote our organizations, journals, authors, editors, reviewers, and our communities at large. For no cost, we can cultivate audiences across the world to amplify our important messages near and far. We can also use these same tools to showcase our own talents and strengths to further our careers. Let's examine the social media outlets commonly used in our field and how to best use them to promote both those we serve and ourselves.

Twitter

It's no secret that Twitter is my favorite social media tool as an individual professional. I rely on Twitter for a myriad of work-related uses. I wholeheartedly recommend that anyone in the field of scholarly publishing have an account and immediately start following coworkers, community members of their own organizations, colleagues at other organizations (CSE, Society for Scholarly Publishing [SSP], Association of Learned and Professional Society Publishers [ALPSP], International Society for Managing and Technical Editors [ISMTE], etc.), and anyone and everyone who has something valuable to say about publishing, science, and the world at large. I learn at least one new thing from Twitter every single day of the year. Twitter keeps me sharp and allows me access to knowledge that makes me better at my job.

Here's where I find value as an individual Twitter user:

- **Keeping up with scholarly publishing trends and news.** Thanks to Twitter, I keep up with the latest information related to Open Access, preprint servers, peer review innovations, what other journals are up to, and so much more.
- **Networking.** With this one app, I connect with fellow employees at the American Urological Association plus

our editors, authors, and members. I have conversations with fellow scholarly publishing professionals I have met in person, in addition to those I only "know" from Twitter.

- **Promotion.** I use my own Twitter account to amplify messages from my organization and our publications. It's a platform to share my own volunteering efforts, including those with CSE. And where else would I encourage people to read this very column? Twitter, of course!
- **Following the right individuals and organizations on Twitter.** Here are some good places to start:
 - CSE: @CScienceEditors
 - SSP: @ScholarlyPub
 - ISMTE: @ISMTE
 - ALPSP: @ALPSP
 - Editor-in-Chief of *Science Editor*, our very own Jonathan Schultz: @jdgscultz
 - President of CSE, Carissa Gilman: @chickybird
 - Former CSE President, Dana Compton: @danamcompton
 - Former CSE President, Angela Cochran: @acochran12733

Then, as you scroll through Twitter more regularly, you'll start noticing other accounts that interest you. Follow those, too. Don't forget to keep the list of people you follow fresh. If you aren't learning from and/or interacting with an account, perhaps it's time to unfollow.

And let's not forget that Twitter is a powerful tool to promote our journals and organizations. Journals can promote authors and their articles individually, positively influencing citations and Altmetrics. Organizations at large can advance their missions, events, and members. What do you need to do to get started if your journals and/or organization aren't on Twitter?

- **Permission from those in charge.** Do not start a Twitter account for your journal or organization without the buy-in of your leadership. You will want the buy-in of your supervisor, your organization, your editorial board—anyone who should have a say in the messaging of the account.

JENNIFER REGALA is the Director of Publications/Executive Editor at the American Urological Association.

CONTINUED

- **A plan.** Once you have support from your leadership, then you need to decide what you're trying to say. Also, who will the account represent? Your journal? Do you have more than one journal? What about your organization at large? Will you have separate accounts for each of these entities? Who will be involved in maintaining the account(s)?
- **Consideration of voice, style, and tone.** We all work in the field of scientific editing and realize the importance of all three. Don't forget about voice, style, and tone when crafting your posts.

Facebook

I have to be completely honest here and share that I do not love Facebook as an individual. I don't love the idea of getting back in touch with my middle school gym teacher or the girl who was mean to me on the bus in middle school. I do acknowledge that it's valuable to some in their professional lives, though, and I encourage you to think about how you can use this tool to elevate yourself. As one example, my husband is a real estate agent, and Facebook is one of the top ways that he is able to earn new business and keep his clients updated on his new listings and the market. It doesn't take much of his time, but the return on his small investment is undeniable.

Although I am not a Facebook fan for my own personal use, I love it for organizations and journals. Facebook doesn't have the same constraints as Twitter as far as characters and numbers of photos that can be posted. If you want to post an entire abstract and multiple figures for an article, you can! If readers want to comment with a long response to a post, they can! The sharing capabilities on Facebook are tremendous. Just see above about the due diligence you need to do before starting any organizational account(s).

LinkedIn

I see LinkedIn as the tool for *you*. LinkedIn should be kept up to date at all times with your full career history, education, professional memberships, and skills. Did you read an article you think your colleagues would benefit from? Re-share it here. Is your organization hiring? Tell everyone on LinkedIn. Do you have an awesome professional accomplishment

that everyone needs to know about? LinkedIn is the place to brag about it and where your peers expect to see such self-promotion. And don't be selfish! Every time you are on LinkedIn, take a minute to comment on someone else's post or to endorse a connection for their skills.

LinkedIn isn't *only* for you, though. I learned an important lesson revolving around LinkedIn a few years back. With a former employer, our Subscriptions Manager learned that one of our international subscribers preferred getting their information from us via LinkedIn. Our organization quickly made LinkedIn more robust in featuring content from our journals. The takeaway? Have these conversations with your constituents and implement changes to show you're listening.

YouTube, Instagram, Pinterest, TikTok, Snapchat, and More

Do you have video content you'd love to share, or are your members and authors clamoring for a vehicle to share their hot takes? YouTube is your answer. Many online hosts for journals will allow you to link out to YouTube videos. Instagram is perfect to share get-to-know-you features of individuals, beautiful images from your journals, slide shows of summarized scientific content, and short video posts and stories. Pinterest, TikTok, and Snapchat might not seem related to your mission, but you can have fun with these platforms. TikTok is an excellent vehicle to make a snappy, fun video to explain a tough scientific concept. Make it part of your job to understand these more obscure platforms and how they may or may not fit into your individual and/or organizational social media strategies. You'd be surprised at what might be successful.

That's the Tweet!

I can't summarize what I'm trying to say in 280 characters like I would in a tweet. However, I can conclude that you need to know your audience(s). Who is your personal audience? Who are the audiences important to your organization? What is the best way to reach these people? Keep looking around you and listening carefully to determine which platform(s) the people important to you are using. Social media is constantly evolving, and what is useful at the time I'm writing this article could be quite different from what will work best for you and your organization in the future.

Gatherings of an Infovore^{*}: Open to the World. Really?

Barbara Meyers Ford

OPEN has become an adjective used with a myriad of terms beginning with access and joined by communications, data, source—and open research/science, which is the focus of this column. What was most interesting as I went about my gatherings was the number of articles about “open (fill in the blank)” that were not accessible without a personal or institutional subscription or the willingness of the reader to pay on demand for a download (a.k.a., pay per view, or PPV). As always, only openly accessible references are included here. Further investigation on the reader’s part using search terms such as “open research” and “open science” will uncover many more articles, but most of those will come at a price. So, it begs the question whether research/science is really open now ... or will it ever be?

Maintaining trust in academic publishing

Groth M. KnowledgeWorks Global Ltd. Blog. 2020.
<https://www.kwglobal.com/blog/2020/12/4/maintaining-trust-in-academic-publishing>

CHORUS now using GetFTR to support open research compliance for publicly funded research

Girard S. 2020.
<https://www.chorusaccess.org/chorus-now-using-getftr-to-support-open-research-compliance/>

Generating codebooks to ensure the independent use of research data: some guidelines

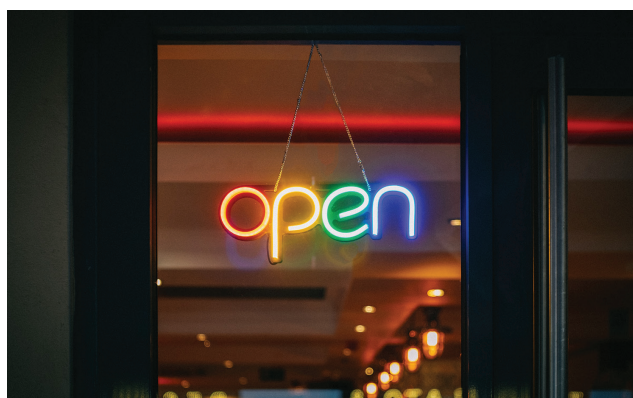
Horstmann KG, Arslan RC, Greiff S. Eur J Psychol Assess. 2020;36:721–729.
<https://doi.org/10.1027/1015-5759/a000620>.

Open access legislation and regulation in the United States: implications for higher education

Chaudhary A, Irwin KM, Khoa DH. J Copyright Education Librarianship. 2020;4:1–28.
<https://doi.org/10.17161/jcel.v4i1.13637>

Science journalism, value judgments, and the open science movement

^{*}A person who indulges in and desires information gathering and interpretation. The term was introduced in 2006 by neuroscientists Irving Biederman and Edward Vessel.



Elliott KC. Front Commun. 2019.
<https://doi.org/10.3389/fcomm.2019.00071>

Stanford researchers discuss the benefits – and perils – of science without peer review

Science moving forward without traditional forms of peer review could shorten the path to solutions—but it also increases the chances that low-quality science gets overhyped.

Kubota T. Stanford News. 2020.
<https://news.stanford.edu/2020/04/06/open-science-era-covid-19/>

Making open science work for science and society

Elliott KC, Resnik DB. Environ Health Persp. 2019;127:1–6.
<https://doi.org/10.1289/EHP4808>

Promoting an open research culture

Nosek B, Alter G, Banks GC, Borsboom D, Bowman SD, Breckler SJ, Buck S, Chambers CD, Chin G, Christensen G, et al. Science. 2015;348:1422–1425.
<https://science.sciencemag.org/content/348/6242/1422>

The Center for Open Science Transparency and Openness Promotion Guidelines (TOP)

The TOP Guidelines were created by journals, funders, and societies to align scientific ideals with practices. TOP provides a suite of tools to guide implementation of better, more transparent research.
<https://www.cos.io/initiatives/top-guidelines>

The **Scholarly Kitchen Archives** is a good source for thoughtful postings on Open Research and Open Science along with other “Open” challenges for professionals in the scholarly publishing world.
<https://scholarlykitchen.sspnet.org/archives/>

There are about 34,550 active scholarly peer-reviewed journals, collectively publishing about 2.5 million articles a year.

(The STM Report, Fourth Edition)

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