MARCH 2023 • VOLUME 46 • NUMBER 1

SCIENCE EDITOR

A PUBLICATION OF THE COUNCIL OF SCIENCE EDITORS

SPECIAL ISSUE:

CAREERS IN SCIENTIFIC EDITING AND PUBLISHING

2023 CSE Annual Meeting
April 29 – May 2, 2023
Sheraton Centre Toronto, Canada

Aligning with the city motto of Toronto, “Diversity Our Strength,” the Council of Science Editors brings a diverse and robust program, demonstrating the strength of the industry and the many opportunities it has to offer. With ample opportunities to network with colleagues across all areas of scholarly publishing, this is a must-attend for anyone within the industry. #CSEToronto

2023 Featured Speakers:

Alpha Abebe, PhD
When Good Intentions Just Aren’t Enough:
Engaging Diverse Communities as Partners in Knowledge Production

Kasha Patel
A Stand-up Comedian's Guide to Science Communication

APTARA

Serving the world's largest publishers and Fortune 500 companies, Aptara's full-service content production accelerates information providers' transition from print to digital. From creation and design to new media enhancements and output for all digital devices and platforms, Aptara can leverage your business needs by creating innovative digital products that deliver content optimally while giving content providers renewed agility and revenue opportunities.

Committed to delivering world-class solutions

INNOVATION THAT SETS YOU APART FROM THE REST

Our skilled professionals and industry veterans understand your brand requirements to develop customized content. Our proven track record ensures repeat business. Since we are chosen by industry professionals, we ensure:

- Top quality services
- Scalable and technological solutions
- Consistent on-time delivery
- Cost-effective content production
- 24 × 7 client support

Our Areas of Expertise:

- K-20 Education
- Publishing & Conversion Services
- Corporate Learning & Performance
- IT Services
- Data Management Services
- Customer Lifecycle Management

Services Offered

- Digitization and/or conversion of legacy content
- End-to-end services including Production Editing services for STEM, humanities, and trade publications
- Automated page-charge collection process using SciPris
- Automated Abstracts and Conference Proceedings into XML, PDF, Responsive HTML, and EPUB3
- Editorial and publishing production services
- Educational publishing to design preeminent programs in K–20 content space
- Rights and permissions, plagiarism check, and content development
- Animation development and voiceover audio services
- Tagging video content for a consistent display, test-to-speech functionality and searchability
- User-driven accessibility services
- Back-office process support and project management services

+1 (703) 352-0001
www.aptaracorp.com
2901 Telestar Court, Suite 522 Falls Church, VA 22042
moreinfo@aptaracorp.com

Council of Science Editors
P.O. Box 7
Mullica Hill, NJ 08062

SCIENCE EDITOR
MARCH 2023
VOLUME 46 • NUMBER 1
www.CSEScienceEditor.org

COUNCIL OF SCIENCE EDITORS
www.CouncilScienceEditors.org

VIEWPOINT

CAREERS IN SCIENTIFIC EDITING AND PUBLISHING

FEATURES

DEPARTMENTS

On the cover: *The image on the cover of this issue of Science Editor originates from a science art project titled "1000 Handshakes". The work is "a performance piece during which the artist shakes hands with as many people as possible, gradually changing the invisible microbial community in the palm of his hand. Periodically, assistants take a swab from the skin, and the samples are analyzed in the lab to reveal how our contact with others shapes the microbes between us. This ongoing project has been performed in different cities around the world (including Copenhagen, Montreal, San Francisco, Perth, Berlin and Baltimore) as a way to map our collective microbiome using scientific data. Production of the 'microbiome selfies' involved many different steps. Following the collection of the microbiome samples, bacterial DNA was extracted, amplified and sequenced to create the bioinformatic data shown in this series. The nodes of the networks represent bacterial DNA sequences, and two nodes are connected by an edge (line) when the bacterial DNA sequences have more than 95% similarity. The different colours correspond to distinct samples collected at every 50th handshake, from 0 to 1001. This image corresponds to the 14th image in this 21-part series, showing the extensive microbiome resulting from 650 handshakes."* ***Credit:*** *Bacterial microbiome mapping, bioartistic experiment. François-Joseph Lapointe, Université de Montréal. Wellcome Collection (CC-BY-NC). https://wellcomecollection.org/works/u23mcyhh*

Special Issue: Careers in Scientific Editing and Publishing

Jonathan Schultz and Kristin S Inman

The focus of this issue of *Science Editor* is on careers and roles in scientific editing and publishing. In 2017, we published a similar special careers-focused issue (https://www.csescienceeditor.org/issue/summer-2017-%e2%80%a2-vol-40-no-1/), and it seemed a good time to explore what has shifted in the past 6 years. This issue includes interviews and articles covering an array of editor roles and positions, many of which are new, have increased in prominence, or significantly changed in the last few years. There are also articles on the importance of training and preparing the next generation of researchers and editors, increasing diversity and equity, and the transition to remote work.

The Council of Science Editors (CSE) is a great resource for career help and guidance, and this issue includes an overview of the CSE Professional Development Committee and a preview of the upcoming CSE 2023 Annual Meeting. Many of us come to the annual meeting to network, and the article covering the fundamentals of LinkedIn can aid in growing that network online.

Finally, this issue introduces a new feature, Origin Stories. We have invited readers to share how they started on a path to a career or role in scientific editing and publishing and the many twists and turns along the way. We hope these stories will encourage readers to share their own experiences, demonstrating that there is no one path to success and expertise in our field.

Path to Publication

One of the great challenges when discussing careers in editing and publishing is the lack of consistency across journals and publishers with regard to process (the path of a manuscript from submission to publication) and roles (the title of those individuals performing each of the steps). Anyone who has searched for a job has likely found how widely workflows can vary within scientific publishing along with the vast differences between job titles and roles.

As a guide through this issue, although the process may vary by journal, we have created a list of stages describing the general path of a manuscript at most peer-reviewed journals. The stages we have identified are as follows:

Jonathan Schultz is Editor-in-Chief, *Science Editor*, and Director, Journal Operations, American Heart Association; Kristin S Inman, PhD, ELS, is Associate Science Editor, *Environmental Health Perspectives*.

https://doi.org/10.36591/SE-D-4601-01

- **A: Triage** (or initial submission): Initial review of the manuscript for suitability for peer review; often this includes an evaluation of scope and article type.
- **B: Peer Review:** Review of the manuscript by experts in the field. This stage may involve review by additional editors who manage the peer-review process.
- **C: Post–Peer Review:** Period after peer review, but before acceptance of a manuscript. This may describe the time between peer review and sending the manuscript back to authors or after peer review is complete, and the manuscript is not expected to go back to peer reviewers.
- **D: Acceptance:** The official acceptance of the article. This stage typically separates the editorial and production stages of publication.
- **E: Production:** The manuscript is copyedited, formatted, and prepared for publication.
- **F: Publication:** Publication of the manuscript to the journal's website and/or printed in an issue and distributed to indexing services and elsewhere, followed by promotion via emails, social media, and more.

For each of the scientific editing and publishing roles highlighted, we have indicated at which stage of the process each role generally falls in the following table.

This special issue was borne out of recognition that the previous career-focused issue left many gaps to be filled. No one issue can cover the breadth of roles and careers in scientific editing and publishing, and we encourage readers to reach out to us at scienceeditor@councilscienceeditors.org and let us know what is still missing as we would love to feature an interview or article on an important role in the future. For now, we hope that you enjoy this issue and find it helpful as you navigate your career.

Article	Stages
Roy H Hamilton: Diversity, Equity, and Inclusion Editor	B, C
Kathy Canul: Journal Ombudsperson	C, F
The Roles of Data Editors in Astronomy	A, B, C, D
The Scientific Editor: An Advocate for Transparent Research	C
Kathy Stern: Graphic Arts Director for the *New England Journal of Medicine*	C, D, E
Eric Pesanelli: Utilizing Tools and Resources to Ensure Image Integrity in Scholarly Publishing	D, E
Copyediting in 2023: What Has Changed?	E

Roy H Hamilton: Diversity, Equity, and Inclusion Editor

Patricia K Baskin

Roy H Hamilton, MD, MS, FAAN, is one of two Associate Editors for Diversity, Equity, and Inclusion (DEI) for the *Neurology*® journals, published by the American Academy of Neurology.[1] He is also professor of Neurology, Psychiatry, and Physical Medicine & Rehabilitation at Penn and Vice Chair of Diversity and Inclusion for the Department of Neurology.

In this interview with *Science Editor*, Dr Hamilton discusses his role with the *Neurology*® journals as a DEI Editor focusing on broadening the definition of expert peer review and helping ensure that the journals use best publishing practices related to unbiased research and reporting.

Science Editor: Tell us about your job and organization. How did you get involved in an editorial role?

Dr Roy Hamilton: I've been involved in the American Academy of Neurology (AAN) for many years since I was a medical student, and I have benefited greatly from AAN programs. I received scholarships to meetings, participated in AAN's Diversity Leadership Program, and advanced in my career as a recipient of a clinical training research fellowship. I've held a number of administrative roles at Penn related to diversity, equity, and inclusion, where I also run a research lab focused on the use of non-invasive brain stimulation (transcranial magnetic stimulation [TMS]) and transcranial electrical stimulation (tES) in neurology. As a researcher, I understand the peer-review process and was already engaged in editorial leadership activities for other journals and had knowledge of the scientific literature, so it seemed a logical step to move into the editorial arena when the journal's editor-in-chief requested I take on this assignment in partnership with another DEI editor, Dr. H.E. Hinson.

SE: What led to the creation/expansion of your role in the journal *Neurology*?

Dr Hamilton: There was an incident in which an article with negative racial stereotypes was published in our Humanities section and offended our readers. It was obvious that there were gaps in the review process that allowed this to happen. The article was subsequently retracted, but the editors and staff decided to implement some major changes—including ongoing DEI awareness training for editors and staff, a focused website on DEI issues, updating of the journal's style guide, and appointing two DEI editors who could review submitted papers for appropriate perspectives from a DEI viewpoint.

SE: What is the purpose of your role as a DEI Editor?

Dr Hamilton: We try to assist authors in ensuring the content is respectful and affirming to minoritized populations. These communities include minoritized racial and ethnic groups and sexual and gender minorities but could include other marginalized groups such as those with disabilities. We will offer suggestions, when appropriate, for best practices when describing these populations. Our role ***is not*** to serve as content censors.

SE: How do the DEI editors make decisions about what content for the *Neurology* journals should receive a DEI review? And when in the review process do you review

Patricia K Baskin, MS, is Executive Editor, *Neurology*® Journals.

https://doi.org/10.36591/SE-D-4601-02

CONTINUED

manuscripts for DEI concerns? Can you describe the logistics of this process?

Dr Hamilton: Papers are often referred to us by the editor or a handling editor, but the DEI editors review all the titles of papers that are going to be invited for revision. We also follow up on notifications from staff if they notice something that was not addressed by reviewers or handling editors. DEI reviews are completed before invitations are sent to authors for revisions or later if there are still concerns.

SE: What are you looking for when you review titles or decide to read the abstract or a complete paper? Do you find you are approaching papers mainly from the standpoint of terminology or do you find yourself identifying conceptual issues in researchers' reports involving different populations?

Dr Hamilton: Obsolete terminology and biased language are easier to identify, but we are also checking for methodological specificity in determining DEI variables and whether study limitations are acknowledged, in addition to other concerns about how populations are described.

SE: What DEI categories stand out for you as most problematic when you review these papers? (racial, ethnic, gender, sex, other?)

Dr Hamilton: Race and ethnicity concerns seem to surface about twice as often as sex or gender concerns, with fewer concerns in other marginalization categories.

SE: What are the main issues you've identified during DEI reviews of papers?

Dr Hamilton: We see factual errors regarding marginalized groups, lack of information about how DEI variables are determined, insufficient acknowledgment of study limitations when groups are not included, obsolete terminology and biased language, framing issues, and terminology confusion (see Figure online).

SE: Do you know if papers are often rejected based on DEI concerns only?

Dr Hamilton: Authors are usually cooperative in addressing the concerns raised. So reviewing for DEI concerns leads to substantive corrections. Often, items can be changed with a tonal framing. Very rarely do we need to reject a paper based on DEI concerns only. Occasionally, we will reject if a paper is based on poor methodology so we are still acting as scientific content experts with DEI knowledge.

SE: What skills, abilities, and personal attributes have you found to be essential to success in your role?

Dr Hamilton: To state the obvious, I enjoy reading and reviewing scientific papers. In some ways, the job is to be a super-reviewer, one where you have to love reading and improving papers. This type of editing makes the DEI portions of a paper more coherent and helps improve the quality of a paper. In this role, I have to try to stay current as social constructs and societies change. It also takes a fair amount of flexibility and cultural humility. If you think your view of race or gender or other areas of diversity is the only way to think and that you are right, you'll do a disservice. It's important to constantly think of new ways to think. The lens through which you view the issues has to allow for changes, and you need to be willing to be humble to that. You also have to invest the energy to learn about something you haven't been trained in. Other editors handle areas in which they have specific formal years of training. Editing for DEI comes from lived experience, other related experience, and experience doing the job. I am supposed to be the person to go to for this expertise and that motivates me to continuously learn this content. Unfortunately, there is no natural training pathway yet for DEI in neurology. We are trained formally in neurology, but becoming a specialist in DEI comes about more informally. Persons coming from other educational backgrounds may be better trained in DEI issues, but someone without training in neurology might have difficulty understanding the scientific and clinical content of the manuscripts they are reviewing and might struggle to perform the role of editor in a journal focused on neurology.

SE: What do you enjoy most about your role? What challenges do you face?

Dr Hamilton: What do I enjoy? I like the moment when I have received feedback from authors after I advised them about their manuscripts that indicate they were receptive to my comments—and treated the issues seriously and sensitively, whatever they decided to do with their paper. The intent of my comments is to motivate authors to face DEI issues in their papers, and they generally represent friendly advice on how to improve them. I enjoy seeing that the papers have been strengthened by that feedback. That way, not only will the data in the paper make an impact, but the way the authors are conveying the DEI issues will have an impact on the science around the data. After hundreds of articles, it makes you feel like you've changed something meaningful in science by doing this.

The challenges? There are two. The first is the demands of the job itself, having a high volume of articles to review and keeping up with a logical time demand and fast turnaround, but I am committed to not slowing down the review process with my work. I don't ever want DEI editing to be a drag on the review process. The second

CONTINUED

is the limitation of expertise of my co-DEI editor and myself: DEI covers a huge editorial mission with many lanes, and in some of these spaces, we don't have the scientific expertise to feel that we are on steady ground. Unfortunately, we can't have expertise in all the subfields in neurology and neuroscience that are affected by DEI issues. For example, in genetic studies, it's difficult for us to wade in and correct the science when looking at race and ancestry. Race is often used as a proxy for ancestry, but as non-geneticists, we struggle sometimes to make relevant, detailed recommendations. Also, people expect us to read articles on both health disparities and health research services and assume we have deep expertise in both, which isn't necessarily the case. It is best to include reviewers who are researchers in those areas.

SE: What are some of the biggest changes you've seen in the industry and where do you see scientific editing and publishing heading?

Dr Hamilton: When I first took on this job, I felt like Dr Hinson and I were the only ones in this role, but now I'm seeing a lot of other DEI editors at many other journals. That's clearly the biggest change I've seen.

As this role propagates across journals and matures, persons who do this job will have an increasingly clear understanding of what is important, not just from a social justice and equity perspective but also in terms of how attention to DEI improves the quality of science. DEI editors not only make sure a journal doesn't commit errors in describing groups of people, but they also ensure that published data include more diverse populations and therefore contribute to the dissemination of more robust, generalizable discoveries. Scientific work is not generalizable, and ultimately is not as useful, if only persons from specific, homogenous backgrounds are included in the research. When considering the value of DEI editors, journals should absolutely think about advancing social justice, but they should also consider how their science mission is enhanced by the contribution of DEI editors.

Also, in my view, DEI editors will eventually play a role in the diversity and inclusivity of the journals themselves. Much could be done to make the workforce of journal editors, staff, and even reviewers more diverse. In a more holistic future role, DEI editors of journals will lead the charge to enhance diversity in this arena as well.

References and Links

1. Hamilton RH, Hinson HE. Introducing the Associate Editors for Equity, Diversity, and Inclusion Aligning editorial leadership with core values in *Neurology*®. Neurology. 2019;93:651–652. https://doi.org/10.1212/WNL.0000000000008235
2. Hamilton RH, Hinson HE, Burch R, Budhu JA, Rosendale N, Baskin PK, Gross RA, Merino JG. Assessment of *Neurology*'s implementation of equity, diversity, and inclusion editorial review of research manuscripts. International Congress on Peer Review and Scientific Publication; 2022. [accessed March 5, 2023.] https://peerreviewcongress.org/abstract/assessment-of-neurologys-implementation-of-equity-diversity-and-inclusion-editorial-review-of-research-manuscripts/.

Kathy Canul: Journal Ombudsperson

Jonathan Schultz

An Ombudsperson (or Ombuds) exists to help resolve disputes in a neutral, independent way. It's a role that is common in government and journalism, but less so in scientific publishing. In 2022, when the American Chemical Society (ACS) Publications sought to create the role of ombudsperson as part of their "commitments to addressing systemic racism in chemistry journals," they turned to Kathy Canul, an ombudsperson for the University of California system for over 20 years. As described by ACS,[1] an ombudsperson serves as "an independent, impartial, off-the-record, and confidential channel for concerns regarding the peer-review process."

Recently, Kathy Canul and Shaina Lange, Senior Manager in the ACS Publishing Integrity Office, spoke with *Science Editor* about the role of an ombudsperson and its place in promoting inclusivity and equity.

Science Editor: Let's start with the basics: What is an ombudsperson?

Kathy Canul: In brief, an ombuds is a resource available to address issues and obstacles that get in the way of an organization meeting its objectives and goals. ACS Publications wants to publish high-quality content that advances scientific knowledge. There are numerous steps in moving a research study through the submission, peer-review, and publication process, and along the way, there can be challenges in the process that may need to be addressed in order for the research to undergo a fair evaluation.

As an ombuds, I serve as an independent, neutral, and confidential resource available to hear publication concerns from authors, reviewers, and editors. I listen to the issues brought forward and if there is a means to resolve the matters informally, I work with the involved parties to create options for resolution. As a neutral resource, an ombuds doesn't take sides but rather, gathers information, much like putting pieces of a puzzle together, to get a broader perspective of the problem and arrive at resolutions. There may be times when an individual has a concern that is best handled by a formal process or protocol, and I will redirect the person to an appropriate unit within ACS Publications to address the matter.

The resolution doesn't necessarily mean a paper is going to be published, but it can lead to a mutual understanding of why the current situation is as it is and be able to move forward. I want to emphasize that the resource is confidential. An ombudsperson does not share communications with anyone except in the rare circumstance that there is imminent harm to an individual or an immediate public safety risk. In resolving problems when possible and appropriate, I also try to bring parties together to informally resolve concerns.

SE: The ombuds role is positioned with the ACS Publications' Publishing Integrity Office but is different from an editor who handles the concerns about scientific misconduct in published articles. Can you clarify that distinction?

Canul: People can come to me with any concern, and I will make every effort to either help directly or find the right resource within ACS Publishing to assist with the issue. In some ways, I'm like a traffic cop directing people to where they need to go and helping to cut through the

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

https://doi.org/10.36591/SE-D-4601-03

CONTINUED

bureaucracy. Generally, when people come to ask for help, they're concerned and upset, and they want a response and resolution. I should clarify that an ombuds does not investigate complaints, determine outcomes, replace formal channels, or overturn decisions. My hope is that if an author, reviewer, or editor faces a challenge that interferes with fulfilling their roles or creates conflict or stress, they reach out and don't feel like they have to struggle on their own.

At ACS Publications, formal concerns about a specific manuscript or published article are brought to the attention of the relevant journal. Typically, the editor-in-chief of that journal is tasked with overseeing the investigation and resolution of that concern. They may work with other editors at the journal with relevant subject matter expertise and who are best positioned to evaluate scientific concerns in context with the work. They may also work with the ACS Publishing Integrity Office to ensure alignment with our ethical best practices and policies and explore various paths to resolution. The editors ultimately make a binding editorial decision.

SE: What is a typical case for you?

Canul: A typical case may involve an author whose paper has been rejected, and they have questions or concerns about the process that led to that outcome. For example, an author may perceive that there has been bias in the process or a violation of the protocol in the review of a paper leading to a belief that there has not been a fair evaluation of the work.

Sometimes concerns are related to communication between an author and an editor. I've witnessed communication exchanges where there appears to be a lack of courtesy. In haste, sometimes we lack tact that could lead to miscommunication or misunderstanding. I may address some of those interpersonal communications where people feel disrespected in their work.

SE: On the topic of bias: I thought it interesting that ACS specifically created this role as part of their commitment to addressing systemic racism and promoting inclusivity. Shaina, what led ACS Publications to create this role?

Shaina Lange: Diversity, equity, inclusion, and respect (DEIR) are long-standing core values of ACS. We strive to advance chemistry by publishing the highest quality and trusted research, which can only be achieved by providing services that are equitable and inclusive of the diverse chemistry community. In mid-2020, we sought to address a changing social justice climate by renewing and accelerating our commitment to advancing DEIR. The ombuds program came out of several commitments we made in an editorial published by all ACS journals: "Confronting Racism in Chemistry Journals".[2] That editorial expressed support to historically underrepresented communities in science, acknowledged the disparities within the chemistry community and within our publishing program, and recognized that there is a lot that we don't know. We are committed to learning by listening to the chemistry community and people who are trying to engage with us as a publisher so that we may understand issues and challenges they are facing.

The ombuds program is a way for us to understand some of the root causes of those inequities and, furthermore, work to address them. The ombudsperson is asked to create an annual report and provide recommendations to us as a publisher on potential workflow changes or additional resources or trainings that might be needed based on the cases they are seeing. We then intend to take that information to make our peer-review process more equitable and inclusive for the entire chemistry community.

Creating the program itself was the work of many of ACS colleagues. After months of my colleagues working with the International Ombudsman Association and our legal team, they developed a charter for the Ombuds program including standards of operation, position scope, and procedures around accountability and reporting. We placed a call for proposals in mid-2021 and appointed Dr Canul that October.

SE: In research for this interview, I saw that "ombudsman" is a Swedish word meaning "representative". It's clear that you are approaching this as a representative of the outsider: the reader, the author, or whoever has the concern; that you are going to act on their behalf to make sure those concerns are addressed appropriately by the appropriate party.

Canul: Exactly, but I need to clarify that an ombuds is not an advocate for a particular person. An ombuds is an advocate for fairness, equity, and justice. My responsibility is to hear all sides of a matter and envision viable options for solving the conflict.

Regarding diversity, we know that science is always better when you get a wide range of ideas and viewpoints in both the discovery of new knowledge as well as problem solving. The more we learn about the diverse group of people that make up ACS Publications community, the better ACS will be as an organization in its effort to create a sense of inclusion, belonging and community.

SE: What has been the most surprising or interesting insight you've had from the first year in this position?

Canul: There are a couple of things. The first one that surprised me is that authors are not complaining about their paper not being accepted for publication. The concerns lie more in feeling disrespected when authors explore and

(Continued on p. 44)

The Roles of Data Editors in Astronomy

August Muench

Introduction

In 2000, the Journals of the American Astronomical Society (AAS)[1] completed the adoption of electronic editions for all its journal titles. Writing at the time, Editor-in-Chief Robert Kennicutt asserted that "electronic publishing made it possible to efficiently archive scientific contents that never could be reproduced on a printed page … range[ing] from extended data tables that are useful only in machine-readable form to various forms of on-line graphics …".[2] These data and online graphics were also explicitly considered part of the article's version of record. They were expected to be contextually integrated into the flow of the article rather than relegated to a paragraph after, or footnote under, the text. Kennicutt also recognized that while the journals could house small- to medium-sized datasets permanently, they needed to support larger datasets, which required cross-linking the data in astronomy archives with the articles.

By enveloping its digital assets as part of an article's version of record, the journals established a clear editorial need. Thus in 2000, the AAS employed its first Data Editor: a PhD-trained astrophysicist whose role is to support and assist researchers with submissions of data and graphics, curate and standardize data for improved reuse and long-term storage, and review and establish links to data centers. The role of the AAS Data Editor, which expanded to a journal staff of three full-time PhDs in 2023, has the expressed goals of increasing data sharing and improving the overall published results. How this role is engaged and achieves these goals is an evolving and expanding story that is driven both by its origin and by rapid changes in the treatment of data and software in scholarly journal articles today.

August Muench (https://orcid.org/0000-0003-0666-6367) is Journals Data Editor, American Astronomical Society.

https://doi.org/10.36591/SE-D-4601-04

Categories and Growth of Data Editing

The types of data products curated by AAS Data Editors and the corresponding curves of growth over the past 22 years are graphed in Figure 1. For the purposes of explaining the editing that we do, I have simplified the different article elements into graph categories: "data" and "interactive graphics" and "data links". In practice, data comprise multiple ways of contextualizing data in an article. These elements include machine-readable tables or different types of "data behind a figure." Similarly, readers would experience interactive graphics in online AAS journal articles in various forms: a browsable atlas of related figures, animated figures streamed into the journal article, and HTML5/JavaScript-driven interactive figures. Finally, data links include dataset DOIs from, or data citations to, astronomy archives. This also includes data and software deposited into domain-specific archives or into generalist repositories as part of the review and publication process.

Data Review

For the first 17 yr, the data editors focused on the data products only after a manuscript's acceptance. However, many of the necessary curation tasks are ones only the authors can complete. A good example is enforcing compliance with the AAS Software Policy.[3] As our duties expanded, we asked the question: "Can we change data editing from a serialized process that begins only after a manuscript is accepted to a parallel one?"

In 2017, we implemented a data review of initial manuscript submissions; approximately 90% of all peer-reviewed manuscripts are given this initial data review, which is a considerable effort for the roughly 5200 articles published annually by the AAS. The AAS Data Editor review is included with the first peer-review report for the authors to consider and respond. This review has a large scope. Examples include asking for the data in a particular figure; suggesting data or software citations missing from an article; and informing authors of journal data and graphic requirements, including the need to create accessible captions for animated figures. This is also the prime time to solicit authors to move data that is too large or disconnected from the text, as well as their software artifacts, to persistent repositories. Authors are directed to our helpdesk if they

CONTINUED

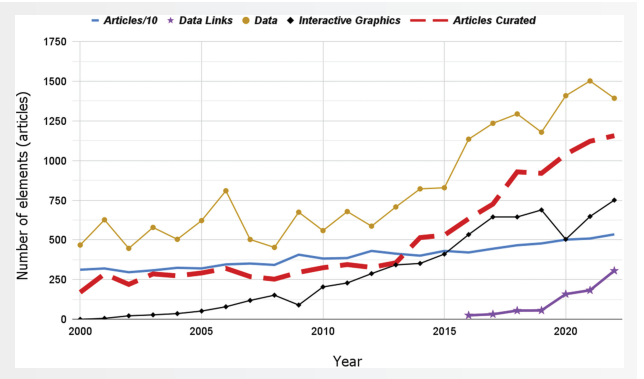


Figure 1. Growth rate of data, online graphics, and data links in American Astronomical Society journal articles. The number of individual elements published annually is compared to the growth rate of total articles (divided by 10, blue solid line) and articles curated by the Data Editors (red dashed line).

have questions or encounter problems implementing our data review requests.

The AAS journals, like many society journals in astronomy, have a very high acceptance rate (more than 85%); our primary editorial mission is to validate, improve, and preserve the astronomy literature. Thus, providing data review at submission leads to little or no wasted effort on rejected manuscripts. Some gains from adding the initial data review were extensive—examples include increasing software citations and improved compliance for descriptive captions of animated figures. Other efforts are rate-limited—we can't ask all authors to submit all data for all figures because we are not capable of curating it all.

Curation

Curation of data occurs after the manuscript has completed peer review and been accepted by the Science Editor. It involves a series of regulated processing steps by the Data Editors that have evolved little except as the domain boundaries of our journals have edged into new fields, such as planetary science. To start, all large tables are standardized, including column labels, units, descriptions, and references, to an ASCII format developed and shared by the Strasbourg Astronomical Data Center (CDS),[4,5] and is used for data in other astronomy journals.[6] Besides providing readers with regularized, curated content, adopting such a format allows information systems such as CDS/VizieR[7] to straightforwardly ingest and serve the calculations using the application programming interfaces (APIs) of the Virtual Observatory.[8] In addition to regularization, we check that author-supplied data adheres to the NASA/IPAC Extragalactic Database's best practices for data publication.[9]

Data-behind-the-figure can be submitted in tabular form (e.g., the data points in a scatter plot, or in several astronomy- or instrument-specific formats, such as FITS)[10] images and spectra. Again, the data are regularized by the editors, especially if the files supplied were headerless. These refined data files are bundled with documentation, which is provided as a template-based ReadMe file, into archive files that are then linked to the related figure's caption in the published article. Between 60%–70% of the manuscripts we work on have curated data in machine-readable tables or as data behind the figures.

Interactive Figures

Data Editors have important roles in the creation of interactive online graphics, beginning with making authors aware that they can provide their readers with something other than the static figures constrained to the PDF copy. The Data Editors build the LaTeX framework that is transformed into online flipbooks or atlas of related figures. We edit authors' animations of observational data, such as the 12-s cadence of multi-spectral images from the Solar Dynamics Observatory or of model and simulation data. Finally, Data Editors guide authors when building HTML5/JavaScript graphics. We give authors direction, edit their figures in Jupyter notebooks, and help to package and document the data that support such figures, which will out-live any technologies used to render the graphics on the Web. Authors have embraced the functionality, creating over 150 JavaScript graphics using technologies such as Bokeh, Plot.ly, and X3D.*

Repositories, Software, and Data Linking

A rapidly growing effort involves authors' use of generalist repositories for hosting data and software related to articles. Surprisingly, there are few domain-specific repositories in astronomy that accept prepublication datasets. This means authors end up using generalist repositories such as Zenodo[12] and Harvard Dataverse[13] if they do not or cannot submit the data to the journals. While these repositories can include rich metadata for deposits, the quality of that metadata depends on guidance and training, which for our authors, come from the Data Editors via data review, curation, and help desk inquiries.

For software, we have evolved from originally soliciting software code to be hosted in the journals in archive files to encouraging authors to provide openly licensed software on collaborative codebases, such as GitHub, and release versions of their code into persistent repositories (e.g., Zenodo). In addition to directing authors to undertake these steps and checking the resulting deposit metadata, the Data Editors also ensure that the software is correctly cited in the final manuscript.

Finally, the AAS has spearheaded efforts to link to important, related data sets in federally funded data repositories, such as the Barbara A. Mikulski Archive for

CONTINUED

Space Telescopes (MAST).[14] Built into our submission system is a prompt for authors asking if they've used data from MAST or IPAC at Caltech.[15] The prompt directs them to find and insert (or cite) the corresponding datasets by their digital object identifiers (DOIs). Data Editors use the authors' responses to these submission prompts to provide additional instruction via initial data review.

Challenges and Future Directions

Two major challenges face the AAS Data Editors. One is how to raise our curation rate to cover a much larger fraction of the literature. In Figure 1, an inflection point in the growth rate of curated articles occurred in 2014, which was when I was hired as the second AAS Data Editor. Even with a third Data Editor starting in 2023, reaching higher will be a challenge. It may be that many of the tasks for data review can be automated using tools for entity extraction or identifying deficiencies in open data and code. This would be akin to the automated peer-review steps in the ScreenIT pipeline for COVID-19 preprints.[16,17] The second major challenge is one of repositories. Data submitted without curation to generalist repositories are of limited value and may be missing critical details, for example, units, which are necessary for either human or machine reuse. Funder mandates to expand the amount of openly accessible data and software could exacerbate this problem unless the Data Editors can keep up.

The future of our data editing almost certainly lies in embracing fully reproducible research. Efforts coming out of astronomy such as "showyourwork!"[18] point directly at articles bound together with the data and software artifacts into complete, compilable results. This future is also apparent in the genesis of Data Editors in fields such as economics,[19,20] ecology, evolution, and behavior research,[21,22] and evolutionary biology,[23] which are focused on the replication of results. Spinning up computing resources to validate such packages may pose a future challenge.

Journals that want to include data editing have many options. Initial data review, which we found to have enormous benefits, could be done by soliciting volunteer data reviewers to perform these tasks quickly at the start of a submission. Developing new author guidance on data and software can follow the recent work of other journals; examples include the guidance developed by the American Geophysical Union[24] or the Data and Code Availability Standard.[25] While our AAS curation tasks seem in-depth, reviewing the metadata and contents of the deposits made by authors to repositories is a simple way to ensure that reusable and good quality data and code are being linked to your final articles. Partnering with repositories, such as Dryad, is another way to add deposit curation at a high-level or even domain-specific depth.

*The full set of ~8000 online graphics can be browsed using the AAS Astronomy Image Explorer.[11]

References and Links

1. https://journals.aas.org/
2. Kennicutt RC Jr. Editorial: electronic supplemental materials for the Astrophysical Journal. Astrophys J. 2001;557:1. https://doi.org/10.1086/323678
3. Vishniac ET, Lintott C. Editorial: the AAS journals corridor for instrumentation, software, laboratory astrophysics, and data. Astronomical J. 2016;151:21. https://doi.org/10.3847/0004-6256/151/2/21
4. https://cds.u-strasbg.fr/
5. Ochsenbein F. Standard for astronomical catalogues and tables, version 2.0. http://vizier.u-strasbg.fr/doc/catstd.htx
6. Brouty M, Woelfel F, Bruneau C, Brunet C, Claude H, Dubois P, Eisele A, Genova F, Lesteven S, Neuville N, et al. Information scientists: between editors and data centers. 2010;433:195. https://ui.adsabs.harvard.edu/abs/2010ASPC..433..195B
7. https://vizier.cds.unistra.fr/
8. https://ivoa.net/
9. Chen TX, Schmitz M, Mazzarella JM, Wu X, van Eyken JC, Accomazzi A, Akeson RL, Allen M, Beaton R, Berriman GB, et al. Best practices for data publication in the astronomical literature. Astrophys J Suppl Ser. 2022;260:5. https://doi.org/10.3847/1538-4365/ac6268
10. https://fits.gsfc.nasa.gov/
11. https://www.astroexplorer.org/
12. https://zenodo.org/communities/aas
13. https://dataverse.harvard.edu/dataverse/aas
14. https://archive.stsci.edu/publishing/doi
15. https://www.ipac.caltech.edu/dois
16. Schulz R, Barnett A, Bernard R, Brown NJL, Byrne JA, Eckmann P, Gazda MA, Kilicoglu H, Prager EM, Salholz-Hillel M, et al. Is the future of peer review automated? BMC Res Notes. 2022;15:203. https://doi.org/10.1186/s13104-022-06080-6
17. Weissgerber T, Riedel N, Kilicoglu H, et al. Lessons learned from automated screening of COVID-19 preprints. Eur J Public Health. 2022;32(Supplement_3). https://doi.org/10.1093/eurpub/ckac129.127
18. https://show-your.work/en/latest/
19. Duflo E, Hoynes H. Report of the search committee to appoint a data editor for the AEA. AEA Papers Proceed. 2018;108:745. https://doi.org/10.1257/pandp.108.745
20. Vilhuber L. Report by the AEA data editor. AEA Papers Proceed. 2022;112:813–823. https://doi.org/10.1257/pandp.112.813
21. http://comments.amnat.org/2021/12/guidelines-for-archiving-code-with-data.html
22. http://comments.amnat.org/2020/10/data-archiving.html
23. https://jevbio.net/data-editor-position-available-at-the-journal-of-evolutionary-biology/
24. Fox P, Erdmann C, Stall S, Griffies SM, Beal LM, Pinardi N, Hanson B, Friedrichs MAM, Feakins S, Bracco A, et al. Data and software sharing guidance for authors submitting to AGU journals. Zenodo. https://doi.org/10.5281/zenodo.5124741
25. Koren M, Connolly M, Lull J, Vilhuber L. Data and code availability standard. Zenodo. https://doi.org/10.5281/zenodo.7436134

The Scientific Editor: An Advocate for Transparent Research

Jenna Jakubisin and Kristin S Inman

If you were to ask a room of editors how they landed a career in scholarly publishing, you might hear a common theme: "I fell into it." Whether by serendipity or design, a career in this field offers opportunities to do meaningful work, acquire new knowledge, and nurture a fondness of the written word. But at the same time, it's a vast and constantly evolving ecosystem. What new or emerging opportunities exist? Scientific editing, for one! Specifics will vary depending on the journal, but in general the scientific (also called science or technical) editor's role is to work with the handling editors to facilitate the publication of high-quality, highly citable manuscripts that are clear, consistent, and transparent. In this article, Jenna Jakubisin and Kristin Inman discuss scientific editing at their respective publications, highlighting its tremendous value to both authors and journals.

Instituting a Scientific Editor Position: How Does Scientific Editing Benefit Journals?

Radiology[1] is the flagship journal of the Radiological Society of North America (RSNA), published regularly in-house since 1923. In a typical year, we receive about 3000 submissions. The scientific editor position was created in 2017, an effort spearheaded by the journal's editor and approved by RSNA's board of directors. The initial goals were simple but ambitious:

- **Goal 1: Support the journal's deputy editors.** Technical edits had previously been performed by deputy editors (our busy subject matter experts). The use of a Scientific Editor allows them to focus on scientific content rather than language editing.
- **Goal 2: Help improve the language and reporting of science.** At *Radiology*, we think of the scientific editor as the author's advocate. The scientific editor helps authors to better communicate the meaning of their research. This includes translating complex science to clinical practice and summarizing for various audiences, including policymakers, regulators, and readers outside the field. Furthermore, a close read at an early stage may help prevent major issues that could delay publication or result in an erratum down the line.

The scientific editor role at RSNA has since expanded. In 2019, we hired a Scientific Editor: Subspecialty Journals. In 2022, we added a second Scientific Editor for *Radiology*. Table 1 provides a broad overview of scientific editing and compares it with what is commonly covered by other roles at a journal or publisher.

What Does the Scientific Editor Role Offer the Author?

Environmental Health Perspectives (*EHP*),[3] a diamond open-access journal, has long included a scientific editor review for manuscripts considered for publication to ensure consistency of reporting, transparency of methods, and adherence to journal guidelines and standards. Whereas the peer reviewers focus on, among other things, the quality of the science and the impact of the work, *EHP*'s scientific editors evaluate the *manuscript* and how it is written, with consideration for how accessible the content of the paper is—from the description of the scientific rationale that motivated the study to the complete reporting of methods in a reproducible manner to thorough and clear reporting of results. In addition to journal-specific formatting, we review the paper for any issues that may have a significant influence on the ability for the science to make a meaningful impact in the field. Table 2 provides examples of questions the Science Editor considers for each section of a manuscript.

What Are the Challenges of Including a Scientific Editor in the Publication Process?

One challenge of the scientific editor role is that it straddles two different functions: peer review (pre-acceptance) and editorial (post-acceptance). Scientific editing typically takes place before the manuscript is accepted and may involve collaboration with editorial board members (e.g., deputy or associate editors) and authors. To help ensure consistency throughout the publishing process, *Radiology*'s scientific

Jenna Jakubisin (https://orcid.org/0000-0002-5203-1461) is Managing Editor, *Radiology*, and Kristin S Inman, PhD, ELS, is Science Editor, *Environmental Health Perspectives*.

Opinions expressed are those of the authors and do not necessarily reflect the opinions or policies of the Council of Science Editors or the Editorial Board of Science Editor.

https://doi.org/10.36591/SE-D-4601-05

CONTINUED

Table 1. Comparison of scientific editing with other common editing roles

	Handling Editor*	Peer Reviewer	Scientific Editor†	Manuscript Editor or Copy Editor
Stage in publishing process	New submission or revision; pre–peer review	Peer review	Peer review (likely to be accepted)	After acceptance, before page proofs
Role	Evaluates the impact and quality of the science, and whether it is within the scope of the journal	Per ICMJE, provides an unbiased, independent, critical assessment of the manuscript[2]	Author advocate; improves language and communication of the science; helps authors ensure compliance with journal guidelines	Reader advocate; liaises with authors and journal staff; may serve as "project manager" responsible for quality assurance and on-time publication
Scope of edit	Big-picture view; usually decides whether a manuscript is rejected or sent for peer review	Big-picture view as well as a critical review of the methods, reporting, and interpretations; includes comments to author with guidance, examples, and recommendations for improvement; may include requests for additional experiments or a recommendation to the editor to reject	Big-picture view; critical analysis; includes comments to author with guidance, examples, and recommendations for improvement	Line-by-line edit to prep document for publication; revises language for usage, flow, and clarity; eliminates biased language and jargon; responsible for figures, tables, supplemental material, and article metadata
Areas of focus	Scope; impact and novelty of work; clarity of presentation‡	Impact and novelty of the work; scientific rigor; clear and transparent presentation; correct study design to answer study question; appropriate interpretation of findings; adequate citation of relevant publications	Adherence to word count; appropriate title; correct overall structure, statistical test information, and data presentation; methodological transparency; clear and consistent reporting; compliance with ICMJE guidelines	Consistent terminology and presentation of data; person-first language; table formatting; accurate funding information, conflict of interest disclosures, and reference numbering; correct grammar and syntax
Goal	Ensure quality of the science and appro-priateness of the article for the journal	Ensure scientific quality	Ensure high editorial quality	Ensure high editorial quality

Abbreviation: ICMJE, International Committee of Medical Journal Editors.
*Describes the role of the Scientific Editor at *Radiology* and *Environmental Health Perspectives*.
†Handling Editor may refer to Deputy Editors, Associate Editors, and in some cases Editors-in-Chief.
‡Although Handling Editors do not focus on the writing, poor writing quality can preclude peer review.
Source: modified from https://pubs.rsna.org/page/radiology/blog/2022/4/ryblog_04202022

CONTINUED

Table 2. Science Editor (SE) considerations.

Paper Section	Items the SE Reviews
Abstract	• Are the methods, results, and conclusions in the abstract representative of the entire paper? • Are the conclusions presented in a way that are not likely to be misinterpreted?
Introduction	• Are statements describing scientific knowledge appropriately phrased and properly attributed? • Does the introduction provide a scientific rationale and objectives?
Methods	• Are materials and methods described in enough detail to ensure transparency and facilitate repeatability?
Results	• Do the results reported in the text match what is shown in the figures and tables? • Are results fully reported (e.g., not cherry picked)? • Do the authors provide the summary data for figures, as appropriate?
Discussion	• Are the conclusions appropriate for the findings described in the study (e.g., not overinterpreted)? • Do the authors discuss the conclusions in the context of relevant studies? • Do the authors address the limitations of their study?

editors, manuscript editors, and proofreaders use the same resources (e.g., the *AMA Manual of Style*, Stedman's Medical Dictionary, in-house style manual). *Radiology* also developed a proprietary Scientific Style Guide[4] as an author resource. *EHP* science editors hold weekly meetings with the editor-in-chief and deputy editors, as well as quarterly meetings with our associate editors to discuss manuscripts and ensure we are providing a consistent voice to the author.

Another challenge is the need to balance quality and timeliness. Scientific editing inserts another step in an already long process. Authors may become frustrated (and rightfully so) with the time it takes to perform a quality review and make additional revisions. They may also question the need for a scientific editor if the manuscript is being peer reviewed. At *EHP* and *Radiology*, we acknowledge that our peer reviewers are volunteers, and that the thoroughness of peer review can vary depending on the manuscript, the reviewer's experience, and even the time of year. The scientific editor review ensures a level of consistency among manuscripts with respect to clarity, consistency, accessibility, and transparency of reporting.

What Qualities Make for a Successful Scientific Editor?

Ideally, a scientific editor will have a Master's or PhD degree in a scientific discipline, or a solid understanding of the scientific method and statistics. A scientific editor needs excellent communication skills, the ability to think critically and to problem solve independently, a keen attention to detail, and a track record of meeting deadlines. Finally, true of any career in scholarly publishing, an abundance of patience and a sense of humor will go a long way!

Conclusion

The clear communication of science is more important than ever.[5] The scientific editor plays an important role in the life cycle of a manuscript by helping to ensure the study findings can be replicated by the scientific community. Furthermore, by making information accessible and understandable to a broad audience, the scientific editor contributes to an article's discoverability and impact.

References and Links

1. https://pubs.rsna.org/journal/radiology
2. https://www.icmje.org/recommendations/browse/roles-and-responsibilities/responsibilities-in-the-submission-and-peer-peview-process.html
3. https://ehp.niehs.nih.gov/
4. https://pubs.rsna.org/page/radiology/author-instructions/scientificediting
5. https://www.ahajournals.org/doi/10.1161/CIRCOUTCOMES.121.008735

Kathy Stern: Graphic Arts Director for the *New England Journal of Medicine*

Elizabeth Bales

Kathy Stern, the Graphic Arts Director at the *New England Journal of Medicine* (NEJM), is familiar with the adage "A picture is worth a thousand words." Over her 29-year career with NEJM, Kathy has drawn and overseen countless images telling myriad stories and has thus contributed millions of "words" to the information shared with NEJM readers. Images range from in-house illustrations drawn by medical illustrators, to line art graphs, photographs submitted by physician-authors, still images captured from videos created in-house, interactive online elements, and more. In this interview, Kathy discusses how she started in the production department back in the days of paste-up layout and now oversees a department of more than 20 employees working with state-of-the-art digital tools.

Science Editor: How did you get started with your career at the *New England Journal of Medicine* (NEJM)?

Kathy Stern: I started out working in a production facility that wasn't even part of the editorial office. We communicated with a production coordinator in Boston (where the NEJM editorial offices are located) who worked directly with the editors. NEJM was one of several products that the production facility of the Massachusetts Medical Society served, but it was, by far, the biggest product.

It was a massive amount of detail work. Everything was done with manual layout with precision cutting knives, acetate, and wax. We would create 14 different proofs that went out to 14 different people. Our main focus was the level of detail; everything had to be exactly right. If you found an italic period, you fixed it; you'd redo the entire page because of an italic period.

We moved things half a point if the editorial office said to. Every preposition, every punctuation mark, every half point had to be the way the editors said. Back then, we didn't query the editors directly. We queried a coordinator, who filtered the queries to the manuscript editors, who then filtered the queries to the deputy editors. We spent a lot of time doing multiple quality assurance passes. In addition, we didn't have in-house graphics; we published illustrations that had been supplied by authors (Figure 1, available online)[1] rather than drawing them ourselves.

SE: Now, you're in charge of all the graphic arts at NEJM. You've come from doing the tiny little details and the italic periods to working on a much larger scale. What has this shift been like?

Stern: Essentially, we still do worry about the italic periods and the tiny details. I first moved to the editorial office kind of as a fluke. Before I came to NEJM, I had worked as an illustrator and graphic designer for 12 years in architecture and ad agencies and decided that really wasn't the field that I wanted to be in (especially ad agencies!).

In fact, I had decided to go to medical school and was taking night classes in the Harvard Extension School pre-med program. I noticed a job advertisement for being a proofreader at NEJM, which I thought would be a great way to make money to support my attempt to go to medical school.

I was working at NEJM because I was interested in medicine—not because I was interested in italic periods—but one day, someone needed a birthday card for one of the editors, and they asked the people at "comp," as they used to call us (for "compositors"), to make the card. I was an illustrator, so I drew it, and the people in the editorial office really liked it. It was a picture of a pink Cadillac driving away into the distance, kind of retro.

The next thing I knew, the editor-in-chief called me, saying, "I have a job for you." He wanted me to illustrate a B-cell for an article about HIV, which was a huge issue in the early 1990s. I did the illustration with a very rudimentary version of Adobe Illustrator. It was a circle with a gradient and a square; the receptors were basically all squares and circles. Even doing gradient shading was a big deal. With this tool, I couldn't see what I was drawing; I had to move things around, click a button, and wait to see it render. It was a laborious process to create a simple drawing. But the editors liked it, and they asked me to do another one. Finally, I drew quite an elaborate version of a DNA molecule (Figure 2).[2]

Elizabeth Bales is a Senior Manuscript Editor, *New England Journal of Medicine*, and Copyeditor, Science Editor.

https://doi.org/10.36591/SE-D-4601-06

CONTINUED

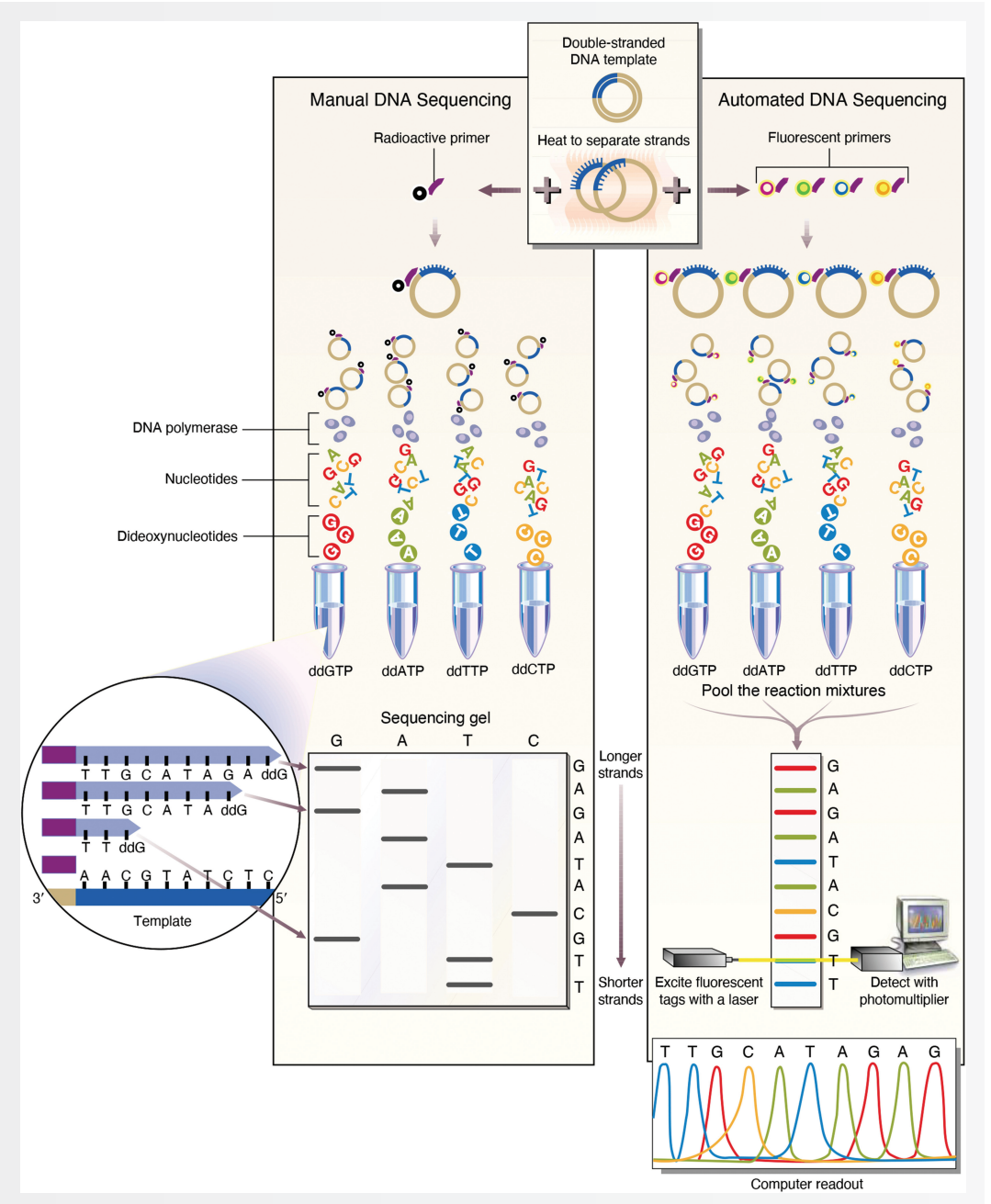


Figure 2. Early medical illustration drawn in-house (1995). This early in-house–created illustration showing how DNA is sequenced appeared in an NEJM Molecular Medicine article by Rosenthal.

Those drawings look rudimentary now—you could probably get a computer to make one if you pressed a button. Back then, it took days and days and days to draw this molecule. Fortunately, the editor-in-chief loved that molecule, and I was asked to join the editorial office. My medical background at that time consisted of those pre-med courses—nothing like the usual medical illustrator training.

There were no other graphic artists or illustrators in the editorial office. I had a tiny office, like a broom closet, with a desk and a computer. I spent a lot of time in the Harvard Medical School Countway Library (the building that houses NEJM), down in the stacks looking at anatomical references and other journals. It was important to be in the library and working directly with the editors. Every time there was a medical illustration, which was rare, the editors conferred

CONTINUED

with me. They would set up a special meeting and describe what the illustration was about, and I'd give them paper drafts. It was such a different process from today. With the digital tools that are available now, we can create quite sophisticated illustrations (Figure 3, available online).[3]

SE: How many people do you currently oversee in your department?

Stern: We have 15 full-time employees, plus about 6 part-time employees, mostly working on videos. The changes have been dramatic. Not only did we become totally involved in the editorial process, but as the need for illustrations grew, we were the only production team involved in the developmental aspect of creating content. In the past, we always did it before the article was accepted. Once the article was accepted, my job became like a production job.

The website started being developed around the same time that we started having regular medical illustrations, so the illustrators became involved in the technical part of making images for print, which was a different process from preparing images for the Web. The department grew on both ends. I hired medical illustrators as soon as I could, as well as people on the technical side for production.

I understood print production really well but not Web production. Once we started learning how to handle Web production, it exploded from there, because once we got online, we started getting involved in multimedia. Multimedia meant the involvement of even more people in both development and production.

If we were still just doing print medical illustrations, we would absolutely still employ several accomplished medical illustrators who understand medicine. I hired these people because I was a graphic designer, an illustrator, but not a person with a strong medical background. When I started doing medical illustrations, I realized that it was a lot more fun and a lot easier than going to medical school <laugh>. I continued taking night classes in topics like molecular biology, but I wasn't worried about getting into medical school.

SE: What types of graphics and multimedia are you managing, handling, and developing?

Stern: The graphic arts department handles two kinds of graphics: in-house illustrations are developed in conjunction with authors and the deputy editors, and the other graphics type involves redoing submitted material, typically black and white line art. Line art is also in color now, so "line art" is a kind of a misnomer, but that's what we call it. There was a completely different technical process for line art than for color illustrations.

When we had paper layout that went to the printer, the printer would send back elaborate proofs, and we would have what seemed like 5000 review stages. But when we got to desktop publishing, the whole process changed. It became easier to integrate color illustration. In the old days, we had to know exactly which pages included color images. We weighed all the information in advance and pasted up the pages in an elaborate way. The printer made four-color plates, and it was expensive and time-consuming. These days, you can make a four-color plate by pressing a button, so we put color on practically everything.

NEJM gets new editors-in-chief fairly seldom. When we do, in my experience, having been here nearly 30 years, each new editor has ideas for updating the journal. When I started, the editor wanted to spearhead a print redesign, but it was also the beginning of the website. As the Graphic Arts Director, I would sit in on meetings, and designers would come in and say, "Let's have more color pages, let's have more drawings, let's create something that's more visually appealing than the old, very simple way of medical and academic journals." Well, academic journals aren't really *Vogue* magazine! We were working within the constraints of inexpensive web presses, but the designers wanted to create something more appealing. That's one reason we started using more color.

The other reason is that we started recreating author-submitted graphics to match our specifications. We never touch the data, but we change typefaces and make the font a size that looks good in print, so the graphics become more consistent. Starting in the 1990s, authors began sending in videos and screenshots of the medical imaging they saw on their computer.

There was more discussion of how we could show other kinds of medical imagery. We had to start creating graphics that could be viewed online. The Web is much more visual than print. We needed lots of previews, little thumbnails for every element. This process changed how graphic NEJM was.

As the Web grew in popularity and medical technology became more digitized, it became important to represent technologies such as ultrasonography online. We started doing rudimentary video editing to show author-submitted medical images online.

For Videos in Clinical Medicine,[4] we work with groups of authors who create videos specifically for us. So, we had to learn video technology and captioning technology.

Several years ago, the editor-in-chief introduced the idea of publishing video summaries of research articles. These "Quick Take" videos[5] became quite popular and involved a lot of video-creation technology.

Some multimedia elements are hard to use on cellphones. But it's pretty much a story of technology in medicine, in publishing, and in social media—and in life. So much is conditioned by what people are using and by what clinicians are using. Since our audience is primarily clinicians, we stick to what they use. At this point, everyone uses cell phones and handheld devices.

For the full interview, visit this article at https://www.csescienceeditor.org/article/kathy-stern-graphic-artsdirector-for-the-new-england-journal-of-medicine/

Eric Pesanelli: Utilizing Tools and Resources to Ensure Image Integrity in Scholarly Publishing

Anna Jester

Graphic arts cover an ever-expanding range of options, and those who major in it in college might expect their job titles to be graphic designer or perhaps professor of graphic design. The field plays an intriguing role in scholarly publishing, and ideally the results display information effectively and meaningfully to readers. As Publisher, Art at the American Physiological Society (APS), Eric Pesanelli is responsible for the production and quality control of all artwork published in APS journals, from developing policy and procedures for journal artwork production to supervising art department staff and independent contract artists and managing the process for addressing image integrity.

Science Editor's Anna Jester recently spoke with Eric about how he came to his position at APS and how he approaches his role in ensuring image quality and integrity.

Science Editor: Please tell us about your job and whether your position historically existed at your organization.

Eric Pesanelli: I am not the first to be in this position, and titles evolve over time, but I am the first person with this job title at my organization who has had to address image integrity as a major component of the department's responsibilities. Previously, as the Editorial Art Manager for APS, I was managing production art editing for all the APS journals. Neither myself nor my staff have any scientific training beyond a few college level courses—we are all graphic arts majors. We do understand how images and graphics are created and published and began seeing and questioning irregularities in how figures were being created. We decided to go to the then Director of Publications, Margaret Reich, and then Executive Director of APS, Dr. Martin Frank, and inform them of the issues we were finding. This was around that time articles were being published about figure manipulation, as well other ethical issues in scientific publishing. APS decided to hold an internal Ethics Summit in late 2008. All the Editors-in-chief, Publication Committee members, and Publications staff came together to discuss all aspects of ethics in APS publications. As a result of the summit, the proactive review of all accepted figures for potential image manipulation was instituted and became a key function of the art department. It remains job one. In early 2009, APS also created an Ethics Manager position, to be held by someone with a PhD in physiology to provide in-house expertise. The art department and editorial staff could now bounce things off the Ethics Manager and get immediate feedback. Prior to having an Ethics Manager, there was more corresponding between the Director of Publications, the journal editors, etc., so this streamlined the process.

SE: What do you like best about your job?

Pesanelli: I like the problem solving aspect of it. That is certainly what has kept the job interesting all these years. Digital image quality was always the first problem we were looking to solve. Having an in-house team of Production Art Editors allows for a great deal of collaboration with authors and among ourselves. Even though we are not physically in the office anymore, we still collaborate via Zoom and chat

Anna Jester (https://orcid.org/0000-0002-8543-0311), Vice President of Sales & Marketing, eJournalPress.

https://doi.org/10.36591/SE-D-4601-07

CONTINUED

programs. There is a level of satisfaction that comes from working with an author and helping them create the best possible images for their publication. Receiving appreciation in return from authors is a nice payoff for all the work that it takes. When image integrity became part of our workflow it added a whole level of detective work to what we were already doing with images.

I also enjoy being part of the Council of Science Editors (CSE) Publication Ethics pre-conference course that has been offered for the last several years. Showing fellow publishers what I do and how I do it has been very rewarding. Being able to provide insight to those who are considering adding the figure review process to their workflow is satisfying. Looking at the audience and knowing people are interested and paying attention, and hearing their thanks, has been a rewarding aspect of my career.

SE: Thank you very much for not only speaking as part of those course faculties, but for sharing beneficial knowledge with others. What are the most challenging aspects of your job?

Pesanelli: One of the main challenges is technology constantly evolving. We use much of the same software that authors have available to them. Applications like Photoshop are constantly improving and adding features that make image alteration easier and better. A good portion of figure manipulation does not include an intent to deceive. Without that intent, a lot of image manipulation is easy to identify. Sometimes authors take the tools available in software programs too far, and since tools just keep getting better, it makes identifying problems more difficult. Now we have AI [artificial intelligence] that can create text and images, and I find that worrisome.

Another significant challenge is that image integrity screening takes time and effort. There is not a separate department that looks at images for integrity, so our Production Art Editors are handling this on top of all the other tasks to get images ready for publication. Doing both of those tasks included a learning curve that slowed down production until we were comfortable with the workflow, the tools, and documenting findings.

SE: Have you presented training similar to the short courses for your internal staff or as people come on board?

Pesanelli: I used much of my content covered in the CSE short course to train an incoming staff member who moved from part-time contractor to full-time figure editing. He previously worked for a large print service provider and had some background knowledge, but not in the tools that we use and the issues we look for.

If you want to start a program training people to detect image manipulation, it is important to stress the need for problem solving skills, and the ability to see the big picture involving workflows. Much needs to be in place before you even get to the point of reviewing figures. Understanding of the types of images your authors submit and their potential problem areas is crucial. Are there common areas of concern with photographic elements and screen captures in the discipline? You need to decide when you are going to look and who will do the screening. Screeners need a strong knowledge of industry-standard applications, especially Adobe Photoshop. To root out image manipulation, you often need to be able to look beyond the obvious in an image, and tools such as those provided by the Office of Research Integrity are a big help in doing that. Understand that the more you look, the more you will find.

Computers can find what the human eye cannot, and the human eye tends to find what the computers cannot. Seeing patterns may come more naturally to someone with an art background, but that doesn't mean somebody who doesn't have an art background can't be helped immensely by the tools and applications that are out there now for detection of figure manipulation.

SE: What has been the biggest surprise to you about your job, organization, or something else related to the industry?

Pesanelli: I didn't have "Work from Home Full-Time" on my bingo card. I knew for years that a lot of roles in our publications department could be done from home. Wasn't sure I wanted to, but here I am. I still miss being at the office and being around people, and it is hard to believe it has been nearly 3 years already. We still have a physical office and will have quarterly full staff in-house meetings, but it is very different than in years past when you could poke your head inside someone's office and ask a question or just chat. You can do that virtually, too, but you hear less about their personal lives outside of work. The commute, however, is not something I miss.

SE: Do you have any predictions for the future you are willing to share?

Pesanelli: Some art department tasks may eventually be automated by AI in the future, but neither humans nor AI can catch everything. Our image review program at APS has also been one of education for staff, our Ed Boards, and our authors. We defined policies and published them in our instructions for authors, but it has been a learning experience for journal staff and our authors. When we started looking, we encountered many cases where we pulled the articles out of production and sent it to the Ethics Manager for resolution. The majority were what we call "presentation errors" and not an attempt to deceive. Still, the time and effort to resolve hundreds of instances the first year of the program had a big

(Continued on p. 44)

Copyediting in 2023: What Has Changed?

Jessica LaPointe

In the long-ago days of 2017, I wrote an article for *Science Editor* on the hiring and training of copy editors.[1] Since then, we've experienced a global pandemic, economic upheaval, and political and social changes that have affected every facet of society. Those of us in scholarly publishing have not been immune to these currents in the zeitgeist, and we have seen our jobs change dramatically as well. In this article, I cover 4 major changes that have characterized my experience managing copy editors over the past 6 years: 1) the rise of remote work, 2) using freelancers, 3) reliance on outsourcing, and 4) increased expectations for authors.

Rise of Remote Work

One of the advantages of science publishing is the fact that it largely can be done as effectively from home as in the office. Working from home is not a new concept—it has long existed for certain roles in some organizations—but it has increased notably over the past 6 years, accelerated by changes caused by the COVID pandemic.[2] Remote work has been shown to have substantial benefits, including allowing workers more autonomy and the ability to manage their time in a way that's best for them, which contributes to higher staff morale.[3] Some folks are night owls while some are morning larks, but the traditional 9 to 5 workday doesn't allow for such personal variations. In the absence of a long morning commute, a lark like me can start the workday by 7:00am, when I am most alert and ready to tackle the day. While working from home, night owls don't need to force themselves out of bed and into the workplace while they are still in a state of fuzzy-headed sleepiness. There are standard working hours we are expected to be available, but remote work allows for a much greater degree of flexibility.

Even prior to 2017, my copyediting team was able to work from home a day or two per week. Thus, we were well suited to moving to a full-time remote work model. Like many others in our industry, in March of 2020 we were advised by our managers to work from home until further notice. This period extended to 6 months, then a year, and finally it was decided that we may work remotely permanently. The desks in our former office have been converted to "floating" desks for staff who choose to work in the office occasionally as needed. Though not unwelcome, this was a major change that still involves a sense of loss. I miss sharing homemade cookies and chatting with my coworkers in person, but the benefits of working from home cannot be overstated.

While we copy editors are generally happy to move to a permanent remote-work model, this transition is not universally popular. Traditionalists have argued that requiring staff to work in the office promoted creativity and employee engagement, improved team cohesion and sense of belonging, and above all, increased productivity.[4] Not all those claims are supported by solid evidence, however,[5] and any potential benefits of working in the office would have to be weighed against its drawbacks, which skyrocketed during COVID. The ordinary daily stressors of long commutes and uncomfortable professional attire were dwarfed by the threat of severe, potentially chronic, illness and death. Increased flexibility of work requirements, along with the use of communication apps like Slack and Zoom, allows us to protect our health and the health of our loved ones while simultaneously staying in touch with our coworkers. In maintaining productivity and staff morale, this change has been a win-win.

Using Freelancers

Costs are an increasingly pressing consideration, and full-time in house staff are tremendously valuable, yet comparatively expensive. Freelance copy editors can be found through publishing-specific websites, like ACES,[6] as well as general-purpose gig work sites like Upwork.com and Fiverr, but identifying qualified copy editors that best fit your needs can be a challenge. And finding them is only the beginning. Then there is the training period, which can be extremely time-consuming. For the process to be cost-effective, it is necessary to get a freelancer up to speed with a minimum of time spent in training. As we know, it can take a significant amount of time to develop proficiency in the unique and varied terms and practices that are common in the field, whether medical or other scientific publishing.

Jessica LaPointe (https://orcid.org/0000-0002-2655-3776) is Managing Copy Editor, American Meteorological Society.

https://doi.org/10.36591/SE-D-4601-08

CONTINUED

In the past year, I have started to rely on freelance copy editors to help stay on top of the never-ending influx of submitted manuscripts. Fortunately, I was able to recruit a couple of talented copy editors I have previously worked with, and they were able to pick up the house style and get started fairly quickly. Nevertheless, unless your freelancers are working exclusively on your journals, you have to compete for their time with their full-time job, which naturally takes precedence. I've been lucky to work with freelancers who are experienced copy editors, but they are also busy people, so I've had to adjust my expectations of how much freelance work they are able to do. Using freelancers also involves a level of administrative support that differs from full-time in-house staff: hourly rates need to be negotiated and contracts signed, expectations must be clearly conveyed (ideally in writing), and productivity needs to be continually monitored.

The best relationships between publishers and freelancers are characterized by mutual respect and trust. Freelance work should be deployed where it can fulfill the needs of the organization and also provide the benefit of a flexible income stream to the freelancer.

Relying on Outsourcing to Fill the Gaps

While the costs of publishing, along with everything else, have continued to rise, the amount of work continues also to increase. To balance these competing pressures, we need to find creative ways to tackle the incoming work with cost-effective means. Thus, it has become the norm to rely on checklists for style points that are deemed nonnegotiable while relaxing enforcement of other, less critical, elements. Long gone are the days of copy editors having the luxury of time to pore over a manuscript to carefully check spelling, correct punctuation, adjust grammar, and enforce formatting according to the style guide. Along with freelancing, we need to find other ways to keep up with the work efficiently. Automation and outsourcing have been adopted in scholarly publishing as in other industries. Standard operating procedures now include a large factor of trust: trust in automated processes and in the work of hired vendors.

Like many scholarly publishers, we rely on an outside vendor for composition and printing as well as pre-copyediting services. Using an experienced, qualified vendor can save time during copyediting and relieve copy editors of some of the more rote aspects of the work. Our vendor has teams based overseas that have been trained in our house style. They can apply basic formatting and enforce some general style rules using detailed instructions provided by the vendor. The abilities of such teams, especially if they are not proficient in English, can be limited, however, and it's wise to have reasonable expectations for their work. Making any edits based on contextual meaning is likely to be beyond their skill sets. But with clear and thorough guidance, such pre-copyediting teams can prepare a manuscript so copy editors can spend their time focusing on the more complicated and tricky aspects of editing.

For anything that can be reduced to a simple rule (for example, a variable that must always appear in italics), automated processes can do it faster and with less chance for inconsistencies than making the change manually. Working with a vendor's automated system or simply setting up macros in Word can reduce the amount of time copy editors have to spend making small, yet necessary, edits in manuscripts. With a single click of a button, paragraph styles can be applied and unwanted characters deleted.

Over the past few years, I have seen increased reliance on both automated systems and outsourcing, with somewhat mixed results. It has taken at least 3 years for the offshore teams to produce work that is sufficiently error-free to be more helpful than not. Continually providing them with feedback and helping to refine the instructions they need, not to mention the challenges of ongoing training caused by turnover, has meant we have spent a lot of time fixing errors that may not have otherwise occurred. However, after the initial investment of time and training, it has been a positive development and has allowed our copy editors to focus on the nuances of editing, both for language and style.

Further Expectations for Authors

It seems like every year there are more guidelines from advisory bodies (like COPE[7]), countries, and funding organizations that address topics like data citation and author contributions. Consequently, author guidelines have expanded, and authors are repeatedly pointed toward them during the submission and revision process. The aim is to provide authors with virtually all the resources they need to

- organize their papers and cover all the necessary sections (abstract, introduction, data and methods, discussion, etc.),
- avoid plagiarism and text recycling,
- give credit to all authors and contributors as appropriate,
- cite and format references properly,
- supply figure files in the appropriate file types, and
- provide detailed yet concise figure captions and table headings, among many other topics.

Ideally, authors have all the information at their fingertips to craft a paper into an article that needs minimal editing after peer review. In reality, authors have busy lives and numerous responsibilities, including, in many cases, serving as editorial board members on various journals. Thus, it is unrealistic and perhaps unfair to expect them to wade through the many interlinked web pages to find the information they need.

CONTINUED

Copy editors still need to leave thoughtful, specific queries for authors to answer when they receive the composed proofs of their article and can make minor edits and corrections. When querying, we provide authors with links to web pages that describe our policies and provide copious examples in the hopes that authors will avail themselves of the relevant information. This has helped minimize the need for copy editors to contact authors again at proof stage to clarify our requirements and request corrections. Nevertheless, authors do not always thoroughly read the pages, and copy editors are still tasked with prodding authors to supply, for example, the dates a dataset was last accessed.

Our web designers have done their best to make the instructions for authors web pages user-friendly, and authors have become more accustomed to our editorial expectations. Asking authors to shoulder more of the responsibility for complying with editorial policies, with copy editors available to provide additional support where needed, is a delicate balancing act. The goal is not to overburden authors unduly, while relying on them to be aware of their responsibilities so copy editors do not have to chase after them.

Final Thoughts

I have not needed to hire a new full-time copy editor in the past 6 years. No doubt the process would look very different from the one I described in my 2017 article. My existing team is composed of veteran copy editors I've worked with for many years, and we have an easy, effective working style born from experience. To hire and train a copy editor in 2023 would require even more reliance on apps like Slack, Microsoft Teams, and Zoom. Fortunately, I've now had plenty of time to get used to working entirely remotely, so I have a solid basis for hiring and training a copy editor remotely as well. The last few years have required copy editors to adapt to sea changes that have vastly and permanently altered our working lives. We now rely more on outside resources—freelancers, automated processes, and authors themselves—than ever before, and copyediting entails a greater level of trust in others. On balance, these changes have resulted in agile, interconnected teams that are well-positioned to thrive into the future, whatever it may bring.

References and Links

1. https://www.csescienceeditor.org/article/hiring-training-copy-editors-scholarly-publishing/
2. https://www.bls.gov/opub/mlr/2022/article/telework-during-the-covid-19-pandemic.htm
3. https://blog.avast.com/mobile-workforce-report
4. https://www.forbes.com/sites/glebtsipursky/2022/11/03/workers-are-less-productive-working-remotely-at-least-thats-what-their-bosses-think/?sh=d748cce286a5
5. https://www.nytimes.com/2021/06/23/upshot/remote-work-innovation-office.html?action=click&module=Well&pgtype=Homepage
6. https://aceseditors.org/
7. https://publicationethics.org/guidance/Guidelines

Editorial Fellowships: Acquainting Editorially Inclined Health Professionals and Scientists With the Workings of Journals

Madison Semro

Editorial fellowships are excellent opportunities to acquaint medical professionals and scientists with the world of academic publishing. By completing a fellowship, these scientists learn about manuscript evaluation and the behind-the-scenes of journal publication. In addition, "It's a great crash course in peer review," said Ashley Ketelhut,[1] Managing Editor of American Society of Clinical Oncology (ASCO) Publications.

Fellowship activities often include reviewing manuscripts, selecting peer reviewers, attending editorial meetings, and helping with other journal activities. Some fellowships allow fellows to flex their writing skills for the journal's more public-facing publications, and others allow fellows to help develop content for a journal's social media. Fellowships can be an excellent bridge to an editorial career at a journal, but the program can also greatly benefit the journals hosting them.

"The strength of our fellowship is really the strength of the candidates," said Angela Colmone,[2] Assistant Executive Director of Science and Communications at the Radiological Society of America (RSNA). "Candidates that apply for this fellowship are really truly interested in the editorial process and want to help our journals publish the best papers, and it's exciting to see that there's a continuous group of people interested in doing this and interested in working with the journals."

Fellowships offer journals an opportunity to train the next generation of journal editors—who can then return to their home institution and share what they've learned with their colleagues. Ketelhut calls it a "train-the-trainer model," as the journal staff trains the fellow who can then share what they have learned with colleagues at home.

Training of early-career scientists is not the only benefit a fellowship program can bring to a journal. Colmone added that many fellows "take the fellowship, experience it, and really step off and go into the editorial role." These fellows continue in academic publishing after their fellowship, either becoming associate or deputy editors at journals or joining a journal's editorial board.

Getting the opportunity to network with and be mentored by the current associate and deputy editors of a journal is one of the biggest benefits of pursuing an editorial fellowship. Many programs pair fellows with experienced editors who can show them how to review manuscripts and evaluate peer reviews. Plus, these editors are often experienced scholarly publishers as well. "Relationship building is probably one of the major benefits of [RSNA's] program," Colmone said. "[Fellows] have a number of real opportunities to meet people that they might not be able to meet at this level of their career."

Who that potential mentor is—and what their expertise is—is important to consider when choosing a fellowship program, Ketelhut noted. She recommends potential fellows search for fellowships in journals that match their interests and specialty so that they can maximize the experience. "We try to pair people up as best as we can to the right journal and the right mentor who has the right expertise," she said. "And if we are able to do that well and effectively, I really think they will get the most out of the program."

It is important for potential candidates to get involved in the peer-review process. Many fellowships look for candidates with such experience. "If you do not have previous editorial involvement, reach out to become a reviewer for the journals," Colmone advised. "It is a great way to get your foot in the door and really start to become involved and show interest in editorial work and really build yourself up to become a prime candidate."

Examples of Editorial Fellowships

From the American Psychological Association (APA) to the RSNA, many journal publishers offer fellowships (Supplemental Table, https://www.csescienceeditor.org/wp-content/uploads/2023/02/46-005-table.pdf). Below are some brief overviews of fellowship programs for researchers

Madison Semro is Associate Scientific Editor in the Research Medical Library, The University of Texas MD Anderson Cancer Center.

https://doi.org/10.36591/SE-D-4601-09

CONTINUED

and medical professionals interested in academic editing and publishing.

The APA offers editorial fellowships[3] at many of the association's journals. Candidates who are no more than 10–15 years postdoctoral are eligible to apply, although the qualification requirements vary slightly among journals. Plus, many journals reserve some fellowship spots for members of historically marginalized groups. Fellows complete editorial tasks such as screening manuscripts, selecting peer-reviewers, and making acceptance decisions under the guidance of a mentoring editor. Fellows become members of the editorial board upon successful completion of the fellowship, which lasts for 6–12 months at most APA journals.

ASCO Publications' editorial fellowship[4] teaches oncology fellows about peer review and the editorial process of medical journals. The year-long fellowship involves reviewing manuscripts, attending editors' meetings at the ASCO annual meeting, and completing a final project about the experience. Fellows must be less than 1 year out of an oncology fellowship or have completed a PhD in biostatistics less than 4 years prior and be in an oncology-related field. Previous experience publishing journal articles is preferred.

The American Society of Nephrology matches early career scientists or trainees with *Journal of the American Society of Nephrology* (*JASN*) editors in its 2-year editorial fellowship program.[5] Fellows learn about editorial processes and peer review by reading manuscripts, selecting reviewers, and evaluating peer reviews. The program was established in March 2019.

The editorial fellowship program[6] at *Blood* introduces late-stage fellows or early-career faculty members to medical publishing and editing. *Blood*'s program is year-long and introduces fellows to the editorial process of biomedical journals. Fellows are mentored by a *Blood* associate editor and review manuscripts and receive feedback from their mentor.

JAMA Network offers the Morris Fishbein Fellowship in Medical Editing.[7] This fellowship is 1 year long and introduces physicians to the world of editing. Activities of previous fellows[8] include reviewing and preparing journal manuscripts for publication, recording podcasts, and writing for The JAMA Patient Page. Fellows must hold an MD or DO degree, have completed residency training, and demonstrate writing proficiency. The fellowship is held at JAMA's downtown offices in Chicago.

The *New England Journal of Medicine* (*NEJM*) hosts several editorial fellows[9] who have typically just completed residency, though more experienced fellows and faculty are also welcome. Fellows learn about academic editing and publishing as they attend editorial meetings, write for the NEJM Image Challenge column, review and edit images, contribute to the *NEJM* Review article series, and more. Fellows also undertake projects for *NEJM* based on their own interests or major events in healthcare; examples of past projects include the NEJM Resident 360 website and the Curbside Consults podcast series. The yearlong fellowship is located at the *NEJM* offices in Boston.

Since 1998, RSNA has offered the Eyler Fellowship.[10] This fellowship is for mid-career radiologists who have at least 3 years of attending-level work at an academic institution. The month-long program introduces fellows to radiologic journalism, manuscript preparation and editing, peer review, journal production, and more. Fellow activities include traveling to Madison, WI, to work with the editor of *Radiology,* virtually visiting the editors of RSNA subspecialty journals, and attending editorial meetings during RSNA's annual meeting.

RSNA also offers the William W. Olmsted Editorial Fellowship for Trainees.[11] It is a week-long fellowship for trainees to introduce them to academic editing; fellows learn about peer review, manuscript editing, and digital publishing. The fellows visit RSNA offices to work with editors of RSNA journals, such as *Radiographics*, and attend RSNA editorial meetings during the RSNA annual meeting. To be eligible, one must be an RSNA member, be a resident or clinical fellow, and have published in peer-reviewed, scientific journals.

The Society for Cardiovascular Angiography & Intervention provides editorial training for in-training and early-career interventionists through its *JSCAI* Editorial Fellowship Program.[12] Fellows co-review 12 manuscripts alongside the *JSCAI*'s deputy and associate editors throughout the year-long fellowship. In addition, they attend editorial board meetings and present a report on what they learned throughout the experience.

References and Links

1. Interview, December 6, 2022.
2. Interview, December 14, 2022.
3. https://www.apa.org/pubs/journals/resources/call-editorial-fellowships
4. https://ascopubs.org/fellowship
5. https://journals.lww.com/JASN/Pages/editorialfellowshipteam.aspx
6. https://ashpublications.org/blood/pages/editorial_fellowship
7. https://jamanetwork.com/pages/fishbein-fellowship
8. https://www.csescienceeditor.org/article/jama-fishbein-fellowship-offers-deep-dive/
9. https://medschool.cuanschutz.edu/docs/librariesprovider60/education-docs/heartbeat-im-res/job-opportunities/nejm-fellowship-invitation-2023-2024.pdf?sfvrsn=1a089cba_0%20Olmsted%20Fellowship
10. https://www.rsna.org/journals/editorial-fellowships/eyler-fellowship
11. https://www.rsna.org/journals/editorial-fellowships/olmsted-fellowship
12. https://scai.org/jscai-editorial-fellowship-program

Diversity in the Publishing Workplace—What Can We Do To Make Systematic Changes at the Top?

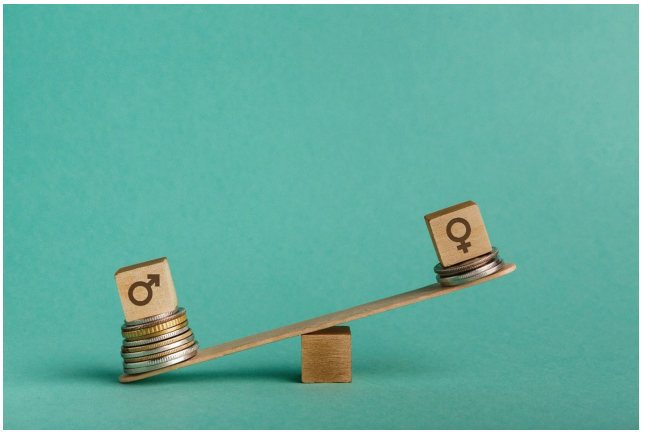
Morgan Sorenson

Workplaces around the world have been making a greater effort to better their hiring practices and increase diversity on their teams. While this is something that will continue to need work, we are all better off making each workplace a fair, respectful, and great place to work. To keep our great employees, we need to make sure they all have equal access to development opportunities and promotions. There is more that can be done to make sure that our equality and equity practices go beyond hiring and start to make a difference at the top levels.

Early types of publishing (i.e., newspapers, magazines, and pamphlets) in the United States began as a predominantly male profession, with female participation being illegal or hidden until the late nineteenth century.[1] With the rise of more publishing houses, more women joined the publishing industry, though they were kept to the low-paying jobs, since it was felt they could not handle the pressure of anything else. Women continued to join the publishing field throughout the years, but in lower positions, without hope of advancement. Men, on the other hand, had much higher chances of promotion. Today, women are now the highest demographic in the scholarly publishing field, but still tend to hold lower-level positions.[1] Moreover, scholarly publishing is predominantly White, with a recent survey finding over three-quarters of the respondents identifying as such, providing for even less diversity throughout the workforce.[2]

Morgan Sorenson (https://orcid.org/0000-0002-0834-2940), Managing Editor, Neurology® Open Access Journals, American Academy of Neurology.

https://doi.org/10.36591/SE-D-4601-10



In order to achieve meaningful diversity throughout the publishing industry, the focus must be on systemic changes, and particularly those that impact upper levels of leadership.

Major Deficiencies Are in Leadership and Systemic Control

A study that looked at the employee demographics from 287 of the nation's 500 biggest companies found that White women were 4.5 times more likely to hold a leadership position than Black women.[3] White men were almost 8 times more likely to be an executive than Black women. This is due to fewer opportunities in training and career advancement, even though reports show Black women are even more likely than White women (and just as likely as White men) to want to become executives.[3]

In the publishing world, we also have a leadership diversity problem. The Workplace Equity Project conducted in 2018 showed that while 76% of the scholarly publishing landscape was female, only 21% of the leadership was.[2] The same goes for other diversity categories. The survey did not find anyone identifying as Black indicating they were in senior or executive management roles. Inequities

CONTINUED

in compensation, age discrimination, and lack of diversity training are some other issues contributing to the overall demographic issues surrounding publishing offices.

Diversity Trainings Focuses on the Individual Level, not on Making Systemic Changes

There isn't a great way to measure success through these diversity training programs, and they often rely on individual change, rather than systemic change. However, it is found to be more effective when paired with diversity initiatives put in place by leadership.[4] A recent article on diversity training improving the well-being of LGBTQ+ employees was published, and it highlights the effectiveness of training for the lives of people in the gender minority.[5] Another study found small success in attitude or behavior change toward women, but recognized that one-off diversity trainings are not enough to make any real change.[6]

When thinking about diversity training and diverse candidates, certain categories can stand out more than others. While sex or gender, race, and ethnicity tend to be the focus of diversity outreach programs, there are multiple other categories to keep in mind. Disability, age, sexual orientation, religion, parent/caregiver status, veteran status, educational experience, and socioeconomic background are a few others to consider (this is not an exhaustive list). A person can feel disadvantaged for many reasons, even if the reasons are not always visible. In the instance of disability, 90% of companies indicate that they prioritize diversity and inclusion, but only 4% consider disability in their initiatives.[7] Having a diverse group of people—whether in leadership positions or in an employee base—has been shown to provide more experience and viewpoints, which facilitates innovation.[8] Understanding and valuing all types of diversity is important.

Indirect Discrimination on the Institutional Level Can Easily Out-Weigh Any Workplace Trainings

Indirect discrimination happens when a policy applies to everyone but disadvantages a group or an individual with a protected characteristic. An example of this would be requiring all employees to have a clean-shaven face and not taking religious beliefs into consideration. Another would be not promoting a person to a higher position if they are unable to work late hours due to a disability or having children. Make sure everyone is considered fairly when looking at promotions or policy changes.

The Workplace Equity Project provides excellent suggestions regarding mentoring programs, networking, realizing when we are biased, and challenging exclusionary practices.[2] Mentorship is an important tool for growing and networking in your career. However, according to the Harvard Business Review, women tend to be over-mentored, and under-sponsored.[9] Sponsoring someone can ensure that a candidate receives jobs and opportunities in leadership positions that they otherwise might have missed out on. Both mentoring and sponsoring play vital roles in removing barriers for career growth. Moreover, if you are in a position of power, sponsoring diverse candidates can lead to a change in the demographic of leadership positions.

You may have one or more implicit biases of which you are not aware. The same goes for the leadership in your organization. While no one likes to think of themselves as having bias about anything, we simply might not be aware of where we fall short. Harvard provides a free test that can point out any bias you may have, though caution should be used when interpreting the results.[10] Consider ways of blinding the hiring or promotion process to ensure that only the important information is being considered when making these decisions.

Stereotypes of a Leader Should Be Questioned

When considering candidates for promotion, we need to recognize that many people have a preconceived idea of what a good leader looks like. In addition, if you are a leader yourself, you may tend to gravitate more towards people who have the same characteristics as you.[11] When this pattern continues, it can lead to the same personality types, mindsets, and other characteristics in leadership positions across an organization.

The stereotypical traits of a leader (e.g., assertiveness, ambitiousness) that come across as favorable to a male candidate, can appear to be a negative trait in a female (the same assertiveness can be seen as being "bossy"). Because of this, women can be seen as inappropriate as leaders.[12] The situation is even worse for Asian-American women, who must also contend with the stereotype of being demure and subservient.[13] People in marginalized groups may have learned that showing the stereotypical leadership traits like assertiveness had negative consequences in other aspects of their lives. By considering only specific traits as good leadership qualities, you are putting people at a disadvantage.

A Focus on the Individual Level often Results in Over-burdening the Very Groups Who Are Already Under-privileged

Often, diverse employees are called upon to serve on committees or in leadership roles for diversity efforts. This places additional burdens upon them, usually without additional compensation. This "minority tax" creates more

CONTINUED

demands on their time as well as mental stress.[14] While working to increase diversity, be aware of the time demands you are asking of people, and question if you are expecting too much from one person.

Making sure everyone has equal opportunities for promotion and growth in their careers helps retain the best employees and makes sure we see the representation of everyone, especially at the top of the leadership ladder. Representation matters, and by having leadership take on a more active role in making broader changes, we can begin to see systemic changes.

References and Links

1. Claro L. Women in the gentleman's career of publishing. [accessed February 7, 2023]. Princeton University Press. https://press.princeton.edu/ideas/women-in-the-gentlemans-career-of-publishing.
2. Spilka S, Taylor S, Wachter J. Global voices for workplace equity: findings from the WE Survey 2018. [accessed February 7, 2023]. Workplace Equity Project. https://c4disc.files.wordpress.com/2019/08/002_wep_executive_summary_digital_aw-1.pdf.
3. Fraser J, Guynn J. 2 years after George Floyd pledges, Black women still denied top jobs at largest companies. This is why. [accessed February 7, 2023]. USA Today. https://www.usatoday.com/story/money/2022/05/25/black-women-business-executives-diversity/9828385002/?gnt-cfr=1.
4. Devine PG, Ash TL. Diversity training goals, limitations, and promise: a review of the multidisciplinary literature. Annu Rev Psychol. 2022;73:403–429. https://10.1146/annurev-psych-060221-122215
5. Perales F. Improving the wellbeing of LGBTQ+ employees: do workplace diversity training and ally networks make a difference? Prevent Med. 2022;161:107113. https://doi.org/10.1016/j.ypmed.2022.107113
6. Chang EH, Milkman KL, Gromet DM, Grant AM. The mixed effects of online diversity training. Proc Natl Acad Sci U S A. 2019;116:7778–7783. https://doi.org/10.1073/pnas.1816076116
7. Cube J. 3 Reasons to bring disability inclusion to the mainstream: the rising, the unforeseen & the unforgettable. [accessed February 7, 2023]. texthelp. https://www.texthelp.com/resources/blog/3-reasons-to-bring-disability-inclusion-to-the-mainstream/.
8. Forbes Expert Panel. 14 important benefits of a more diverse leadership team. [accessed February 7, 2023]. Forbes. https://www.forbes.com/sites/forbescoachescouncil/2021/06/24/14-important-benefits-of-a-more-diverse-leadership-team/?sh=417750041f9b.
9. Ibarra H. A lack of sponsorship is keeping women from advancing into leadership. [accessed February 7, 2023]. Harvard Business Review. https://hbr.org/2019/08/a-lack-of-sponsorship-is-keeping-women-from-advancing-into-leadership.
10. https://implicit.harvard.edu/implicit/index.jsp
11. Sanger M, Chamorro-Premuzic T. What kind of leaders do people love? [accessed February 7, 2023]. Human Capital Leadership Institute. https://hcli.org/articles/what-kind-leaders-do-people-love.
12. Koenig, AM, Eagly AH, Mitchell AA, Ristikari T. Are leader stereotypes masculine? a meta-analysis of three research paradigms. Psychol Bull. 2011;137:616–642. https://doi.org/10.1037/a0023557
13. Paikeday, T. S, Shek, Y. L, & Vashista, D. (2020, September 23). *Shattering the bamboo ceiling: Addressing Asian American under–representation in the C-suite*. Russell Reynolds. https://www.russellreynolds.com/en/insights/reports-surveys/shattering-the-bamboo-ceiling-addressing-asian-american-underrepresentation-in-the-c-suite Accessed 1/25/2023
14. Jordan A, Shim RS, Rodriguez CI. Psychiatry Diversity Leadership in Academic Medicine: Guidelines for Success. The American Journal of Psychiatry. 2021;224-228.

Remote Work is a Trend with Staying Power: How Employees and Managers Can Succeed in this Brave New World

Erin Landis

I have been working remotely—in one form or another—since 2005. My boss at the time allowed our team to work 1 day from home if we kept it hush-hush. It wasn't until 2015 that my employer moved to a formal telecommuting policy, allowing 3 days of remote work. Suddenly, after 15 years of navigating the DC Metro traffic scene daily, I only made the trek to work 2 days a week. My quality of life improved in ways I couldn't have imagined.

The pandemic spurred an entirely new arrangement—starting in mid-March 2020, our entire company was fully remote, staying that way for the next 2 years. Things changed for me again in January 2022 when I became the managing director of Origin Editorial, a remote-only company. Finally, after more than 2 decades in the workforce, I had complete control over how and when I worked. In this article I'll share with you the true value of remote work, how to maximize its effectiveness, and the best strategies for managing a remote team.

A NASA Physicist Advocates for Telework

In 1973, NASA physicist Dr. Jack Nilles coined the term "telecommuting," which he defined as "the substitution of telecommunications and/or computers for commuting work."[1] Dr. Niles was particularly interested in how telecommuting could address several societal and business concerns such as commuter traffic, healthcare costs, and worker productivity. As a remote worker himself, he made a persuasive case for the arrangement in his 1994 book titled *The Telecommunications-Transportation Tradeoff*.

Despite Dr. Nilles's convincing arguments for telework, the idea of working virtually was slow to take off. Over the course of the next several decades, the invention of personal computers, the Internet, WiFi, and tools like Slack and Zoom, remote work slowly took hold. Federal government policy also helped remote work gain a foothold in the American workplace—the 2010 Telework Enhancement Act[2] required all federal executive agencies to establish a policy allowing eligible employees to telework. The legislation supported the more-than 100,000 federal employees already engaged in a remote-work arrangement.[3] Private companies and non-profit organizations took note, and many established their own telework policies.

It wasn't until the COVID-19 pandemic that remote work made significant gains. Between 2019 and 2021, the number of people primarily working from home tripled from 5.7% (~9M) to 17.9% (27.6M), according to a 2021 American Community Survey released by the US Census Bureau.[4] The share of remote-work opportunities also jumped—at the start the pandemic just 4% of jobs were remote; in 2023 that number is at 15%.[5] And prior to the pandemic, only 5% of paid workdays were from home; now 30% of paid workdays are from home.[6] In particular, the knowledge industries—finance, information technology, and communications, for example—have been affected by the shift, with workers in these sectors finding the transition to remote work organic.

Wearing PJs to Work is Nice, But Remote Work Offers So Much More

For those of us who've had the opportunity to work remotely, we've long understood its value and benefits, beyond the cliché of wearing "business on the top and pajamas on the bottom." With so many of the world's population forced into remote work during the pandemic, millions of people experienced first-hand these advantages for the first time. While many of them are obvious, some are less so—below is a look at what employees can gain from remote work.

Reduced Commute Times

For anyone who lives in a major metropolitan area, getting to and from work can sometimes take hours, depending on the time of day, weather conditions, and day of the week. Remote work affords employees the opportunity to cut hours of wasted time on the road, leading to improved physical and mental health. On the financial side of the commute,

Erin Landis is Managing Director, Origin Editorial.

https://doi.org/10.36591/SE-D-4601-11

CONTINUED

FlexJobs estimates that we spend $2,000-$5,000 annually on getting to and from the office and up to $2,700 on lunches.[7]

Preferred Location of Residence

I've known many colleagues over the years who've chosen to live in more affordable locations thanks to being able to telework. With lower costs of living, they were able to reside in dwellings of their choosing versus having to settle for less. Furthermore, and I observed this especially throughout the pandemic, remote work allows people to relocate closer to their families, which provides a natural support system they may have been without previously.[8]

Higher Levels of Engagement and Morale

Research shows that employees who spend at least part of their time working remotely show higher levels of engagement and morale over those who do not ever telework.[9,10] They are also the most likely to feel as though they have someone at work who cares about them as a person and encourages their development. And surprisingly, they are the most likely to say they have a best friend at work.

Increased Opportunities for Inclusion

For those with chronic disabilities or illnesses, getting into an office on a daily basis can be incredibly challenging. Remote work provides these individuals with the opportunity to have meaningful careers. In fact, an October 2022 report by the Economic Innovation Group found that individuals with disabilities between the ages of 25 to 54 were more likely to be employed in 2022 than before the pandemic thanks to more remote-work opportunities.[11] Good remote work policies can also accommodate the needs of other underrepresented groups so they don't have to make inequitable sacrifices. Research has found that people from historically underrepresented groups are more likely to prefer remote work, citing the ability to live in welcoming communities, higher senses of belonging, and less harassment.[12,13,14]

Greater Levels of Productivity

According to Owl Lab's 2022 State of Remote Work report, 62 percent of workers feel more productive when working remotely.[15] The reason for this could be that teleworkers report having more opportunities for focused and independent thinking, as well as fewer distractions from colleagues. The reduction in commute time also often translates to working more hours than when in the office.

How Can You Maximize Your Work-From-Home Arrangement?

If you're anything like me, remote work has taken a little getting used to. I've come a long way from sitting at my kitchen table on a dial-up modem, single-screen laptop, and being driven to distraction by barking dogs, ringing doorbells, and friends and family who think working from home means "working" from home. Now, decades in, I've developed a tightly managed approach to remote work that allows me to maximize productivity and demonstrate that employees who telework are engaged and valuable members of the workforce. What strategies can you employ to effectively work from home (Figure)?

Set Boundaries—Both Literal and Figurative

If space allows, establishing a physical space in your home for work allows you to "walk away" from your job at the end of the day. It also signals to others in your household that this is your workspace and to respect certain rules around it.[16] Even with minimal space you can set up dividers, curtains, or other visual cues that this space is dedicated for your work area. It's also important to set other types of boundaries—for example, having a consistent start and stop time each day so you don't find yourself working at all hours of the day, as well as taking lunch and coffee breaks away from your desk. Moreover, set boundaries with those in your household who might also be home, enforcing the idea that they can't repeatedly interrupt you with requests and questions.

Practice Good Meeting Etiquette

Who hasn't been in a Zoom meeting where someone is clearly busy doing something else (e.g., checking emails, writing a text, speaking to someone in the background). This can be incredibly distracting and shows a lack of respect for others in the meeting. While it's tempting to multitask during video calls, it's important to remain focused on the meeting at hand.[17] Try to keep background distractions to a minimum, make eye contact, and while this certainly doesn't seem to be the norm, keep yourself OFF of mute when possible. It can be disconcerting when the normal subtle sounds of being heard and understood aren't present when everyone is on mute.

Connect with Colleagues

Something that is obviously missing in remote work are the spontaneous conversations that happen in an office. It's important, therefore, to be deliberate in connecting with your virtual colleagues.[16] Reach out to them for a Zoom coffee break or take a few minutes to chat with them over Skype or Teams. At the top of meetings, instead of jumping straight into the agenda, take a few minutes to ask questions about their day or weekend. Participate in virtual team-building activities that your company offers so that you can get to know people personally.

CONTINUED

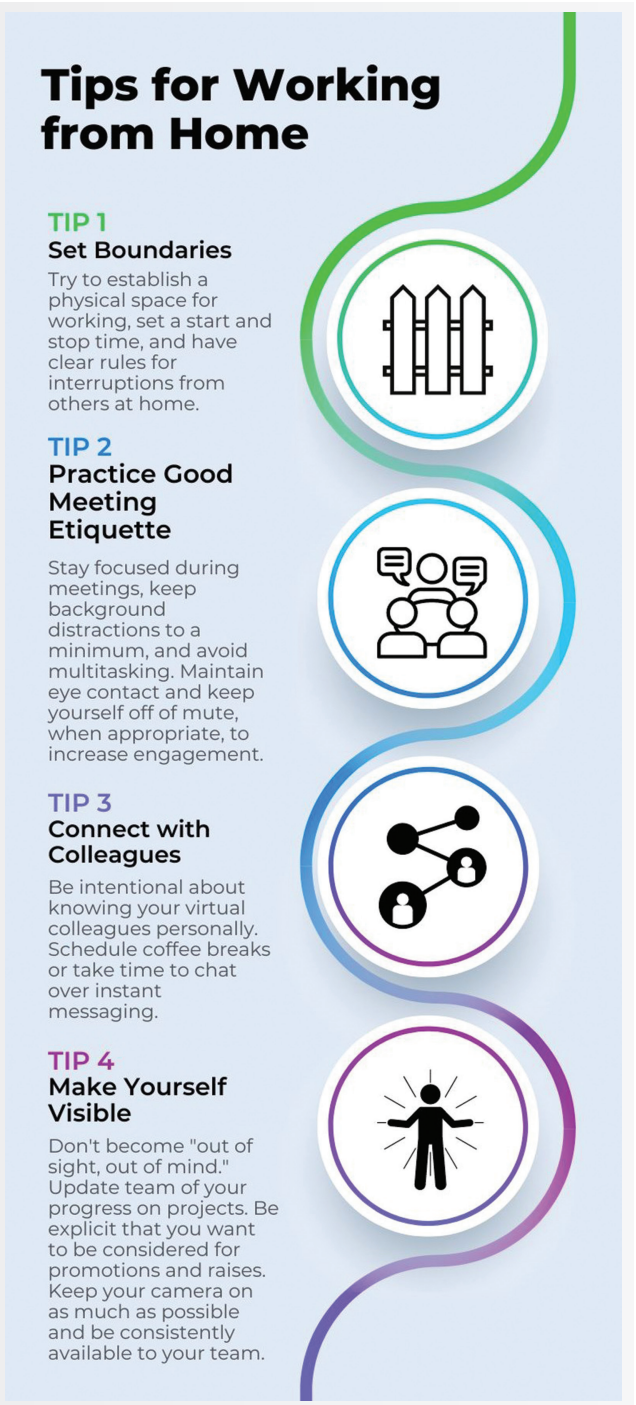


Figure 1. Keys to successful remote work.

Make Yourself Visible

One of the harsh realities of working remotely is that research has shown in-person workers may be more likely to be promoted.[18] That's why it's critical you don't fall into the "out of sight, out of mind" category. Be explicit with management that you want to be considered for raises and promotions. Also, keep your supervisor and your team abreast of your contributions to projects and developments on any work you are doing. Try to make yourself easily accessible by being responsive to emails and instant messaging and keep a consistent schedule so your team knows when they can reach you.

Managing A Remote Team

The unique strategies to effectively manage a remote team came into stark relief when the publications team I supervised became fully remote overnight in March 2020. While we had all worked remotely for several days a week for years, we had never all been remote at the time for an extended period. I quickly learned that managing a remote team is very different from managing an in-person or even hybrid team.

Experts suggest, and I can attest to, managers must be deliberate in their communication efforts with a remote team. It's important to communicate regularly and to also determine what types of communication each person on the team prefers—for example, some might want video drop-ins or phone calls, others might prefer routine check-ins, and yet others might like to use chat. Understanding what communication styles your team members prefer, as well as the frequency, will lead to greater trust and accountability.[9]

Also critical is holding regular team meetings, which, when virtual, require a bit more skill than in-person team meetings. Managers should take a little extra time to show interest in their team members, as well as make eye contact and encourage participation.[19] This means asking team members who have been on mute to express their opinion on a specific topic—sometimes people find it challenging to break into discussions in virtual settings.

You'll have to work harder at creating a team culture with a remote team. Unlike in an office space, where culture is often built on the physical space itself, dress, and behavior, culture in a telecommuting environment needs to be built on intuition and with deliberation.[20] As a leader of the team, it's critical that you set the tone and invest in establishing the right culture.

Parting Thoughts

Remote work, for all of the benefits and value it provides, is not without its shadow side. If not managed properly, it can lead to a blurring of boundaries between work and home, social isolation, lack of the right equipment and support, and presenteeism, which is when you don't take sick days as needed but instead work through illness. Telework can sometimes even result in health issues, such as feelings of depression from

CONTINUED

social isolation, stress from overworking, and the emergence of musculoskeletal problems due to sitting long hours without breaks.[9] These disadvantages can be managed, however, with an intentional approach to remote work. Now that we've been thrust into this brave new world, I'm confident we'll become increasingly skilled at finding the right strategies to effectively work from home and managing remote teams. After all, someone has to keep the pajama business booming.

References and Links

1. Hill EJ, Fellows K. Telecommuting. In: Michalos AC, editor. Encyclopedia of quality of life and well-being research. Springer; 2014, p. 6599–6600. https://doi.org/10.1007/978-94-007-0753-5_2985
2. https://www.telework.gov/guidance-legislation/telework-legislation/telework-enhancement-act/
3. https://www.alliedtelecom.net/the-history-of-telecommuting/
4. https://www.census.gov/newsroom/press-releases/2022/people-working-from-home.html
5. https://www.theladders.com/press/research-remote-work-now-accounts-for-nearly-15-of-all-high-paying-jobs
6. Barrero JM, Bloom N, and Davis SJ. Why working from home will stick. Working paper 28731. National Bureau of Economic Research; 2021. https://doi.org/10.3386/w28731
7. https://www.flexjobs.com/blog/post/infographic-the-true-cost-of-commuting/
8. https://buffer.com/state-of-remote-work/2022
9. https://www.gallup.com/workplace/238085/state-american-workplace-report-2017.aspx
10. Tavares AI. Telework and health effects review. Int J Healthcare. 2017;30–36. https://doi.org/10.5430/ijh.v3n2p30
11. https://eig.org/remote-work-is-enabling-higher-employment-among-disabled-workers/
12. https://www.cnbc.com/2021/06/22/remote-work-can-be-more-equitable-and-inclusive-to-lgbtq-employees.html
13. https://futureforum.com/2021/01/28/hybrid-rules-the-emerging-playbook-for-flexible-work/
14. https://www.businessinsider.com/remote-work-return-to-office-wfh-diversity-jamie-dimon-2023-1
15. https://owllabs.com/state-of-remote-work/2022
16. https://www.workplace.com/blog/remote-work-best-practices
17. https://nira.com/remote-work-best-practices/
18. Bloom N, Liang J, Roberts J, Ying ZJ. Does working from home work? Evidence from a Chinese experiment. Quart J Econ. 2015;165–218. https://doi.org/10.1093/qje/qju032
19. https://www.inc.com/justin-bariso/googles-remote-work-policy-has-9-great-tips-you-should-definitely-steal-today.html
20. https://hbr.org/2021/02/wfh-doesnt-have-to-dilute-your-corporate-culture

Intrinsic and Acquired Professional Development at CSE: An update from the CSE Professional Development Committee

Andrea Rahkola, Anna Jester, Morgan Sorenson, and Carolyn deCourt

Introduction

The Council of Science Editors (CSE), as an organization for editorial professionals publishing in the sciences,[1] intrinsically provides professional development for industry professionals. Attending an annual meeting, joining a virtual event, accessing a *Science Editor* article, or participating as a committee member all bolster connections with the network of scholarly publishing professionals while increasing knowledge of industry standards. CSE's Professional Development Committee is devoted to ensuring CSE members are provided career development opportunities. While only a fraction of CSE's offerings fall under the purview of the Professional Development Committee, the committee promotes professional development within all CSE events, resources, and membership benefits. The committee is charged with providing a network for career development and does so through the implementation of networking opportunities, management of the CSE Publication Certificate Program, and continued assessment of the professional development needs of CSE members. Some opportunities provided include CSE Connect, the CSE Book Club, and the CSE S.P.E.A.K Podcast.

Andrea Rahkola, BA, ELS (https://orcid.org/0000-0002-9133-3163), Production Editor, Neurology® Journals, American Academy of Neurology, Co-chair, CSE Professional Development Committee; Anna Jester (https://orcid.org/0000-0002-8543-0311), Vice President of Sales & Marketing, eJournalPress, Subcommittee Chair, CSE Connect; Morgan Sorenson (https://orcid.org/0000-0002-0834-2940), Managing Editor, Neurology® Open Access Journals, American Academy of Neurology, Subcommittee Chair, Certificate Program; Carolyn deCourt (https://orcid.org/0000-0002-8806-2390), Editorial Client Manager, J&J Editorial, Co-chair, CSE Professional Development Committee, Co-host, CSE S.P.E.A.K. Podcast.

https://doi.org/10.36591/SE-D-4601-12

CSE Connect

CSE Connect events aim to support networking and connectivity among CSE members, ideally while learning about topics that apply to scholarly communication professionals at various career stages and organizations. Recent CSE Connect topics include the Early Career Roundtable, CSE Editor Roundtable, The Great Resignation or the Great Reshuffle, and Poster Submission 101. CSE members are encouraged to submit suggestions for topics and presenters, and CSE Connect events are free to attend for members and non-members.[2] Encouraging your coworkers, mentors, and mentees to join us is applauded. CSE Connect events typically last 30–45 minutes; while unmuting and sharing your camera is recommended, it is not required.

CSE Book Club

Started in 2016 with the book *The Poisoner's Handbook* by Deborah Blum, CSE's 2016 Annual Meeting keynote speaker, the CSE Book Club provides a forum for members to discover industry-relevant books and join virtual discussions on Goodreads.com.[3] A total of 17 books have been read and discussed by the CSE Book Club with record participation occurring during the spring of 2021 with the book *Between You & Me: Confessions of a Comma Queen* by Mary Norris (Table 1, online). A handful of book club participants went on to publish book reviews in *Science Editor*, including Carissa Gilman,[4] Carolyn deCourt,[5] Anna Jester,[6] Michael Friedman,[7] and Morgan Sorenson,[8] making the most out of their experience by adding bylines to their resumes. We are currently reassessing member interest in the CSE Book Club after a 6-month hiatus in volunteer moderators and member participation.

CSE Publication Certificate Program

The CSE Publication Certificate Program began in 2015 and has had 18 members successfully complete the program. The program was developed to provide professional development to those in scholarly publishing that seek to enhance their

CONTINUED

resume and update their knowledge in the field. It consists of attending 2 CSE conferences, 3 webinars, 2 short courses, and completing a research project. The project can be presented in either a poster format or a research article. Project ideas are reviewed by a team of volunteers that help to guide participants with comments, ideas, and feedback, so they can get the most out of their research project. We encourage anyone interested in professional development to join and take part in this great learning program.

The CSE Publication Certificate Program has enjoyed a partnership with the Associação Brasileira de Editores Científicos (ABEC Brasil) beginning in 2015.[9] Since then, we have had many graduates coming from the ABEC society, including the president of ABEC, editors-in-chief, and researchers. They complete the same requirements, including the final project. Projects from ABEC participants have included authorship concentration from Latin America and the Caribbean, misconduct in Brazilian Scientific Journals, and internationalization of journals in Brazil.

CSE S.P.E.A.K. Podcast

The podcast series S.P.E.A.K (Scientific Publishing Exchange Around Knowledge) is a recent addition to CSE, and was launched in 2021. A total of 6 episodes are currently available (Table 2, online), with more in the works. The aim of this podcast is to provide a platform for CSE members to discuss and share experiences in the Scholarly Publishing Industry. Co-host Jasmine Wallace explains, "This podcast series is part of CSE's mission to foster a community for networking, education, and discussion and exchanging of practical information for publishing professionals." Co-host Carolyn deCourt adds, "Our aim is to be an authoritative resource on current and emerging issues in the communication of scientific publishing and to do so by the voices of our members, not just emerging experts."[10] Both Carolyn and Jasmine strive to include different points of view, and different levels of experience when selecting speakers and guests for the podcast. The first 6 episodes delve into a variety of topics, from early career advancement to virtual team management, peer-review politics to workplace culture shifts, and beyond.

Each episode is approximately 30–40 minutes long and features a new speaker for each topic. CSE S.P.E.A.K. can be listened to and followed on Apple Podcasts, the Google Play Store, Spotify, the Podbean App, and Amazon Music/Audible.[10] The podcast team is currently working on new content, and additional episodes will be coming out soon. We welcome ideas from CSE members for future S.P.E.A.K. Podcast topics or speakers!

Conclusion

Professional development offerings from CSE rely heavily on member participation. Without member interest, there would be no audience; without member volunteers, there would be no content creators or moderators. While professional development is a highly personalized experience, requiring individuals to determine their own goals and acquire desired opportunities, the CSE Professional Development Committee remains committed to developing and providing opportunities of interest to CSE members. We welcome collaborations with other CSE committees, partnerships with other professional organizations, and volunteers to join and contribute to the Professional Development Committee. As said in an interview of past Professional Development Committee Co-Chair Karen Stanwood, "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."[11]

If you would like to volunteer on the CSE Professional Development Committee, or have ideas you'd like to suggest, please reach out to the current committee co-chairs, Andrea Rahkola and Carolyn deCourt.

References and Links

1. https://www.councilscienceeditors.org/about/about-cse/
2. https://www.councilscienceeditors.org/events/cse-connect/
3. https://www.goodreads.com/group/show/188509-council-of-science-editors-book-club
4. Gilman C. Book review: Grunt: the curious science of humans at war. Sci Ed. 2017;40:125.
5. deCourt C. Book review: The emperor of all maladies: a biography of cancer. Sci Ed. 2017;40:160. https://www.csescienceeditor.org/article/book-review-emperor-maladies-biography-cancer/.
6. Jester A. Book review: Lab girl. Sci Ed. 2018;41:29. https://www.csescienceeditor.org/article/book-review-lab-girl/.
7. Friedman M. Book review: Cork dork: a wine-fueled adventure among the obsessive sommeliers, big bottle hunters, and rogue scientists who taught me to live for taste. Sci Ed. 2018;41:105. https://www.csescienceeditor.org/article/book-review-cork-dork-a-wine-fueled-adventure-among-the-obsessive-sommeliers-big-bottle-hunters-and-rogue-scientists-who-taught-me-to-live-for-taste/.
8. Sorenson MS. Book review: American Sherlock: murder, forensics, and the birth of American CSI. Sci Ed. 2020;43:102. https://doi.org/10.36591/SE-D-4303-102
9. Erlandsson B. Enrolling Brazilian editors in CSE's certificate program: a successful initiative. Sci Ed. 2017;40:157–159. https://www.csescienceeditor.org/article/enrolling-brazilian-editors-cses-certificate-program-successful-initiative/.
10. https://www.councilscienceeditors.org/resource-library/s-p-e-a-k-podcasts/
11. Schultz J. Karen Stanwood: staying curious and taking chances. Sci Ed. 2020;43:126–129. https://doi.org/10.36591/SE-D-4304-126

From DEI to DEIA: Why Adding Accessibility Is So Important

Morgan Sorenson

Traveling for work as a disabled person is very difficult. I require a wheelchair to navigate the airport, and traveling alone with one is exhausting. One of the hardest parts is finding an accessible taxi to take me to my hotel. Even if I book in advance, there is always a good chance they will either not show up, or send me one that isn't wheelchair accessible. When I arrive at the hotel, my accessible room has a door that is so heavy it is incredibly difficult for me to open. The convention center has escalators everywhere, but the elevators are hidden in the back and I have to take two separate elevators to get to the specific floor where I need to be. The staff at the conference are unsure how to direct me from one side to the other without using an escalator. Course room doors are closed and I have to wait for someone to come by to open them for me (because there are no automatic door openers). Meeting rooms are so full of tables and chairs that I either have to stay right by the door in the back of the room or have people move a bunch of chairs and draw even more attention to myself. By the end of the conference, I am in immense pain, exhausted, and wishing I never came. It usually takes my body at least a week to recover. This is just an example of one of my latest work conferences.

This experience is by no means unique to me. Many people with similar accessibility issues face these hurdles and more on a daily basis in their workplaces, schools, communities, and even homes. Often, these problems are caused by either lack of knowledge or a lack of foresight on the part of organizers. Virtual meeting options have been an amazing alternative, but they don't always provide the same experience as in-person meetings.

Definition of Accessibility

So, what is accessibility? It is defined by the Americans with Disabilities Act (ADA) as "the design of products, devices, services, vehicles, or environments so as to be usable by people with disabilities. Accessibility can be viewed as the 'ability to access' and benefit from some system or entity.[1] The concept focuses on enabling access for people with disabilities, or enabling access through the use of assistive technology; however, research and development in accessibility brings benefits to everyone."[1] This is a broad definition that doesn't get to the heart of the importance of accessibility. According to the Centers for Disease Control and Prevention, 61 million adults in the United States and more than 1 billion worldwide live with some type of disability.[2] Accessibility in publishing goes beyond the workplace. Making sure that everyone can access content, attend functions, and otherwise participate in publishing ensures they have an equal chance at opportunities.

The Executive Order on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce was signed by President Joe Biden on June 25, 2021. The goal of this order is to have the federal government become fully accessible and be a model employer of people with disabilities. This has brought more attention to the larger issue of what accessibility means in the workplace and beyond.

Types of Accessibility

Just like there are many different types of disability, there are also many different types of accessibility. A person with a physical disability may need building accessibility (e.g., ramps, parking, electronic door openers). A person with vision issues may need a screen reader for websites or alternative text for images. A person with a hearing impairment may need transcripts for meetings or webinars. Special computer equipment may be needed to accommodate various types of disabilities. These are some examples of more well-known accessibility issues. However, not all disabilities are easy to see. These are generally called "invisible disabilities" or "invisible illnesses."[4] It can be difficult to seek accessible options when you have an invisible disability, and not everyone feels they are able to speak up for themselves. It isn't always possible to know who needs accessible accommodation and who does not. This can lead to individuals feeling frustrated and left out, and is another reason why proactively striving for accessibility is so important.

Ways to Address Accessibility

Everyone deserves to be able to use websites to get information and disseminate our knowledge. To ensure

Morgan Sorenson (https://orcid.org/0000-0002-0834-2940), Managing Editor, Neurology® Open Access Journals, American Academy of Neurology.

https://doi.org/10.36591/SE-D-4601-14

CONTINUED

that everyone has equal access to online content, website reviews should be done to make sure organizations are doing everything possible to follow current guidelines on accessibility. Tools such as alt text on images and making sure headers follow the correct order help to make sure websites are easily read by screen readers for people with visual impairments. Videos should always use closed captioning for people with hearing impairments and auditory processing problems. Making sure websites can be navigated easily by keyboard helps people with mobility disorders. It might not be possible to do all of these things at once but at the very least, keeping accessibility in mind when posting new content to a website will help to ensure that the information is reaching everyone.

Meeting organizers should also take accessibility into account, starting with some easy ways to help people with disabilities have a more positive experience at in-person meetings. A great start is to ask attendees up-front at registration what accommodations they may need—and this goes beyond dietary restrictions (though that is important as well!). Options like reserved front-row seating, advance copies of the presentation slides, and offering an "other" field in which attendees can list potentially unanticipated needs are just as important. Additionally, the meeting space should be planned out for wheelchairs—including all meeting rooms—and there should be available spots other than those at the very back of a room. Where are the elevators located, and how would a person with a disability get from the elevator to the meeting rooms and back? Are the tables and food within reach of someone in a wheelchair? Have a conference organizer try to navigate the space in a wheelchair and point out the difficulties they encounter. Some lesser-known considerations might include always having snacks available for people with blood sugar issues, accommodating for service animals and their needs, and making sure closed captions are always used, even at live events. Consider hiring a sign language interpreter for live events, and designating a seating area in front of them for people who need sign language interpretation.

The workplace is one of the more important places to consider. Having flexible scheduling allows people to work around appointments or transportation needs, especially if they rely on specialty transportation. The ability to work from home has allowed more options for people who have previously had a difficult time finding work. Neurodiverse employees tend to work better in certain environments that are generally easy to accommodate, such as quieter workspaces or workspaces in which the use of headphones is allowed.

Adding in "Accessibility"

The Council of Science Editors (CSE) Diversity, Equity, and Inclusion (DEI) Committee was recently formed to support CSE in establishing an organizational infrastructure, culture, and capacity among its leadership, members, and the profession at large to deliver programmatic activities and training to integrate DEI best practices in science editing, publication management, scholarly publishing and communication, member recruitment, participation, and engagement. We want to become a resource for members of the publishing community when it comes to DEI issues and have made a great start during our first year.[4] As we continue our work, we want to make sure accessibility is not overlooked and promote ways in which it can become more than just an afterthought. With a large number of people identifying as having a disability, relying on laws to handle equity and inclusion is not enough (as we have seen with other diversity issues). Invisible disabilities are particularly at risk of not being accommodated.

In order to highlight the importance of accessibility, we are happy to report that the DEI committee will henceforth be known as the "Diversity, Equity, Inclusion, and Accessibility" (DEIA) committee, and will be including accessibility related measures in our activities.

Conclusion

There has been a tremendous process in terms of increasing attention to aspects of accessibility, yet there is room for great focus and improvement. By highlighting accessibility measures, we not only ensure access for everyone, but we are also providing an environment that fosters collaboration and helps to bring unique perspectives. Including accessibility in DEI activities is important to the people who need it, but also to everyone in the community.

Acknowledgment

Thank you to the members of the CSE DEI Committee for their assistance and support of this article.

References and Links

1. Disabled World. ADA accessibility terms and definitions. [accessed February 28, 2023]. https://www.disabled-world.com/definitions/ada-glossary.php.
2. Centers for Disease Control and Prevention. Disability impacts all of us. [accessed February 28, 2023]. https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html.
3. Invisible Disability Project. Disrupting the silence. [accessed February 28, 2023]. https://www.invisibledisabilityproject.org/.
4. Jack L Jr, Iwuchukwu OF, Olson PJ, Johnson AR, Baskin P, Billingsley MK, Deyton J. CSE's Diversity, Equity, and Inclusion (DEI) Committee: celebrating our first year of growth, successes, and future direction. Sci Ed. 2022;45:124–130. https://doi.org/10.36591/SE-D-4504-06

LinkedIn: An Effective Global Publishing Network at Your Fingertips

Jennifer Regala

In the olden days (side note: I am qualified to say the "olden days" now because as of February 19, 2023, I am 50 years old and have declared myself a Scholarly Publishing Elder; capitalization is intentional), professionals had to connect with the rudimentary tools we had available. We relied on business cards, paper address books, snail mail, early iterations of rudimentary email clients, in-person networking events, and (GASP!) telephones with cords to keep in touch. To be linked in, one had to be intentional about it. Furthermore, valuable relationships tended to be localized to an individual's geographic location.

Along came the emergence of the World Wide Web, and we all know the story: EVERYTHING CHANGED. Boom… our previously small orbits became global. The world was at our fingertips. I still remember the novelty of catching up on the Melrose Place episode from the night before in an Internet recap. And I love to reminisce about the first time I heard Google used as a verb. It was the summer of 2000, and I was working at Cadmus in my very first scholarly publishing job. I had a question for my boss, and she didn't know the answer, either. She suggested: "Why don't you just Google it?" Around that time, according to https://about.linkedin.com/, LinkedIn founder Reid Hoffman began the platform from his living room, officially launching it in 2003. As stated on their site: "The mission of LinkedIn is simple: connect the world's professionals to make them more productive and successful." Also according to this same page, LinkedIn, now owned by Microsoft, touts themselves as "the world's largest professional network with more than 900 million members in more than 200 countries and territories worldwide."

Jennifer Regala is the Director of Publications/Executive Editor at the American Urological Association.

https://doi.org/10.36591/SE-D-4601-15

This remarkable reach is almost impossible to comprehend. The sheer vastness of LinkedIn and the number of bonds it ensures was unimaginable to a Scholarly Publishing Elder like me when I began my career.

Let's think about how we can use this tool to expand our own opportunities in the scholarly publishing community. The possibilities are endless, and it's fascinating to me that I can keep track of almost everyone I've worked with as an adult. Even more compelling is the power that LinkedIn gives us to use these connections to grow our own careers.

How to Get Started on LinkedIn

Don't have a profile? Or maybe you have one, but it's collecting virtual dust? No worries, I've got you. Follow these easy steps to build a strong LinkedIn foundation (https://www.LinkedIn.com or use the mobile app):

1. Find a great photo of yourself to showcase on your page. And don't overthink it. If you have a professional headshot that you like, use it, but if you don't, find a photo that captures your essence. It will need to be professional-ish but doesn't need to be taken by a photographer. Professional-ish means that you are clothed, looking at the camera, and the photo was taken in the last 5 years. It really is that easy. A photo is always better than none. You want your connections to place your name with your face.
2. Fill in all of the blanks that you can in your profile. Education and current employer are most important, but go as far back in your career as you are able. Providing a complete history enables past coworkers to request you as a connection. Don't forget to include your affiliations with professional societies like the Council of Science Editors (CSE)!
3. Search for connections. LinkedIn allows you to connect your own address books to get moving in the process.
4. Remember that the algorithm is fantastic in the year 2023. Once you start connecting with people, LinkedIn takes over with a veritable plethora of suggestions you forgot you even knew. Enjoy a leisurely stroll down

CONTINUED

memory lane of your work pals from your entry level job. Re-establish a friendship with someone you used to spend every single work day with but haven't seen in a hot minute. Check out an old boss and thank them for your thriving career today.

5. Think about whose connection requests you will accept. This one is important. Decide if it's important to you to know someone personally before you accept an invitation. My personal philosophy is that I will connect with someone if I know of them, know others from their organization, or have some other professional interest in them and believe they could enhance my circle of virtual colleagues.

What Can LinkedIn Do for You? And How Can You Use LinkedIn to Amplify the Voices of Others?

In a past *Science Editor* column,[1] I wrote about how to use social media to amplify your voice and the voices of others. I touched on LinkedIn briefly in that piece, but I truly believe that LinkedIn exists to magnify what is professionally important to an individual.

Easy ways to gain traction and use everything LinkedIn has to offer include:

1. Keep the world up to date on what you're up to! LinkedIn is your place to shine. Tell the world about your newest *Science Editor* article (Editor-in-Chief Jonathan Schultz is always open to new submissions).
2. Comment on accomplishments shared by those you're connected with on LinkedIn. Someone got a new job or promotion? That's awesome—tell them so! Your coworker won an award? Share your congratulatory warm wishes with them not only at the water cooler but on LinkedIn for all to see!
3. Use hashtags. Like Twitter, Facebook, Instagram, TikTok, and others, hashtags allow for connections across the platform. I like to use #scholarlypublishing and #councilofscienceeditors to promote my post beyond my own followers.
4. Repost an article or information shared by a connection. I learn so much from what others think is important.
5. Check out LinkedIn to make a big career move. In my opinion, LinkedIn has the best resources out there to improve your own skills and to find ne w employment. Happy where you are? That's great! Use LinkedIn for job listings in your department or organization.
6. Read, read, read! LinkedIn has so many interesting resources that have been curated for you by like-minded people. It's your own responsibility to maintain your personal relevance, and LinkedIn makes it simple for you to do so.
7. Find the places you need to spend your time. LinkedIn is the spot to check for free webinars, in-person conferences, and events that are new to you.
8. Watch your metrics. LinkedIn allows you to see who's looking at your profile, how many views each post receives, and more.
9. Enjoy the platform! LinkedIn is almost always a positive place to be. You get a unique glimpse into the triumphs of others. Think of LinkedIn as a place for you to be a cheerleader, and I think you'll find yourself lifted up by the encouragement you receive in return.

Connect with Your Professional Societies on LinkedIn

Let's use CSE as an example. Follow CSE here: https://www.linkedin.com/company/council-of-science-editors-cse/, plus you'll want to add other CSE members to your own network. CSE will keep you posted on what the most important topics in scholarly publishing today are—peer review transparency, editorial office management, the Office of Science and Technology Policy memo, Open Access updates, and more.

Want to get more involved with CSE? LinkedIn will keep you in the know on webinars, the annual meeting, short court registrations, and let you know when to sign up to serve on committees and working groups. LinkedIn also posts the latest editions of *Science Editor*, which you'll want to read the minute it comes out for the latest news in our industry.

After you've used CSE for practice, add other organizations you're associated with to your list of connections. Your college alumni group and a society you might like to join are great examples.

Reference and Link

1. Regala J. Amplifying your message 101: social media to promote yourself and others. Sci Ed. 2021;44:142–143. https://doi.org/10.36591/SE-D-4404-142

For more on LinkedIn, visit the full version of this article at https://www.csescienceeditor.org/https://www.csescienceeditor.org/article/linkedin-an-effective-global-publishing-network/

Considering Color in Data Displays

Stacy L Christiansen

The goals of responsible communication of science include accuracy, clarity, and consistency. Writers and editors should also aim for equity and accessibility. These goals should apply to every part of the content: text, tables, citations, data display, and any supporting elements. A number of sources offer guidance on inclusive language,[1] but these resources have focused less attention on accessibility of data display, in particular graphic presentations of data. (However, see the helpful section in the *APA Publication Manual* on choosing color in figures.[2])

Some individuals have a color vision deficiency (often called "color blindness"). The most common presentation is "red-green" deficiency, with difficulty distinguishing between red, yellow, and green; sometimes the colors red and black are difficult to distinguish as well. There are other presentations of color vision deficiency, including blue-yellow and achromatopsia, the very rare occurrence of complete lack of color perception.[3]

To illustrate how a figure prepared without consideration for color vision deficiency might look, consider Figures 1 and 2. Figure 1 is how people without any color vision deficiency will see the green, red, and blue lines.

Figure 2 is how someone with a red-green color deficiency would see the same lines, with data for groups 1 and 3 very difficult to distinguish.

Tools and Tips for Building Graphics

What are some things to keep in mind when creating or editing graphics? First, avoid just accepting the default colors or shading that the software generates. Remember that red and green are the most predominant colors affected by color vision deficiency, so avoid using both of them, especially in close proximity.[4]

Stacy L Christiansen, MA, Managing Editor, JAMA; Chair, AMA Manual of Style.

Opinions expressed are those of the authors and do not necessarily reflect the opinions or policies of the Council of Science Editors or the Editorial Board of Science Editor.

https://doi.org/10.36591/SE-D-4601-16

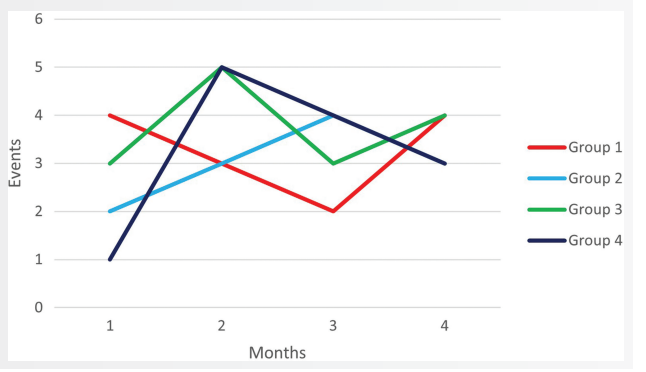


Figure 1. Color in a figure as seen by those with no color deficiency.

Second, consider using only black and white with shading or patterns instead. Figure 1 is recreated as a black-and-white display in Figure 3.

One word of caution: there are a limited number of line weights available in most graphic software; lines that cross, overlap, or run very close together may be hard to follow when multiple patterns are used.

Third, explore some of the color palettes that have been designed specifically for people with all visual abilities, such as Adobe Color and Color Universal Design palette.[5]

Fourth, check any figures for display issues. Adobe Illustrator offers the ability to toggle between different views that simulate 2 types of color vision deficiency (protanopia [red] and deuteranopia [green]) to ensure that text and images are discernable.[6] In addition to the

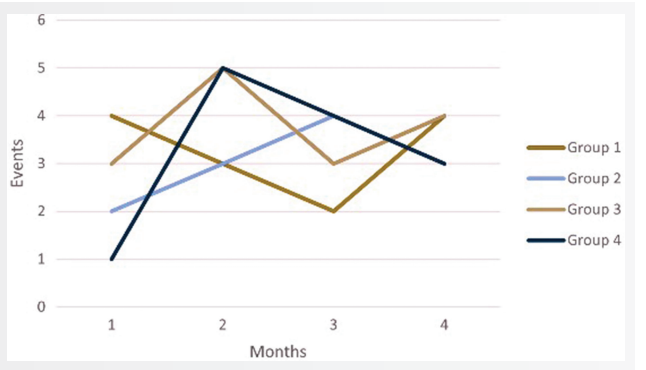


Figure 2. The same image as in Figure 1 as seen by those with red-green color deficiency.

CONTINUED

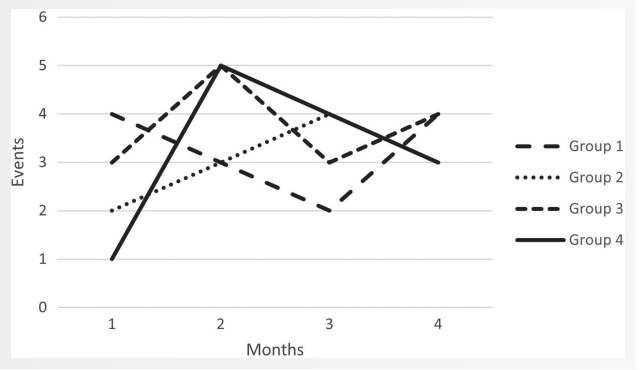


Figure 3. The image in Figure 1 recreated in black and white.

built-in functionality of Illustrator, there are a number of tools that can simulate different color vision deficiency views:

- Color Check for ADA Image Compliance https://www.oss-usa.com/color-check-ada-image-compliance
- Coblis (Color Blindness Simulator) https://www.color-blindness.com/coblis-color-blindness-simulator/
- Color Oracle https://colororacle.org/

Even for people without any limitations in distinguishing colors, how they view the graphics may be a factor in interpretation. Data display can be device dependent; for example, reading content on a small smartphone screen or using a computer monitor with very low resolution may obscure small differences, particularly in figures with more than a few categories graphed.

Displays for Individuals With Vision Impairment or Blindness

Data displays are also a challenge for individuals with vision impairment or blindness. Publishers are beginning to adopt technologies to aid in accessibility of text and numerical data, but access to data in graphical displays is still largely prohibitive. This complex and important area will be the focus of a future column highlighting some initiatives and technologies that have been developed.

Acknowledgment

The image in Figure 2 was prepared using Coblis (Color Blindness Simulator) at https://www.color-blindness.com/coblis-color-blindness-simulator/.

References and Links

1. Frey T, Young RK. Correct and preferred usage. In: Christiansen S, Iverson C, Flanagin A, et al., editors. AMA manual of style: a guide for authors and editors. 11th ed. Oxford University Press; 2020. Updated November 28, 2022. https://academic.oup.com/amamanualofstyle/book/27941/chapter/207567296
2. Accessible use of color in figures. APA style. https://apastyle.apa.org/style-grammar-guidelines/tables-figures/colors
3. Color vision deficiency. American Optometric Association. https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/color-vision-deficiency?sso=y
4. Katsnelson A. Colour me better: fixing figures for colour blindness. Nature. 2021;598:224–225. https://doi.org/10.1038/d41586-021-02696-z
5. Masataka Okabe and Kei Ito's Color Universal Design palette. https://nanx.me/oneclust/reference/cud.html
6. Escalada J. How to design for color blindness. illustratorHow blog. Updated July 14, 2022. https://illustratorhow.com/design-for-color-blindness/

From Pipette to Pen: One Researcher's Journey to Find Her Calling

Kristin Inman

From a degree in microbiology to my current role as a Science Editor at an environmental health sciences journal—and all the steps in between—I have a unique career journey. Or so I thought. The more I've talked with colleagues and peers, the more I realize that the surprising twists and turns of my journey are what make it familiar, almost ordinary, in today's world.

I started out, like many new undergrads, changing my major on the first day. I had gone in thinking "computer science" but had second thoughts and switched to microbiology after skimming a list of options on a single-sided, nondescript piece of 8 × 10 paper. I worked hard, did the grunt work (washing dishes and making fly food), completed two internships, and was ultimately accepted into graduate school. My destiny as a scientist awaited!

The SciComm Class That Changed My Life

On a whim in grad school, I took a class on scientific communication; we critiqued our colleagues' posters, talked through how to improve the presentation of papers in highly esteemed journals, and discussed ways to improve our own communication styles. This single class changed my entire view of the world. I had believed that anything in print was a model of perfection—as good as it was going to get. Once I learned this was not the case, I challenged myself to see content not as it was, but what it could be.

Fast-forward to a postdoctoral position at the Mayo Clinic: I loved the work but became frustrated with the bench science environment. Somewhere along the way, I began editing colleagues' manuscripts. Mind you, at this point I had no formal (or informal) training in editing or copyediting, but I had a knack for revising text to make a point clearer or the paper flow better. I saw an opportunity to make extra money, so I took to the internet to find freelance work. I was rejected by 50 jobs for every one that I secured, primarily editing manuscripts by non-native English speakers, which was a refreshing challenge. Interpreting a manuscript and recommending revisions for clarity and flow felt like solving a riddle.

I was fortunate to have a mentor who fostered my love of editing. When our grant money ran low, she secured a part time position for me Mayo as a departmental editor.

Kristin Inman is Science Editor, Environmental Health Perspectives.

https://doi.org/10.36591/SE-D-4601-17

Transition to Editing

I knew that I didn't want to write grants for a living—I am an editor, not a writer! So I decided at this point to go all in and seek a career in editing. I already had a lot of experience between the Mayo Clinic and freelancing for online companies (Cactus.com, American Manuscript Editors). Then a most unlikely meeting changed my career trajectory: My father-in-law reconnected with his cousin, whose partner just happened to work for a vendor in academic publishing. The vendor was looking for a PhD to write a sample for a request for proposal (RFP) from a major publisher. I wrote the sample, they won the bid, and I got a new freelancing client.

Just as my grant was coming to an end, the vendor offered me a full-time position as Editorial Director. This was my dream job—more money and relocation to North Carolina, where I had always wanted to live. Could it get any better? As it turned out, yes it could. I worked upwards of 90 hours a week to keep up in a position for which I was not qualified. And managing staff and freelancers taught me very quickly that I was made to manage projects, not people. I was overworked and burnt out, then we ran out of work and I was laid off. Cue simultaneous heartbreak and joy.

Current Position

Fortunately, I was well positioned to find freelance clients. Along the way, I took copyediting tutorials and various courses to strengthen my skills. Eventually, a recruiter on LinkedIn contacted me about a job at an academic journal. One look at the description and I knew I was made for the job and it for me. I would be reviewing manuscripts for suitability for peer review and content editing those that passed. I could stay connected to the science and perform the developmental/content editing that I loved, without having to manage people. I interviewed and was offered the position on the spot.

After nearly 6 years, I can't imagine being anywhere else. Looking back on my complicated path, I realize that every position I held, every class I took, every job for which I was turned down provided valuable experience and knowledge that I needed to succeed in my current role. I continue to seek opportunities to grow as an editor and a person, earning my Editor in the Life Sciences (ELS) certification from the Board of Editors in the Life Sciences and becoming more involved in CSE. It is important to me to stay connected to this community because as I've learned, you never know when or from whom your next opportunity will come. If there is one lesson I've learned through my conventionally unique journey, it is this: don't let where you have been define where you go.

Origin Stories: Greetings from the Career Path

It's clear that there is no one path to a career or role in scientific editing and publishing. *Origin Stories* was created to capture the circuitous routes of these careers and the interesting stories of the twists and turns along the way. The editors encourage readers to email your origin story to scienceeditor@councilscienceeditors.org.

Jean Winkler

A combination of detours and a big coincidence led to my career as a medical editor. I have always been drawn to both language and science. As a kid, I wanted to be a writer or an astronomer. I had a fantastic English teacher who taught sentence diagramming long after it had fallen out of fashion, and I won the science fair 2 years in a row. However, as a teenager, I took a dramatic detour and ended up majoring in theater in college. I won a scholarship for writing an essay about the synthesis of creativity and science to solve problems, but I graduated with no idea how to turn my interests into a career.

My mom convinced me to apply for a writing position at American Greetings (AG), the greeting card company. I thought it was a long shot, but I wrote a cover letter in rhymed, metered verse and was hired. During my first week I was invited to a plush toy-naming brainstorm and thought "I'm getting paid to name teddy bears!" I worked for AG for more than a decade, first on staff and later as a contractor when I moved out of state. Although I wrote many greeting cards, I most enjoyed writing and editing Day-at-a-Time (i.e., "page a day") calendars, especially those involving research and a more journalistic writing style. Unfortunately, AG canceled the calendar program and cut the freelance budget. I was suddenly out of a job.

https://doi.org/10.36591/SE-D-4601-18

Ex-greeting card writers are not exactly in demand, and employers are reluctant to hire them to write anything else. So for several years, I cobbled together a living from whatever work I could find including writing, editing, theater work (because we all need something to fall back on), assisting a special effects artist on commercial shoots, herding children as one of Santa's elves, designing tiny sweaters for a teddy bear company (again with the teddy bears), and calling the temporary agency when necessary. One of those temp jobs was at a medical association, where, by complete coincidence, my cubicle was next to that of a busy medical editor who introduced me to AMA style. I remember thinking "Yes! This is what I want to do." A reference from her helped me to get my first medical editing position.

Medical editing is the blend of science and creativity I described in that essay all those years ago. It allows me to indulge my curiosity about science and love of words while helping scientists to communicate their important work clearly. Plus, it is nice to not have to find yet another fresh, original way of saying happy birthday that works for every possible recipient and includes the word "special."

Jean Winkler, Manuscript Editor, Radiological Society of North America

Tinka George William

CONTINUED

My name is Tinka George William; I am a 27-year-old medical doctor and scientific editor from Uganda. I became passionate about writing at university. In 2016, I had my first taste of success in writing when I won the Merck Foundation's concept paper-writing competition during my first year at university. This win not only earned me a postgraduate diploma scholarship in diabetology, but it also marked the start of my writing journey. Since then, I have won several awards for various themes, including world hunger, youth unemployment in Africa, menstrual hygiene, and social medicine.

In 2018, I took on the role of Director of the Publications and New Technologies division at the Federation of Uganda Medical Students' Association, where I was responsible for creating publicity content, managing social media pages, and promoting campaigns. My skills as a writer and editor continued to grow, but it wasn't until the COVID-19 pandemic that I found my true calling as a scientific editor.

During the pandemic, when our university was closed and the country was under lockdown, I had a lot of free time. I spent my days browsing the internet and writing, and it was then that I discovered the field of scientific editing. The idea of merging my love for writing with my passion for science captivated me, and I decided to take an exam for an overseas company. To my delight, I was accepted as an editor, and it turned out to be one of the best decisions I have ever made.

Since then, I have edited over 4 million words and have had the opportunity to collaborate with scientists, authors, and researchers from all over the world without having to leave my home country. I am grateful for each opportunity that has come my way and am eager to continue learning and growing in this field. Scientific editing has given me the chance to be a part of the process of bringing new scientific knowledge to the world, and I am grateful for the opportunity to share my story with others.

Although I still practice medicine (I graduated from medical school after the first wave of the pandemic and completed my medical internship from February 2021 to January 2022), scientific editing has become a fulfilling and enriching career for me. I am grateful for the chance to continue learning and growing.

Tinka George William, MB ChB (Mak)

While working from home as a copy editor for a small publisher of educational materials and caring for my infant, I saw a printed newspaper advertisement seeking a person with a background in English, computer science, and health care. I could not believe it: someone was looking for me! Not only did I have bachelor's degrees in English and computer science and experience working for a publisher, but I also had been trained as a first responder and worked as an administrative assistant for a medical group and as a respiratory therapy assistant. I applied for the job and was hired as an editorial assistant for a medical journal. After a couple years, as I saw the benefits to the members of the professional societies sponsoring that journal, I looked for societies in my own profession and found the Council of Science Editors and the American Medical Writers Association (AMWA). I earned AMWA certificates in Editing and Writing and in Science Fundamentals, and I passed the certification examination of the Board of Editors in the Life Sciences. My infant has grown into a high school junior, and I have grown into the managing editor for the same journal from that ad.

Ann Tennier, ELS, Managing Editor, Academic Psychiatry

Dawn Bielawski

When I started graduate school, editing seemed like one item on a long task list for succeeding in academia. Professors at Villanova University taught me to search for errors in published manuscripts, and I was hooked! I always enjoyed word games, and this was a puzzle to solve by finding design flaws, inconsistencies, and unclear language. During my doctoral program at Wayne State University (WSU), a mentor asked me to help peer review manuscripts, and the editors soon began sending manuscripts to me directly.

There was considerable stigma back then about becoming anything other than a tenured faculty member, so I kept trying to fit into that mold. It might have been simpler if I had gone straight into editing, but I didn't think of it as an option. I don't regret any of the experiences I had because they helped me understand editing and writing from a unique perspective.

As a psychology instructor, I taught hundreds of students how to write literature reviews. Many hadn't learned this before and were proud of how much their writing improved between drafts. It is important to me to provide constructive feedback, rather than only focusing on errors. My clients appreciate that when I call out a great sentence or paragraph in their work.

When I became a research faculty member in pediatrics, my department chair suggested joining the institutional review board (IRB). It was a lot of extra work, but I stayed

CONTINUED

up until after midnight reviewing protocols. I realized that I preferred reviewing the research of others to doing my own, and got a full-time job with the WSU IRB, reviewing thousands of research protocols and other documents over 11 years.

In 2006, I joined the American Medical Writers Association (AMWA), attended conferences, and headed the MI education committee. I bought a huge dictionary, editing books, and style manuals, and started The Editing & Writing Alchemist, LLC. I enjoyed editing so much that I took all sorts of jobs, including editing resumes, scholarship applications, science fiction books, and children's books, along with scientific and medical manuscripts and grants. I always made sure I had some understanding of a topic before accepting a job, and the wide range of protocols I reviewed for the IRB helped with that.

During the pandemic, I reevaluated priorities. I wanted a more flexible schedule, freedom to be outdoors during the day, and time with my granddaughter. I attended the online AMWA conference in 2021 and learned how to optimally support myself through freelance editing. I joined the Council of Science Editors and contacted the Michigan Small Business Development Center for advice on successfully running a business in my state. They provided excellent feedback on my business plan and projections. I took the leap last January, and I'm excited about having just passed my first anniversary as a freelance editor. I find it fulfilling to assist clinicians and scientists in getting their important work published.

Dawn Bielawski, PhD, The Editing & Writing Alchemist, LLC, https://www.linkedin.com/in/dawn-bielawski-phd-0a900ba6

Barbara Gastel

My interests in science and editing date back at least to high school, and they coalesced in college and especially medical school. In high school, I took as much science as possible and participated in summer research programs. I also was an editor of the school newspaper, a copy editor of the yearbook, and our high school's columnist for a local weekly.

My interests in both realms continued in college, where I pursued essentially a combined major in biology and medical history. Looking toward graduation, I sought a career with large components of both science and communication. The two main options seemed to be science journalism (broadly defined) and medicine. Back then, in the 1970s, little opportunity existed for graduate study in communicating science. And finding jobs in the field was iffy. Medicine, however, was a well-established path. I applied to medical school and was accepted.

In medical school, I liked the communication aspect most. I enjoyed interviewing patients, explaining items to them, giving presentations, and more. I wasn't particularly enamored of doing medical procedures and wasn't particularly good at them. One day, a fellow student informed me that a medical journal based at our school had openings for student assistant editors. I applied and was accepted. I loved working on the medical journal. Based in part on my experience there, I decided to seek a career in communicating science and medicine.

I made the decision shortly before my last year of medical school. I then spent my remaining elective time obtaining a master's degree in public health, as I felt that background in areas such as epidemiology and biostatistics would aid me as a medical writer and editor. (OK, I'll admit it, I also wanted to do classwork rather than clinical rotations.) The prospect of finding work after graduation was somewhat daunting. (The internet era had not yet arrived, and alternative careers were not yet much discussed.) While my classmates were applying for residencies, I was sending out letters and resumes. I figured that if nothing panned out, I could apply for residencies the next year.

About 45 years have passed, and opportunities have not been lacking. The summer after medical school, I did an American Association for the Advancement of Science mass media fellowship, helping with the medicine section of *Newsweek*. I then worked at the National Institutes of Health in a role consisting mainly of writing and editing. Since the early 1980s, I have been in academia—largely teaching science reporting, science editing, and related subjects; directing a graduate program in communicating science; and continuing to write and edit. Concurrent activities have included coordinating the U.S. aspect of a program to train author's editors at medical schools in China, helping to develop AuthorAID (a program mainly to help researchers in developing countries write about and publish their work), and serving from 2000 to 2010 as Editor-in-Chief of *Science Editor*.

Perhaps I have now contributed to the origin stories of some science editors in successive generations.

Barbara Gastel, MD, MPH, Professor, Integrative Biosciences and Medical Humanities, Texas A&M University; Director, Texas A&M Graduate Program in Science and Technology Journalism.

Researchers and the COVID-19 Pandemic

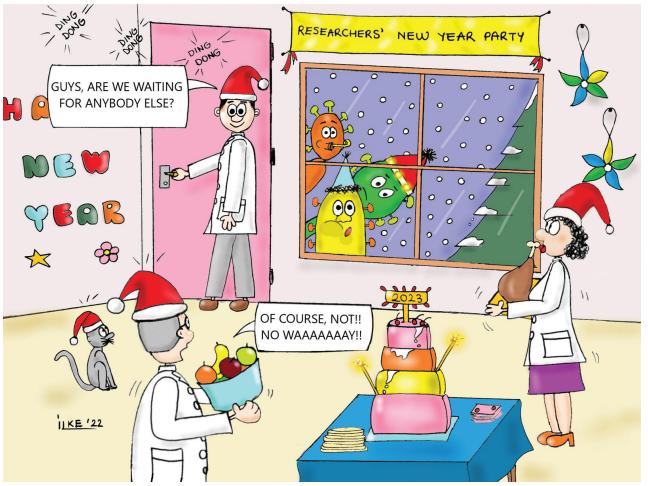
Ilke Coskun Benlidayi, MD

The work environment, as well as the general well-being of researchers has been disrupted by the coronavirus disease 2019 (COVID-19) pandemic.[1] Researchers had to make major/minor adjustments to research operations, and some ceased their research either temporarily or permanently. An online survey evaluating the impact of the COVID-19 pandemic on National Institutes of Health (NIH)-funded extramural principal investigators (PIs) and their projects revealed that 74.6% of the respondents reported that their professional life was affected by the pandemic.[1] Another study showed that 77.8% of surveyed early career dementia researchers reported research delays during the pandemic. Moreover, 41.8% of the researchers experienced a negative effect of the COVID-19 pandemic on their career progression.[2]

There are several factors that may have impacted researchers' productivity and willingness. A cross-sectional, stratified random sampling study examining the factors related to medical researchers' intention to leave their research organization revealed that 41.4% of the researchers had a moderate/high level of intention to leave, with burnout and job dissatisfaction as the leading factors.[3]

Researchers reported that they needed support during the pandemic; particularly, younger researchers and those with family members requiring care. The needs included, but were not limited to, research promotion and online education for the development of skills.[4] Confirming the positive role of institutional support, a 38-item survey of 772 dental researchers revealed that this support was associated with higher productivity and was beneficial in terms of mitigating the effects of the pandemic.[5]

The pandemic has had an impact on researchers and their related research practices, and thus on science



editing. A tremendous volume of manuscripts on the pathophysiology and treatment strategies of COVID-19 have been submitted to journals worldwide, which has put extra weight on editors' shoulders. Moreover, plagiarism has become another issue[6] as well as a relative decrease in the number of non–COVID-19 publications for some journals.[7] This may result in a possible delay in the quality of care for non-COVID diseases in the upcoming years.[8]

The researchers wish to have a COVID-free New Year!

Ilke Coskun Benlidayi, MD (https://orcid.org/0000-0001-6517-5969), is Associate Professor, Cukurova University Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Adana-Türkiye.

https://doi.org/10.36591/SE-D-4601-19

References and Links

1. Burnett WJ, Agbali R, Silva J, De Leo G. Impact of the COVID-19 pandemic on National Institutes of Health-funded researchers and their projects: the role of age, sex, experience, and team size. Public Health Rep. 2022. https://doi.org/10.1177/00333549221133809
2. Bartels SL, Shaaban CE, Brum WS, Welikovitch LA, Folarin R, Smith A; ISTAART PIA to Elevate Early Career Researchers. Impact of the COVID-19 pandemic on early career dementia researchers: a global online survey. PLoS One. 2022;17:e0277470. https://doi.org/10.1371/journal.pone.0277470
3. Mat Rifin H, Danaee M. Association between burnout, job dissatisfaction and intention to leave among medical researchers in a research organisation in Malaysia during the COVID-19 pandemic. Int J Environ Res Public Health. 2022;19:10017. https://doi.org/10.3390/ijerph191610017
4. Nagata K, Tanaka K, Takahashi Y, Asada Y, Shimpuku Y, Yoshinaga N, Sugama J. Support nursing researchers' need from academic societies during COVID-19: a cross-sectional survey. Nurs Health Sci. 2022;24:871–881. https://doi.org/10.1111/nhs.12988
5. De Souza GM, Tiwari T, Fox CH, Miguez PA, Letra A, Geisinger ML, Patel M, Shaddox L, Ioannidou E. Perception of COVID-19

CONTINUED

pandemic restrictions on dental researchers. J Dent Educ. 2022. https://doi.org/10.1002/jdd.13104
6. Coskun Benlidayi I. The impact of COVID-19 pandemic on science editing. Sci Ed. 2021;8:126–127. https://doi.org/10.6087/kcse.241
7. Raynaud M, Goutaudier V, Louis K, Al-Awadhi S, Dubourg Q, Truchot A, Brousse R, Saleh N, Giarraputo A, Debiais C, et al. Impact of the COVID-19 pandemic on publication dynamics and non-COVID-19 research production. BMC Med Res Methodol. 2021;21:255. https://doi.org/10.1186/s12874-021-01404-9
8. Cosentino N, Marenzi G, Chiesa M. The Impact of COVID-19 pandemic on scientific research: an upcoming new wave? J Gen Intern Med. 2022;37:2553–2555. https://doi.org/10.1007/s11606-022-07647-6

(Continued from p. 8)

question the review process. For many scientists—actually for many employees within any discipline—work becomes a large part of our identity. When the work is rejected, we can feel rejected as a person. Scientists search for answers and explanations and expect clear and reasonable responses to their queries. When this doesn't happen, it can be a disappointing and frustrating experience.

I also expected that there would be more issues related to equity surrounding race, ethnicity, or gender. I imagine these concerns exist, and I need to continue to engage in outreach efforts and earn the trust of the ACS Publications community to create a safe space to address these important challenges.

Lastly, I didn't realize how people could be so passionate about chemistry. People love what they do. I'm used to working with a variety of disciplines, but to see people so enamored with their work and the time and attention they put into it is inspiring. I am grateful for this hard work as we are benefactors of these efforts of discovery within chemistry.

SE: You've been an ombudsperson for a while, even before joining ACS. What led you to that profession and what are the skills that you need to be an ombuds?

Canul: My career of over 30 years has been within the University of California system where I started out as a Clinical Psychologist counseling students and later faculty and staff. Simultaneously, I taught undergraduate and graduate students and worked on my own research. I felt that I had an understanding of many roles within higher education as well as how school and work problems can lead to low morale and even emotional distress. It saddens me that for many people, work has not been a place of recognition or productivity but rather a stressful and painful experience. As an ombuds, I am gratified to explore solutions to problems and also make a difference in addressing systemic concerns within an organization.

An ombuds role requires patience, a nonjudgmental perspective, empathy, good listening skills, and compassion for the people you serve.

SE: What advice do you have for journals and organizations that would want to add an ombudsperson?

Canul: Resources such as an ombuds demonstrate a concern for community members and help build a sense of safety and trust. Members may feel recognized, seen, and heard. If you have a place for people to share their discontent, worries, and frustrations, there is a chance problematic issues can be addressed and resolved at the individual and organizational level.

References and Links

1. https://axial.acs.org/2021/11/11/ombudsperson/
2. https://pubs.acs.org/doi/10.1021/acsami.0c10979

(Continued from p. 18)

impact on staff. Since that first year, we have recorded a steady decline in the number of ethics cases involving figures. Watching the numbers go down year after year has been positive and reinforces that the message has gotten out and raised the level of awareness for authors regarding appropriate and inappropriate image manipulations.

SE: That is very encouraging to hear for authors, editors, readers, your organization's members, and the entire discipline. It definitely clarifies why we need standards, clear author instructions, and easily accessible policies. Lastly, if you could give one piece of advice to folks interested in working in a similar position in the scholarly publishing industry, what would it be?

Pesanelli: Take advantage of information from those who have gone before you. Reach out and ask questions because the scholarly publishing community is generally very willing to offer guidance. Often, others in this space have had similar experiences or created a path or a framework that you can follow. Use resources such as those provided by CSE—and it is worth being an active member, maybe even an organizational member, to help ensure your staff are up to date. Volunteering is also important. I am not a refined public speaker, but I am glad that I was given the opportunity to participate in the CSE Short Course on Publications Ethics. For someone like me, it can be so much easier to just do something than to try and explain to someone how to do it. It took me out of my comfort zone and forced me to step back from what I was doing and think about it in a way that would have meaning for others. Plus, it introduced me to a great group of people.