SCIENCE EDITOR

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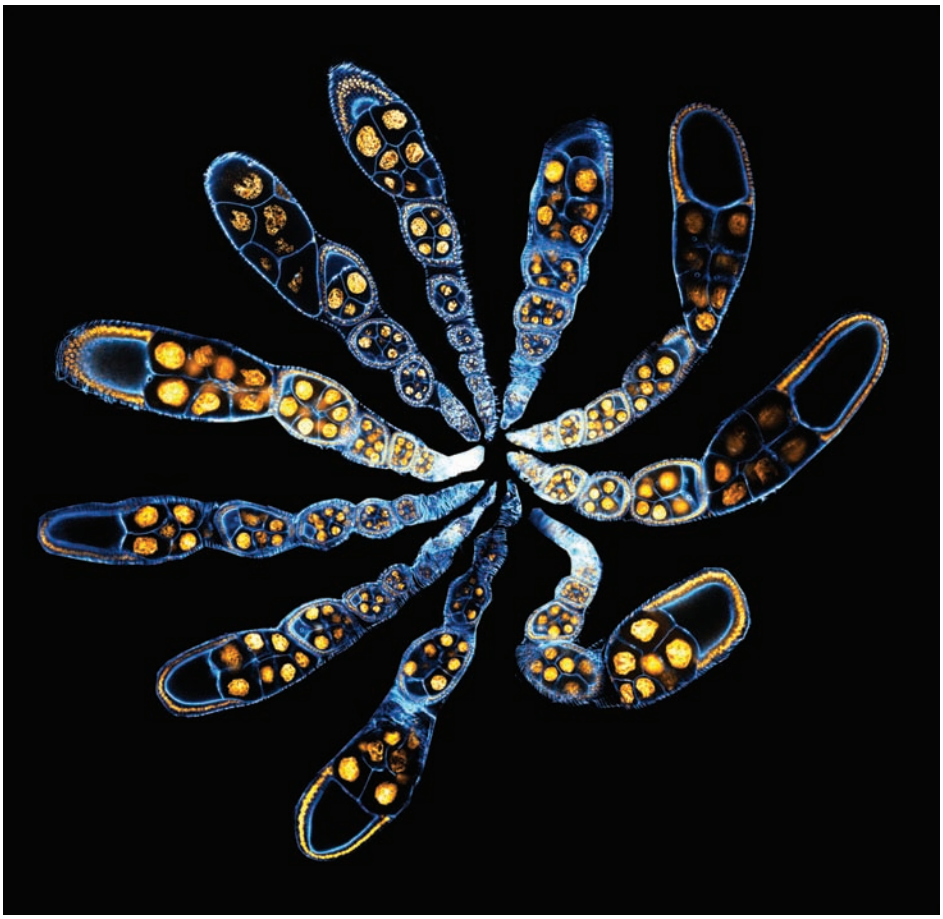
In this issue



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SCIENCE EDITOR

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Science Editor (ISSN 1535-5365) is published quarterly by the Council of Science Editors Inc, 10200 W 44th Street, Suite 304, Wheat Ridge, CO 80033, and serves as a forum for the exchange of ideas among professionals concerned with publishing in the sciences. We encourage contributions describing research and current practices in editorial processes, publication ethics, policy, business models, and other items relevant to CSE members and journal readers. For more details about submission, see our Information for Contributors page at *www.councilscienceeditors.org/publications/science-editor/information-for-contributors/*.

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VIEWPOINT

ANNUAL MEETING REPORTS

FEATURES

DEPARTMENTS

CSE NEWS

Cover image: Fruit fly factory. Each ovary of the female fruit fly houses multiple ovarioles or "assembly lines" in which individual egg chambers develop into fully formed fly eggs. Each egg chamber consists of 16 large germline cells (one of which is the future egg cell), surrounded by a thin sheet of smaller cells. In this picture, cross-sections of 10 ovarioles from different female fruit flies are arranged with stem cells and early-stage egg chambers at the center and the more mature chambers at the periphery. The nucleus of each cell is stained yellow/orange. The cell membranes are stained blue. Image by Yogesh Goyal, Bomyi Lim, Miriam Osterfield, Stas Shvartsman, Princeton University. Winner of "People's Choice" award, Princeton University 2014 Art of Science Competition. See all images online at *artofsci.princeton.edu*. Reprinted with permission from Princeton University.

Science Editor Online

See What I'm Saying? When Parlance Differs

For scientific editors and publishers, language is the lifeblood of our careers. We spend a lot of time trying to get the words just right, and helping others to do so.

And because many words morph or evolve rapidly, we sometimes face challenges not only in understanding what communicators are really getting at with a word (e.g., Did the author intend to submit a formal rebuttal or just a note asking for a more detailed explanation from the editor?), but, as importantly, figuring out how to respond when a word's usage is at best unexpected, or at worst, incorrect.

Although this topic is worthy of exploration beyond the confines of this brief column (and we'll tackle a few more in-depth for an upcoming issue), for now, let's look at just a few words that may require a double take.

Post | Publish

Much to the chagrin of many scholarly publishers, the distinction between post (the act of putting a document or information online; e.g., blog, social media, or preprint) and publish (in our context, an article appears in peer-reviewed journal or other formal publication after a process that involves editing, review, revisions) is becoming blurred, in some cases by design. Merriam-Webster offers secondary definitions of *publish* as "to make generally known; to make public announcement of"—so while in the literal sense, one could publish a tweet or a preprint, that construction and its implications are not in mainstream usage.

Article | Preprint | Blog Post

Similar to the acts of posting and publishing, the distinction between these document types can be confusing if used interchangeably. Some intentionally refer to preprints or blog posts as articles (which implies a more finished, reviewed product), even if those items have never seen review, editing, or feedback—which means that the findings and facts may not have been validated.

Conflict of Interest

Conflict of interest (COI) is often interpreted as misconduct that has either already taken place or will take place on the part of authors, reviewers, or editors. A COI includes personal, professional, and financial interests and relationships to be aware of and, if necessary, to declare. The Committee on Publication Ethics (COPE) advises that publishers and journals should have clearly-stated COI policies.

Tracey A DePellegrin
Editor-in-Chief, *Science Editor*

Peer Review | Post-Publication Peer Review

Historically, peer review is part of a process of journal article publication. While new models of peer review (e.g., open, transparent) are becoming more mainstream, formal peer review must be differentiated from feedback or comments posted online as a response to a preprint or published article. As a measure of validation (for correctness, quality, and other criteria such as significance, novelty, context), what elements are critical to fully constitute a post-publication peer review cycle?

(continued on page 39)

continued

Closed Access | Paywalled

These terms are used as euphemisms for subscription-based content to imply difficulty in reader access to articles. Publishers often have pay-per-view or article rental options available.

Crisis | Broken

These words are typically seen in articles, blogs, and social media posts to add a sense of urgency. It's important to scholarly publishers to assess whether and to what extent a "crisis" exists. Areas referred to as *in crisis* or *broken* include scholarly publishing, reproducibility, peer review, access to science (for the public and for scientists), retractions, and submission-to-publication time.

Open Access | Free to Read

These two terms are sometimes conflated. But *open access* now has many definitions that have evolved since it was first defined in the 2002 Budapest Initiative* as "free and unrestricted online availability," including digital rights management.

Usage

Long-important to institutional subscribers as a journal-wide measure, usage statistics at the article level are coming into the fore as authors seek multiple aspects of impact. It is important to distinguish between abstract views, full-text views or downloads (including PDF and HTML), and supplemental and other data views. Article usage should include counts and unique IP addresses from as many sites as possible (including PubMed Central, institutional repositories, and preprint services). COUNTER also supports a Usage Factor metric.†

For clarity, we turn to resources such as CSE's own *Scientific Style and Format* (8th edition), the *AMA Manual of Style*, *The Chicago Manual of Style*, dictionaries, copyeditors, colleagues, scholarly societies, white papers, standards organizations like COUNTER and NISO, and even Google and social media.

Language and how we feel about certain words indeed do (and should) evolve. But at the same time, as leaders in scientific editing, publishing, and communications, we have a responsibility to our field to develop and uphold standards for use. What does this mean in practice?

In part, we are obligated not only to understand words as they are used in context by our diverse groups of stakeholders, but we should also aim to provide clarification, to question an unusual instance of use, and to point out when the meanings of words are muddied.

If you have good examples of terms that have morphed over time, have multiple interpretations, are euphemisms, or are being used out of context, please contact me at tracey.depellegrin@thegsajournals.org. We'll feature selected words and anecdotes in the next issue of *Science Editor*.

In This Issue

Science Editor is committed to publishing CSE's Annual Meeting Reports (including, this year, the Short Course reports) as soon as possible, so that the content and context are still fresh. So this issue is a feast of useful highlights, whether or not you were in Philadelphia, and whatever your professional interests. Take a look at "Managing Journals in a Global Context," "By the Numbers: Evaluation Strategies to Improve Journal Performance," "Publishing Questions—Data-Informed Solutions," "Taking Author Instructions to the Next Level," "Dynamic Disruptors: A Series of Lightning Talks from Various Startups," "Recognition for Reviewers," and more.

Now in his first term as BELS president, Thomas Gegeny discusses the nearly 25-year-old organization's goals and details BELS examination topics. For manuscript editors, the BELS exam is worthy of serious consideration.

As we head into autumn, *Science Editor* is still looking for new editorial board members, including columnists. Please contact me if you're interested. We welcome contributions of individual articles relevant to our community, as well as case studies related to author outreach, business models, data, ethics, peer review, policy, social media, standards, and technology. Pitch an idea, write a story, or ask us a question!

*www.budapestopenaccessinitiative.org/read

†www.projectcounter.org/usage_factor.html

Keynote Address: The Research Data Revolution

Speaker:
G Sayeed Choudhury
Johns Hopkins University
Baltimore, Maryland

Reporter:
Jessica LaPointe
Managing Copy Editor
American Meteorological Society
Boston, Massachusetts

G Sayeed Choudhury

Of the many striking points G. Sayeed Choudhury made in his keynote address, the one that got the biggest audience reaction was "data is the new bacon." The more fastidious editors among us might have preferred it to read "data *are* the new bacon," but the point was well taken: data management is becoming ever more relevant and essential, with the topic appearing in such diverse forums as the *Harvard Business Review* ("Data Scientist: The Sexiest Job of the 21st Century") and Twitter. The statement that "data is the new oil" (Clive Humby) encourages us to think about data as a natural resource: they flow, can be extracted, and must be preserved for the use of future generations, whose goals and results cannot be predicted by today's researchers.

An engineer by trade, Choudhury described engineering as a liberal art, involving people, processes, and products and the workflows that connect them. He applies this same outlook to the challenges of data preservation through his work with the Data Conservancy (DC; *https://dataconservancy.org/*), which is devoted to data preservation and the cross-disciplinary aspects of data management using a three-pronged approach: preserve, share, and discover. DC aims to collect research data, reveal their potential across many disciplines, and promote re-use and new combinations of data. At the governmental level, data preservation may be addressed by programs such as the Commons (a program of the National Institutes of Health), which multiple agencies may use to store and share data, and the White House Open Data Initiative (*www.data.gov*), designed to allow the public access to tools and resources for research and analysis.

The traditional definitions of "Big Data" are based on its volume, velocity, and variety. But in the future, the size of a given collection will matter less than what can be done with the data and how they interface with other available services. For Choudhury, the definition of "Big Data" is less about size and more about methods (or the lack thereof): When a community's ability to deal with the data is overwhelmed and new methods are required, that's when data become "big." We are currently grappling with this issue with scientific data: They have become so massive that we need new systems to effectively manage and preserve them.

Much of this address focused on libraries, but the concepts can also be applied to publications. Both libraries and publishers can be considered from the three pillars of collections, service, and infrastructure. Data are a new form of collections. Storage is basically the same regardless of content, and if datasets are open, libraries must distinguish themselves by the services they offer. The existing infrastructure cannot interpret data in as sophisticated a way as humans can. As with libraries, "publishing is about content, not format" (Wendy Queen). Fundamentally, we are all about collections, services, and infrastructure.

The comments during the question-and-answer period touched on issues that affect every publisher: We can identify plagiarized or recycled text, but we can't identify stolen data. All agree on the need for an iThenticate-type product for datasets. As publishers attempt to convince researchers to make their data widely available, federal and private funding agencies increasingly require open availability of data, which helps motivate the researchers to comply with publishers' requests. The question period wrapped up with the observation that, as editors and publishers, we have to think about how best to serve readers and what tools can we offer them. Choudhury replied that professional society publishers are uniquely positioned to provide services to researchers because of their relationships to and in-depth knowledge of specific scientific communities.

The major takeaway of this talk was that "one person's noise is another person's signal." Careful data preservation and management are essential primarily because it's impossible to anticipate how existing data might be used in the future. Data that are properly stored, archived (protected), preserved, and curated today will be available to answer the questions and solve the problems of tomorrow.

Plenary Address: The Future of Thought

Speaker:
Clive Thompson
Author, Journalist, Technology Industry Expert
New York, New York

Reporter:
Frederic Shaw
Editor-in-Chief
Centers for Disease Control and Prevention
Atlanta, Georgia

Clive Thompson

Is the Internet changing how people think? One school of thought says yes, the Internet is rewiring our brains and not for the better. Nicholas Carr has written, "I'm not thinking the way I used to think... [W]hat the Net seems to be doing is chipping away my capacity for concentration and contemplation."[1]

Clive Thompson agrees with many of these fears, but he is intent on celebrating the upside of the Internet age. In his witty and insightful talk, based in part on his 2013 book, *Smarter than You Think: How Technology Is Changing Our Minds for the Better*, Thompson explained four ways the Internet is changing the way we think and share ideas, giving us a better understanding of our world.

The first is what Thompson calls "public thinking." Where we once did most of our thinking by ourselves or with a few friends and family members, the Internet has allowed us to broadcast our thoughts instantly to huge audiences through emails, texts, blogs, comments, and social media posts. The average person is writing more today than perhaps at any time in history, contributing as many as 3.6 trillion words a day, equivalent to the entire contents of the Library of Congress. Is this torrent of words a good thing? Not necessarily, Thompson says, but it has had an effect on human thought. We now have the ability to know what thousands of people are thinking right now and understand that many of them are having the same ideas that we are having. Many of these ideas are novel and interesting, because when we write publicly, in front of other people online, we experience the "audience effect." We feel the need to be a slightly more interesting and articulate version of ourselves.

The second change is what Thompson calls a new "ambient awareness" of other people. The advent of messaging through texts and Twitter is changing the way we know each other. When texting and Twitter first appeared, many people were skeptical. Thompson remembers thinking, "Is this (a 140-character message) what civilization has come to?" But anthropologists are learning that some people—Japanese teenage couples, for example—are able to gain a unique ambient awareness of each other through thousands of short, frequent messages, a kind of ESP into the other person that is not possible through less frequent, higher-bandwidth communications, such as telephone calls.

Third, the Internet has created several new forms of literacy. One is what Thompson calls "photographic literacy." Decades ago, newspaper readers believed that news photographs portrayed their subjects literally. Although other examples surely exist, Thompson pointed out that Joseph Stalin pioneered the art of manipulating photographic images, erasing offending commissars from official photographs in an attempt to revise history. In the 1980s, with the advent of Photoshop, people began to understand how easily photos can be manipulated. Photo manipulators now had a harder time tricking people. In 2008, Iran published a propaganda photo (see Figure) showing the simultaneous launch of four missiles. Newspapers around the world ran

Figure. Iranian propaganda photo. Image courtesy of Clive Thompson.

(continued on page 43)

Short Course on Journal Metrics

Moderator and Speaker:
Angela Cochran
Journals Director
American Society for Civil Engineers
Washington, DC

Speakers:
Glenn Landis
Editorial Director
Blood
American Society of Hematology
Washington, DC

Carissa Gilman
Managing Editor
American Cancer Society
Atlanta, Georgia

Phill Jones
Head of Publisher Outreach
Digital Science
Edinburgh, United Kingdom

Sara Rouhi
Product Specialist
Altmetric
Washington, DC

Reporter:
Kathleen Pieper
Managing Editor
Neurology
Rochester, New York

"Data are power" was the decisive theme strung throughout the Short Course on Journal Metrics. Anecdotes from authors about long manuscript delays and editor complaints about lazy reviewers will persist, but the numbers tell the truth. This panel of self-declared "data geeks" reinforced this truth: from ferreting out poor-performing reviewers to analyzing your competition, data leverage power and lead to informed decision making.

Glenn Landis initiated this metric-centric discussion with the directive to *know* your journal. When submissions enter your system, measure key touch points from submission to assignment to production. These turnaround times tell the story of your staff and editors. Taken in aggregate, they can help you to assess where manuscripts may be sitting too long and allow you to set goal timeframes and reconnect with staff and editors on expectations.

Every journal should audit its impact factor (IF) statistics as soon as published to target inaccuracies. Extract all included articles from Web of Science by DOI using the same timeframe as for the published IF and export the data into an Excel pivot table. List article types and numbers to obtain the denominator. The numerator is often undercounted. If you find specific problems, you can report them to Thomson Reuters but must do so soon after the IF is released.

Continuing the story of metrics, Carissa Gilman, managing editor, *Cancer*, approached the age-old question of how and why your readers view published content. The old print circulation models no longer apply in the current landscape. Publishers are proactively tracking data that are ripe for the picking. Editors can also extract valuable statistics from open source, proprietary, and hosted analytics programs such as Google Analytics, Webtrends Analytics, and Adobe Analytics.

It is also important for editors to conduct their own mini-analyses by navigating their sites regularly: assess the number of clicks it takes to find specific content; test search function by author, title, subject keywords, and DOIs; Google your own content to ensure it appears on the first page of results. With these data you can make informed decisions about site changes depending, of course, on time and current resources.

Angela Cochran from the American Society for Civil Engineers provided a case study of successfully using data to change editor behavior. Across the portfolio of 35 journals, the average turnaround from submission to first decision was 7 months in 2005. In 2014, this number had fallen to 3 months. Although the editors complained of poor reviewer turnaround times, data indicated that manuscripts were sitting in editor versus reviewer queues. The editors began to take responsibility and improve practices. Editors are even requesting more granular data, and these data "report cards" are distributed to all members. Late reports are run and distributed when manuscripts pass a specific deadline for that touch point.

Data-driven metrics can also spark new product development. Cochran noted that editors should routinely examine types of published papers, topic areas, authors, and countries of origin. By conducting analyses of trends, rejected material, and your competition, you may find that it makes sense to consider launching a spinoff journal. She emphasized that serious consideration of the investment of time and resources is warranted. If your high-quality papers are going elsewhere and being cited, this is a positive indicator for adding a spinoff journal to the existing portfolio.

Landis outlined which segments to examine in a competitive analysis. Using Web of Science, Journal Citation Reports, or SCOPUS, you can determine your own citations, journals that are citing your articles, journals in which the top articles are being published, where highly cited articles are published, and who the top authors are, all of which will enable comparison of performance across journals. Google Scholar can provide snapshot metrics to assess the visibility and influence of recent articles in scholarly publications.

Although you should look at your competition's classic metrics of impact including Eigenfactor and Article Influence Score, also review the media coverage and where your society meeting plenary reports are published. Survey your authors to gauge the reasons for submitting to your journal, including speed of review and first decision, open-access options, audience, and branding. Ask authors where else they have submitted and the reasons for choosing other journals.

Gilman then defined the IF and outlined some shortcomings of this metric. Universities still use this classic measurement to

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determine faculty tenure, librarians use it to make decisions about which journals to purchase as their budgets diminish, and authors use it to assess where to submit. However, the drawbacks are well-established: the analysis does not correct for self-citations and review articles can increase the score, among others. Journals can also employ unethical "gaming" practices of self-citation, citation stacking, and citation cartels. Cartels can be formed by a group of journals whose authors cite articles in the group's journals, thereby increasing IFs within the group. These inappropriate actions can result in exclusion from the Journal Citation Reports (JCR).

Journal performance should not be based on one metric. Some adjunct or alternative measurements are available. JCR can also provide Immediacy Index, Cited Half-Life, 5-Year JIF, Eigenfactor Metrics, and Journal Self Cites. The strengths and weaknesses of other metrics including PageRank, Eigenfactor, Article Influence Score, SCImago Journal Rank (SJR), Impact Per Publication (IPP), Source-Normalized Impact per Paper (SNIP), and h-index were outlined. M-index, g-index, e-index, h-index, c-index, and Google's I10-index are author-based metrics that can be used to gauge your—and your competitors'—influence in the field.

Phill Jones, head of outreach at Digital Science, discussed the traditional metrics of IF and citations and how these measurements actually play out in the real world. Traditional metrics are increasingly lagging behind. Although they still may indicate academic impact, the reality is that funders are now seeking ways in which researchers can show proof of social impact. The results of research may yield policy change, or lead to obtaining a patent on devices that would mitigate poverty or robust clinical trials can lead to improved patient treatment. It is important for researchers to show impact to funders, and alternative metrics can monitor these conversations in real time.

Furthering this concept, Sara Rouhi, Product Specialist, Altmetric, noted that these complementary measurements—or altmetrics—gauge immediate attention to research. This interaction is measured from nontraditional sources such as social media, blogs, and policy documents and also relays who is interacting with your content, e.g. practitioners, general public, or academicians. This usage can be leveraged for specific authors to describe the story of their article's impact, thereby securing greater grant funding, solidifying their reputation in the field, and tracking their competitors. The company Altmetric provides products that are rapidly gaining traction as an industry standard. Publishers can display Altmetric badges and widgets that link to real-time conversations (clicks, Tweets, posts, blogs) about a specific article. Publishers can provide these data as a free service to authors. Altmetrics can also leverage marketing, gauge who is competing for authors, and track trends.

Importantly, this course continually challenged the audience to assess: What are you trying to solve? Avoid extracting data for the sake of extracting data. Dissect each aspect of a problem so that the solution providers can assess all of those problem sets and work backward to pinpoint and glean necessary data.

continued (from page 41)

it on the front page. But, as Thompson relates, online bloggers "smelled a rat" and pointed out that the plume from missile number 4 was identical to the plume from missile number 3. The Iranians had copied and pasted in a fourth missile to make the launch look more impressive. Newspaper editors had missed this but the photographic literati had not.

Fourth, the Internet has advanced human collaborative thought. The Internet has connected billions of minds, and this has opened up new ways of solving problems. Need to learn how to use high-speed power tools? YouTube has tens of thousands of videos from people who are skilled at that. Need to figure out how to fold a cellular protein structure into the smallest space? To do that decades ago, biochemists would have needed a supercomputer that was only available to large institutions. Thompson related how the Internet has changed that. In 2010, researchers tossed such a problem to the Internet. Thousands of people began working on the folding problem simultaneously and solved it in a shockingly short time through collaborative thought, by testing ideas and rapidly telling each other what was working and what was not.

Note: The conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Reference

1. Carr N. Is Google making us stupid?: what the Internet is doing to our brains. *The Atlantic*, 2008;July/August. *www.theatlantic.com/magazine/archive/2008/07/is-google-making-us-stupid/306868/* (accessed 8 June 2015).

Short Course for Publication Management

Speakers:
Denis G Baskin
Executive Editor
Journal of Histochemistry and Cytochemistry
Seattle, Washington

Patricia K Baskin
Executive Editor
Neurology
Minneapolis, Minnesota

Nancy Devaux
Process Improvement Manager
Sheridan/Dartmouth Journal Services
Waterbury, Vermont

Kenneth F Heideman
Director of Publications
American Meteorological Society
Boston, Massachusetts

Amy McPherson
Director of Publications
Botanical Society of America
St Louis, Missouri

Reporter:
Ruth Isaacson
Assistant Managing Editor
Genetics Society of America
Bethesda, Maryland

The day-long Short Course for Publication Management focused on educating first-time journal editors about their role and the challenges they face while simultaneously providing new perspectives for experienced managers. Topics included how to lead, especially in a disaster; managing communications and building a team; journal production; managing your editor(s); and understanding the role of scientists in publishing.

Managing editors and publication managers communicate both to and with a variety of users. Whether staff, editorial boards, vendors, authors, or reviewers, it's our task to identify and address the differing needs of these communities.

Ken Heideman first discussed strategies to help us succeed as managers. He presented Maslow's Hierarchy of Needs as an analogy for the workplace. This model, represented as a pyramid, lists five levels of human existence, with each level needing to be satisfied before moving to the next higher level. The three bottom levels of the pyramid are basic needs, safety needs, and psychological needs, with the top two levels being self-actualization and peak experiences. An analogous pyramid can be imagined for the workplace. For your staff to rise to the top of the pyramid (namely, to be creative and independent and to provide leadership and vision), you must first help them to establish core competencies and provide them with the basic tools and training they need; only with that solid foundation can they then thrive and excel as integral members of your team.

How can we get our staff to the top of the workplace pyramid? Suggestions from attendees indicate that managers should provide constructive feedback, even when difficult; be consistent in their responses; be trustworthy, so that staff can communicate their needs; and be both physically and emotionally present. Heideman also shared his personal motto: "Manage Consciously. Consciously Manage." As a leader, you should manage in a way that reflects your values and supports your employees. Think about the various supervisors you've had and make an effort to incorporate their best traits into your managerial style. Seek out management training, attend leadership conferences, and identify a leader who inspires you. Above all, recognize that you're not going to be a great manager on day one. You'll develop these skills over time, and if you manage consciously, your staff will give you the time that you need. If you lead effectively and support your bottom tiers, your staff should feel empowered to take on challenges and grow in their roles.

Next, Patricia Baskin presented tips for managers to communicate positively and enthusiastically, lead team-building exercises, and focus on efficiency and time management. It's important to provide clear instruction, have positive goals and targets, and display enthusiasm for your staff's talents. Because the unique perspective that each member brings to the table strengthens a team, you need to hire a diverse group. However, this brings additional challenges, and you should consider how different generations, cultures, and skill levels can influence your workplace. Baskin suggested considering nontraditional work environments, offering training and support, and understanding that a single approach won't solve all problems.

Baskin also presented techniques used to reach group consensus and increase efficiency in the office. Make the most of meetings by keeping them short (implement standing meetings, or walking meetings if there are only two people), providing agendas, discussing important items first, and summarizing outcomes in writing. It's key to focus on efficiency so that you can create the time to assess the health of your staff and your publication.

Switching gears, Nancy Devaux discussed the processes involved in article and issue production from the vendor's perspective, as well as maintaining a positive relationship with your production vendor. Ideally, your production vendor is an extension of your office. Communicate with the vendor's staff as if they are part of your staff. Let them know when things are going well and when problems exist. Be clear when developing new projects and provide the details that they need for implementation. Understand that workflow changes, new initiatives, and regular production are scheduled and require a standard amount of time to complete. If you expect something out of the ordinary (e.g., special collections, new article types, schedule delays, new editorial staff), communicate these needs in advance. Clear lines of communication between you and your vendor help to strengthen your relationship and will contribute to efficient journal production.

Finally, Amy McPherson and Denis Baskin provided different perspectives on the needs of your editors, authors, and reviewers. Publishers rely on editors for their expertise, and we expect them to be fair, constructive,

(continued on page 49)

Short Course for Manuscript Editors

Moderator:
Peter J Olson
Senior Copyediting Coordinator
Dartmouth Journal Services
Waterbury, Vermont

Speakers:
Elizabeth Blake
Director of Business Development
Inera, Inc
Belmont, Massachusetts

Stacy Christiansen
Managing Editor
JAMA
Chicago, Illinois

Annette Flanagin
Executive Managing Editor
JAMA and the JAMA Network
Chicago, Illinois

Reporter:
Beverly Lindeen
Managing Editor
Allen Press, Inc
Lawrence, Kansas

Elizabeth Blake, Director of Business Development for Inera, Inc, started the Short Course for Manuscript Editors with a presentation on tips for using Microsoft Word. Manuscript editing tasks are composed of several components:

- checking for manuscript completeness;
- formatting the document;
- confirming data consistency;
- ensuring consistent usage;
- applying journal style;
- editing for grammar and syntax; and
- entering queries to the author.

Word offers a lot of tools—some hidden, some obvious—to help with many of these tasks.

Word contains tools that can fix file corruption, reveal text fields within a document, and convert tabbed tables into Word tables with a click of a few buttons. The Navigation Pane can help with searching for and inserting different heading levels. Formatting and editing shortcuts can be an important time-saver for the busy manuscript editor, as can the Split tool (see two parts of the same document at one time).

Each manuscript editor has different preferences for how he or she edits a document. Depending on your personal workflow and the journal's workflow, there may be some tools in Word that you use all the time, some that you rarely use. Customizing Word to your specific needs will make the program easier to use and increase your efficiency and productivity. The Ribbon can be altered to add or remove buttons or tabs, rename tabs, and change the order of the tabs. The Quick Access Toolbar also can be customized to the user's preferences. Don't forget to explore all of Word's options through the Options menu!

Peter J. Olson, senior copyediting coordinator for Dartmouth Journal Services, continued the course with a presentation on editing medical and scientific tables. The purpose of a table in a scientific article is to present the data of a study, support the conclusions, give an overview, or highlight significant trends. When editing tables, a manuscript editor should try to use as little space as possible and make the table concise by consolidating the information presented in the table and avoiding repetition.

Editing tables can be challenging, but there are things that a manuscript editor can do to make the task easier. Some of the tools available in Word make the table easier to read when editing, such as viewing gridlines, adding and removing rules, and removing or inserting columns or rows. It is also possible to repeat the header if a table flows from one page to another and merge cells or split them apart, as well as distribute cells evenly throughout the table.

Stacy Christiansen, managing editor of *JAMA*, then presented information on editing charts. Charts are used by authors to graphically illustrate the results of their studies. In general, charts, along with their titles and captions, should be able to stand alone, apart from the text of the paper. Keeping this in mind, the manuscript editor should edit the titles, legends, keys, and captions to be concise but informative.

The chart itself should be thoughtfully labeled without wasting space. Axes should be labeled. The chart should be easy to read, that is, the right amount of information should be conveyed. Too much information and the reader may be confused about the results being reported; too little and the reader may not learn anything from the chart.

Choosing the right type of chart is important: bar graphs, line graphs, forest plots, dot graphs, string plots, and flow diagrams are some of the available options. Make sure that the chart the author has chosen is suitable for expressing the results as intended. If the type of chart is correct, make sure that it has been used correctly as well.

Sometimes a photograph is a suitable format for illustrating the elements of the article. In such cases, care should be taken to ensure the anonymity of the subject(s) in the photos. It used to be acceptable to insert black bars over the eyes of the subjects in a photo as a way to make the subject anonymous. However, acceptable practice now is to take other measures to ensure anonymity, such as close cropping to the area of interest in the photo. When complete anonymity cannot be achieved, patient consent should be obtained, or the photo should be omitted from the article.

The final presentation of the course was given by Annette Flanagin, executive managing editor for *JAMA* and the JAMA Network, on some ethical and legal issues in scientific editing. Common concerns for editors working with journals are authorship, conflicts of interest, and copyright.

Authorship is an issue for which each journal should have a standard policy, but journal policies vary. Questions surrounding the authorship of a paper can cause problems for authors and editors. The International Committee of Medical Journal Editors (*www.icmje.org*) provides a recommendation of four criteria that should be used when deciding whether or not someone qualifies as an author. Other authorship factors to consider are the order

(continued on page 49)

Conquering the Production of Mathematical Content

Moderator:
Kaveh Bazargan
CEO
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Speakers:
Michael Friedman
Journal Production Manager
American Meteorological Society
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Gil Poulin
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Reporter:
Beverly Lindeen
Managing Editor
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This session presented possible solutions to the problem of typesetting math set in LaTeX. It also delved into accessibility of mathematical content for the visually impaired.

Mathematicians, many scientists, and engineers prefer to create their mathematical content in LaTeX. However, this program poses some problems for journal production processes because LaTeX, in its native form, does not work well with most types of article-composition software because LaTeX is accessible only by reading the source language. Converting LaTeX to XML for it to work with such software is challenging. Having good XML is important, as it is the version of record in most cases. Whereas the PDF created during the pagination process could contain errors, the XML should be sound. Therefore, a reliable program is needed that can accurately make that conversion. The American Meteorological Society and the American Mathematical Society are both using new software for this purpose, which their representatives presented during their talks at this session.

Michael Friedman, journal production manager for the American Meteorological Society, gave a presentation on their approach to typesetting mathematical content.

The American Meteorological Society publishes roughly 34,000 pages per year in ten technical journals. About 33% of their submissions are supplied in LaTeX. For those authors who do not use LaTeX, detailed instructions are provided regarding the use of MathType or Word's Equation Editor. And for those who use LaTeX, a template is available that authors can use to format their submissions.

The American Meteorological Society compositor converts the LaTeX files to Word so their in-house copy editors can edit the files. When the edited file is typeset, the article is exported to XML. The final mathematical output is sent to their online host as bitmapped images. When the articles are viewed online, the math does not resize with the text, the images are often larger than the surrounding text, and the math cannot be read by accessibility software.

Starting in 2015, the American Meteorological Society will begin to use a software called MathJax (*www.mathjax.org*). MathJax is an open-source math display engine designed to show math accurately online. It is server based, works with all browsers, and does not require Flash to run. MathJax will be used to convert all MathML coming from XML into MathJax objects. However, the technical editors must ensure that all math is formulated correctly in MathType or MathJax will not display the math properly.

Gil Poulin, production editor for the American Mathematical Society, discussed his organization's approach to mathematical content.

For the American Mathematical Society, LaTeX rules. Ninety-seven percent (97%) of the content in their books and 100% of their journal content is provided as LaTeX files from the authors. Once a paper is accepted, the Society formats, links, and tags the content. For the most part, they use XML when appropriate but generally feel that converting to XML takes away from what the authors are doing in LaTeX. Because mathematicians are still print oriented, this workflow is fine for them because the output is a PDF that can be printed. However, for their online content, the Society is also working with MathJax.

Another project at the American Mathematical Society is the Lens eReader. Lens is a new online reading experience for research mathematicians that offers a more dynamic experience than reading PDFs.

The last presentation for the session was given by John Gardner, president of ViewPlus Technologies. He offered a solution to the problem of accessibility of math content for the visually impaired. Recent screen reader advances now make it possible for MathType equations in Word to be read in audio. Gardner has created LEAN, an app that makes MathType equations and other equations expressible in MathML readable in both audio and braille. LEAN also permits MathType and other MathML equations to be edited or created.

Managing Journals in a Global Context

Moderator:
Carolyn Brown
Independent Writer, Editor, and Consultant
Ottawa, Ontario, Canada

Speakers:
Carly McCuaig
Managing Editor
Journal of Medical Imaging and Radiation Sciences
Ottawa, Ontario, Canada

Silvia Buntinx
Editor-in-Chief
Veterinaria México OA
Mexico City, Mexico

Aaron Weinstein
Managing Editor
Plastic and Reconstructive Surgery and *PRS Global Open*
Dallas, Texas

Reporter:
Amy Ninetto
Scientific Editor
University of Texas MD Anderson Cancer Center
Houston, Texas

Science journals in our globalized world confront two related problems: how best to reach a global audience and how to attract more international authors. The panelists described a wide variety of creative strategies to raise their journals' global profiles, but some common threads emerged: choosing an appropriate name for an international journal, globalizing editorial boards, expanding outreach to potential authors and reviewers, ensuring wide accessibility, and managing language challenges.

Carly McCuaig recounted her experience developing a higher international profile for the former *Canadian Journal of Medical Radiation Technology*. In order to bolster its application to be indexed in MEDLINE, the expanding journal dropped "Canadian" from its name—it is now the *Journal of Medical Imaging and Radiation Sciences* (*JMIRS*)—and recruited a more international editorial board. It has partnered with several international professional societies that do not have journals to offer free access to *JMIRS*. The journal has also embraced global social media by starting a journal club on Twitter (#MedRadJClub), where members "meet" each month to discuss a prearranged theme. These strategies have been very successful in attracting more international authors and readers.

Silvia Buntinx was asked to rebuild the journal *Veterinaria México OA* (*VMOA*), replacing an editor-in-chief who had enjoyed a 43-year tenure. *VM* mainly published the research of the Veterinary Medicine Faculty at the Universidad Nacional Autónoma de México (UNAM), and its structure raised several potential conflicts of interest: articles were mainly authored and reviewed by faculty, who also made up the editorial board. Although Silvia did not remove "Mexico" from the journal's name, she added "OA" to signify its new open-access format. Under a more independent and international editorial board, the new *VMOA* went online in 2014. Peer review is conducted in English, so both Spanish and English versions of manuscripts are required. *VMOA* charges no author fees because it is funded by UNAM; it uses Creative Commons licenses to give readers free access. Google Analytics shows vastly improved global visibility for both the journal as a whole and individual articles.

Plastic and Reconstructive Surgery is already the "International Voice of Plastic Surgery." Understanding that the information needs of plastic surgeons in different places vary, Managing Editor Aaron Weinstein and his team spun off a new open-access journal, *PRS Global Open*. The high rejection rate (~80%) of *Plastic and Reconstructive Surgery* effectively feeds many high-quality articles to its competitors. Seizing this opportunity, *PRS Global Open* automatically offers to review papers rejected from *PRS*. *PRS Global Open* also advances the mission of the American Society of Plastic Surgeons—to improve plastic and reconstructive surgery worldwide—by waiving or discounting fees for authors from low- and middle-income countries and publishing abstracts and proceedings from international partners. Its editorial board, with a non-US majority, serves as a worldwide network of regional ambassadors. Aaron explained that "you have to bring your journal to where your audience and authors are," so its next editorial board meeting will be held in South Korea. *PRS Global Open* also presents awards for international papers at the Society's annual meeting.

Moderator Carolyn Brown asked the panelists to discuss their decisions about whether to provide open access. Carly explained that although *JMIRS* is not open access, it more easily attracts international authors because, as a publication of Elsevier, it does not charge author fees. The decisions of Buntinx and Weinstein to permit open access were based in the understanding that their readers would need free access, even though *PRS Global Open* has to charge author fees as a result.

In the question-and-answer period, the panelists and audience discussed translation. Buntinx said that, at the bilingual *VMOA*, Spanish and English manuscripts are edited by native speakers of each language. Several audience members mentioned that volunteers translate abstracts for their journals but that, unfortunately, skilled volunteers are hard to find. Weinstein reported that *PRS Global Open* is piloting an innovative program in which authors post a short online "video abstract" of their articles in their local language. In all, the panelists' experiences represented some of the many paths to taking a journal global.

By the Numbers: Evaluation Strategies to Improve Journal Performance

Moderator:
Alexis Wynne Mogul
Senior Managing Editor
KWF Editorial Services
Baltimore, Maryland

Speakers:
Marc F Swiontkowski
Editor-in-Chief
The Journal of Bone & Joint Surgery
Needham, Massachusetts

Christina Nelson
Peer Review Manager
The Journal of Bone & Joint Surgery
Needham, Massachusetts

Jonathan Schultz
Managing Editor
Circulation Research
American Heart Association
Dallas, Texas

Etta Kavanagh
Editorial Manager
Proceedings of the National Academy of Sciences
National Academy of Sciences
Washington, DC

Reporter:
Kerry O'Rourke
Senior Managing Editor
KWF Editorial Services
Baltimore, Maryland

Evaluating all players on the journal side of the peer-review process—editors, reviewers, editorial board members, and staff members—can provide benchmarks that may lead to improved journal performance. But which metrics do we look at and what numbers do we crunch? This panel of experts shared their experiences and offered practical suggestions about evaluation methods they are using to maintain their competitive edge.

Figure. Slide depicting reviewer removal process for *The Journal of Bone & Joint Surgery*. Image courtesy of Christina Nelson.

Evaluating Reviewers

A recent author survey done for The Journal of Bone and Joint Surgery, Inc,* which publishes four journals, highlighted challenges shared by journals in many different fields: Authors were concerned about the quality of reviews and the length of the review process. The editor-in-chief decided to "review the reviewers" and recognize those who received high rankings.

Authors and reviewers are "our customer base," said Marc F. Swiontkowski, editor-in-chief of *The Journal of Bone & Joint Surgery* (*JBJS*), a biweekly orthopedic journal that receives about 1,700 submissions each year and that once counted about 1,500 reviewers in its database but now is down to 1,300. "We want reviewers who do an excellent job and [who] do it without delay."

The journal had long used a reviewer-grading system to weed out substandard reviewers, but, in 2014, began an extensive project to pare down its database, said Christina Nelson, *JBJS* peer review manager.

They removed any reviewer who had registered and never completed a review, hadn't done a review in three years, or declined to review three or more times in the past year, she said (see Figure). They kept people who had registered recently but hadn't yet had a chance to complete a review. Ultimately, they want to reduce the reviewer database to 1,000 registrants.

Evaluating Editors

The American Heart Association (AHA), which publishes 12 journals that as a group received 20,000 submissions in 2014, had evaluated its editors by looking at standard metrics such as time to first decision and acceptance rate. But simply looking at quantitative data wasn't resulting in a meaningful evaluation, said Jonathan Schultz,

*A style note for this section from Christina Nelson: Technically the company should be called "The Journal of Bone and Joint Surgery, Inc." The journal itself is called *The Journal of Bone & Joint Surgery* (yes, the ampersand makes a difference).

continued

managing editor of *Circulation Research*. The AHA surveyed its editors to learn what would work better and discovered that editors thought the metrics being tracked were only indirect measures of a journal's quality and that many were out of their control.

As a result, the AHA revamped its editor evaluation process to include more qualitative measures. "They felt successful journals support the society's mission, publish important articles and reach a large audience in a meaningful way. And successful editors have a vision and experience and they know how to curate the best collection of work," he said.

Because qualitative goals can be harder to track, the society developed a new evaluation template that focuses on strategic goals over a three-year period. Schultz shared the template in his slides, which are also available online at *www.councilscienceeditors.org/resource-library/past-presentationswebinars/past-presentations/presentations-for-2015-meeting-sessions/*.

Evaluating Editorial Board Members

The *Proceedings of the National Academy of Sciences* (*PNAS*) receives 17,000 submissions each year and has an acceptance rate of about 18%. The editorial board members, who number 213 and act as gatekeepers, must maintain a reject-without-review rate of at least 50% so that the journal system isn't overloaded, said Etta Kavanagh, the journal's editorial manager.

To track rejection rates for individuals and the board as a whole, *PNAS* created reports in its online peer-review system to pull data each month. She shared examples of the tracking spreadsheets in her slides, which are also available at the URL stated above.

PNAS shares the data each month so that board members can see the big picture as well as where they stand individually; board members are listed by name in the report. Since they began sharing the data five years ago, the reject-without-review rate has increased from 49% to 55%, Kavanagh said.

Evaluating Staff Members

Tracking performance data gives managers and employees a treasure trove of precise information about productivity. At KWF Editorial Services, staff members track their work on specific tasks in a time-management system that can aggregate the data, which then can be used for different purposes, said Alexis Wynne Mogul, a senior managing editor.

The reports allow managers to determine if employees are meeting productivity benchmarks and to provide more training if needed. They also allow the company to supply clients with detailed monthly reports about the work accomplished. The data, displayed in spreadsheets as well as in charts and graphs, can shine a light on workflow bottlenecks and lead to improved efficiency, she said.

continued (from page 44)

and responsive. However, for editors, the journal is usually only a small part of their professional life, and we need to support them and provide regular feedback. Editor training and handbooks, yearly report cards, and term limits are excellent ways to assist editors and prevent burnout. Most editors, reviewers, and authors may not fully understand how the publication process works and would prefer for things to be simple.

The editor-in-chief is interested in your journal's overall quality but not necessarily in the steps that are needed to get there. The role of the editor-in-chief is to set the editorial policy for the journal, raise the journal's level of excellence, and make a difference in the field. To allow your editor-in-chief to focus on these tasks, you need to play to each other's strengths. As a managing editor, you must be a professional partner and colleague. Always be aware of and communicate what is happening in the publishing world. Understand your journal metrics and ways to address problems before they develop further. Manage your staff and office, maintain the confidentiality of the peer-review process, stick to deadlines, and know when to involve your editor-in-chief. After all, running a journal is the managing editor's full-time job and not that of the editor-in-chief.

continued (from page 45)

of authors, how to handle group authorship, and how to acknowledge authors who do not meet all of the four criteria. The Committee on Publication Ethics (COPE) (*publicationethics.org*) is a resource for recommendations on how to handle authorship dilemmas and disputes.

Journals should have firm policies about potential conflicts of interest. Authors, reviewers, and editors should disclose any potential conflicts of interest that may introduce bias into the peer-review process. A journal's policy should indicate specifically what constitutes a potential conflict of interest that an author, reviewer, or editor should disclose and provide a format for that disclosure.

Copyright is another area of publication ethics that requires a journal policy. It should be clear who owns the copyright of any item published in the journal. If the journal requires transfer of copyright or a publication license before publication, then a signed form should be obtained before an article is published. Unless covered under a Creative Commons license, copyrighted material should not be reproduced without permission, even by the author. Journals should have accessible policies on copyright and procedures for handling permissions to reuse their copyrighted material.

Advertising and the Scholarly Journal: Selling Audience

Moderator:
Stephanie Holland
Manager, Advertising Sales and Marketing
American Chemical Society Publications
Washington, DC

Speakers:
Jonathan Christison
Director, Commercial Business Development, Cell Press
Elsevier
Cambridge, Massachusetts

Christopher Hoag
President and Director
Kenyon Hoag Associates
Saddle River, New Jersey

Reporter:
Mary K Billingsley
Managing Editor
American Academy of Child and Adolescent Psychiatry
Washington, DC

"Advertising in the traditional sense is dead." As the *AMA Manual of Style* notes, advertising is often considered to be "an unfortunate necessity." Although it can be a major source of revenue for publications, perceptions of bias and infringement can shake readers' trust and make journal stakeholders understandably nervous about venturing into new frontiers.

Today, more potential pathways are available to reach audiences than ever before. From print and web pages to mobile and virtual events, as journals look to diversify revenue streams and advertisers seek to move beyond traditional print pages, editors and publishers may struggle to find the right balance in advertising content, format, and placement for their publications.

According to Christopher Hoag, of Kenyon Hoag Associates, advertisers today want to narrow their focus, direct content to the most appropriate audience within the scientific information ecosystem, and buy and place ads in different ways to support and participate in scientific communication.

Whereas traditional advertising casts a wide net, in the hopes that a message will reach the right person at the right time, new advertising models seek to create opportunities to put relevant content directly in front of those to whom it is most relevant. By highlighting new products and tools to a niche audience, alongside relevant peer-reviewed, unbiased content, advertisers hope to become a partner on the cutting edge of research. Advertising is part of the information ecosystem that exists in the scientific community, notifying the community of new products, technologies, and processes as part of an ongoing cycle: research, discovery, commercialization, and awareness (advertising).

Moderator Stephanie Holland, of American Chemical Society Publications, paused to ask audience members if they were familiar with the concept of native advertising—nonintrusive advertising content embedded within users' experience. Eschewing the traditional panel discussion framework, Holland's question-and-answer format gave this session the more intense feel of a workshop and encouraged the audience to participate in the discussion throughout.

"Publishing is a landscape fraught with peril." Jonathan Christison, of Elsevier's Cell Press, discussed various models for pairing peer-reviewed content with advertising, from microsites to sponsored open access. The journal benefits from the recirculation and promotion of published content, potentially affecting the impact factor and new audiences, and advertisers are able to "ride the coattails" of valuable published content to direct their messages to readers.

Panelists also reviewed best practices for managing the relationship between the editorial and commercial sides of a partnership between journals and advertisers and the related ethical concerns. To maintain the integrity of the scientific content and avoid perceptions of bias, publishers and advertisers should identify their common ground, set clear boundaries for their work together, and establish a cohesive vision that enables them to strike a balance between editorial content with peripheral messaging from the advertiser. Although advertisers may want some degree of control over content, the system for selecting material for inclusion in advertising programs should be established early on and closely followed. Advertisers cannot be allowed to manipulate content, but they might be allowed to cherry pick from a selection of published content or simply be invited to sponsor a selection of editor-curated content. In this way, the journal always maintains authority over content, helping to prevent real or perceived conflicts of interest.

Advertising is an uphill battle for journals. The many stakeholders bring to the table many and varied priorities and goals. Although the return to journals may be great, with increased revenue and potentially higher usage, advertising must be carefully and very closely managed. As the panelists acknowledged, there is a perception of advertising as the "Big Bad Wolf," but enlightened advertisers will understand the concerns of editors and the need to collaborate with journals to provide information and market their content in a way that is credible and reliable.

Preparing a Manuscript When English Is a Second Language

Moderator:
Anne Coghill
Manager, Peer Review Operations
American Chemical Society
Dunlap, Illinois

Speakers:
David Hanauer
Professor, Applied Linguistics/English
Indiana University of Pennsylvania
Indiana, Pennsylvania

Donald Samulack
President, US Operations
Editage/Cactus Communications
Trevose, Pennsylvania

Jeri Marie Wright
Publications Manager
PLOS Neglected Tropical Diseases
San Francisco, California

Reporter:
Leslie Parker
Production Editor, Copy Editor
Annual Reviews
Palo Alto, California

Anne Coghill began this session by pointing out that every year, publishers see more submissions from authors who use English as a second language (ESL). Donald Samulack added a startling reality check: In 2015, China will produce more research publications than the United States.

We all know that scientists using ESL face greater difficulty when required to publish in English rather than their first language. David Hanauer conducted a study to quantify that additional burden.[1,2]

Challenges of Writing Science in ESL

The study surveyed 148 professors and researchers in Ensenada, Mexico (60 miles south of the United States), who write science in both ESL and their first language. On average, they perceived scientific writing in ESL to be 24.1% more difficult, the final written article 24.1% less satisfactory, and the anxiety induced by the writing process itself 21.7% greater.

Samulack emphasized that authors in China who use ESL are particularly vulnerable to profit-seeking predatory groups soliciting submissions, reviews, or editorial board members. These authors may not benefit from coordinated efforts to publically identify such groups, such as Beall's list, because of government censorship of blogs and other material published with WordPress. Pressure to publish or perish is intensified by the fact that salaries and academic appointments are determined by formulas incorporating publication statistics, including author order in bylines. Samulack also described a service-oriented culture where it is common and acceptable to seek support services to reach career goals. And because authors using ESL in diverse countries are often unfamiliar with principles of publication ethics that Westerners take for granted—all three speakers made this point—unwitting breaches of those principles are frequent.

Jeri Marie Wright emphasized positive incentives for publishers and members of the international scientific community to support authors who face these challenges: The legitimate literature will grow in breadth as publishers start to recognize the value of the science being done in developing nations. Moreover, journal editors personally involved in education and mentoring find the experience deeply rewarding.

Solutions

Hanauer identified universities, research institutions, professional organizations, and publishers as stakeholders responsible for providing the needed support, first saying that "it is both unrealistic and unjust to expect every international scientist to develop…to the level required in order to write publishable manuscripts in English as a second language by themselves and without adequate support."

Similarly, Wright quoted Serap Aksoy, co-editor in chief of *PLOS Neglected Tropical Diseases*: "We are keen to publish high-quality research papers as well as level the playing field for all scientists in our global community. Particularly, we are keen to receive good papers from researchers in disease-endemic countries…I hope more of the publication enterprise will adopt the responsibility to expand and enhance the global scientific community."

To that end, in 2014, *PLOS Neglected Tropical Diseases* began offering free workshops and correspondence courses conducted by journal editors. Workshops are organized for small groups and in multiple languages to provide detailed guidance on writing, the submission process, and publishing practices. Topics include how to write a cover letter, title, and abstract; IMRAD structure of journal articles; and general principles of good writing. Workshops have been conducted in over half a dozen countries across three continents. Editage has conducted in-person workshops in five countries and webinars in 23. Wright and Samulack both said that authors are eager to participate and find the programs incredibly helpful.

Answers to the Challenges of Writing Science in ESL

Universities, research institutions, professional organizations, and publishers can support authors who use ESL by

- offering editing and translating services
- supporting travel to international conferences
- hosting international conferences
- promoting ESL networking
- explaining standard publishing procedures in detail
- teaching publication ethics
- teaching general writing skills
- identifying papers in ESL at the time of submission
- copyediting ESL submissions before review

(continued on page 53)

Publishing Questions—Data-Informed Solutions

Moderator and Speaker:
Diane Scott-Lichter
Vice President, Publishing
American College of Physicians
Philadelphia, Pennsylvania

Speakers:
Helen Atkins
Director, Publishing
Public Library of Science
San Francisco, California

Annette Flanagin
Executive Managing Editor &
Vice President, Editorial Operations
JAMA
Chicago, Illinois

Heather Goodell
Director, Scientific Publishing
American Heart Association
Dallas, Texas

Kenneth F Heideman
Director of Publications
American Meteorological Society
Boston, Massachusetts

Reporter:
Julie Steffen
Director of Publishing
American Astronomical Society
Tucson, Arizona

At one point during her presentation, Heather Goodell of the American Heart Association (AHA) said, "This is the panel where even when you have data, you may not arrive at an answer to your question!"

This valuable and engaging session was intended to illustrate the process by which the industry leaders on the panel have attempted to answer questions about their operations with the data they have at hand.

Session moderator and panelist Diane Scott-Lichter of the American College of Physicians wanted to know how to determine whether or not certain content is of value to readers and writers. She quickly discovered a discrepancy challenge in matching data at the article level and type captured and cited in Thomson Reuters Web of Science and those from the journal's online host, Silverchair. Matching citation data and usage data, Scott-Lichter learned about differences among the article types. Revealing the value of highly used and cited articles, seeing what is either highly used or highly cited, and identifying articles that were not well used or cited allows for a closer examination by domain experts to inform editorial decisions.

With 60% of submissions rejected without external peer review at *JAMA*, panelist Annette Flanagin noted that the *JAMA* editors wanted to evaluate the effectiveness of the process by which the submissions rejected by *JAMA* are transferred to other specialty journals in the *JAMA* Network of journals. The common term for this process used by other families of journals is "cascading peer review." *JAMA*'s previous passive, manual-transfer method required authors to opt in after the rejection decision. Changing this to an active, automated one in which the authors opted in at the time of submission to *JAMA* with an agreement among *JAMA* family editors to guarantee a review within five days improved overall efficiency and increased author acceptance of such transfers. The number of transferred manuscripts increased 4-fold and the number of transferred papers accepted for publication in the second journal increased. The result ensured fast decisions while maintaining healthy rejection rates and not diluting the *JAMA* brand.

Panelist Helen Atkins of PLOS wanted to know a better way to accurately predict when a submitted article had a high likelihood of being rejected so that it could be triaged to appropriate editors through an expedited process. As a community-run journal with no editor-in-chief, *PLOS ONE* was looking to optimize the peer-review process for an average of 200 daily submissions. After analyzing data on two years of rejected and accepted articles, a number of criteria emerged. In addition to identifying specific problematic article types such as clinical trials, meta-analyses, and genome-wide association studies, Atkins recognized that the analysis could be expanded when more standardized data such as author affiliations (Ringgold IDs) and funding sources (FundRef), which are only being newly captured, became more established.

The American Meteorological Society has been seeing a 10% to 15% decline in print runs, year after year, for all nine of the technical journals it offers both online and in print. Even with an anticipated 20% in cost savings resulting from eliminating print, panelist Ken Heideman and Society leadership remain unconvinced that is the right thing to do, citing abundant anecdotal feedback suggesting that a nontrivial subset of members is willing to pay more to receive the journals in print form. Ken was emphatic in stating that subscribers will continue to receive content in whichever form they prefer; the Society has no plans to unilaterally "kill" print.

Goodell wanted to know if social media was "really worth it" and used a randomized trial of AHA Facebook and Twitter activity for the journal *Circulation* to try to find out. The editor-in-chief was the only AHA editor using social media, and the concern was that readers would forego the actual article in favor of the social media about it. The jury is still out on the results; however, Goodell learned along the way that a tweet about a study examining the use of social media at *Circulation* was responsible for more social media activity than the entire marketing campaign designed for that purpose.

All in all, this session was an excellent survey of common questions across scholarly publishing. The panelists gave lively, thoughtful presentations to a large audience and took on a number of challenging audience questions as well. It was clear from the presentations that data-driven investigations can sometimes yield inconclusive results and yet, other times, yield serendipitous discoveries.

Taxonomy

Moderator, Speaker, and Reporter:
Marjorie Hlava
President
Access Innovations, Inc
Albuquerque, New Mexico

Speakers:
Monica Bradford
Executive Editor
American Association for the Advancement of Science
Washington, DC

Charlotte McNaughton
Director of Publishing Technologies
American Society of Civil Engineers
Washington, DC

The session began with a quick overview by Hlava of taxonomies and their place within the controlled vocabulary complexity continuum of list (no control), authority file (people, places, and things, listing the preferred form with other options provided as synonyms), taxonomy (list in hierarchical form), thesaurus (adding related terms while keeping synonyms and hierarchy) and ontology (adding directionality to the relationships) and the characteristics of each. She explored what can be done with a taxonomy implementation besides enhancing search, such as the recommendation of additional articles on the same topical cluster, linked data enrichment of content, finding peer reviewers based on their semantic profile, taxonomy terms applied to the person based on the indexing of their publications, and image indexing. Finally, she gave some examples of how to integrate a taxonomy into the production workflow.

Bradford took up the conversation next by having the audience "Following Our Yellow Brick Road". She described the first failed initiative to create a taxonomy (which lasted two years), and a subsequent hiatus while they worked on taxonomy use cases including editorial, business office, and reader/client usage. Next, they came up with a set of lessons learned, which included the following: 1) Support for the project cannot be focused on a short-term revenue opportunity. 2) The thesaurus must be considered an investment in the long-term value of your content. 3) Technology is only one piece of the project. Skilled taxonomists (consultants or staff) are essential. Strong IT support is needed as well. 4) Subject-matter experts must see the project as a priority and accept the skills brought to the project by the taxonomist and technology team. In 2013, they "awoke in the poppy field" and began the project anew. The American Association for the Advancement of Science (AAAS) development of a new manuscript-tracking system and new journal launches highlighted the need to re-start taxonomy development in support of the peer-review process. AAAS contracted with Access Innovations in 2013/2014 to develop the taxonomy/thesaurus and rules, index content back to 1996, and review content moving forward to help AAAS maintain the thesaurus. Now the taxonomy is integrated into the submission and tracking systems. IT staff worked on integration of automatic indexing using Access Innovations tools. Strong internal project management has been established. AAAS is now able to look ahead to the next steps in integrating the taxonomy across the production and user-facing platforms and indexing all AAAS content. Bradford's slides, which can be found on the CSE 2015 meeting website, include screenshots of the implementation.

McNaughton gave the second case study in the session. She outlined the process of taxonomy creation starting in 2009 and the subsequent rule building for automatic indexing of the American Society of Civil Engineers (ASCE) content. There are 2,400 concepts in the ASCE thesaurus and 1,100 synonyms. The geographic thesaurus grew to 30,000 terms before being reduced to a more manageable size. They have 6,541 rules, 806 of which are complex in nature. The rules help further disambiguate the terms and allow automatic application of the conceptual terms to text during the production flow. Having the thesaurus and rule base in place, ASCE turned its attention to implementation, starting with indexing of author profiles in ColWiz. This application applies taxonomy terms to describe an author's or editor's area of expertise in a reliable, consistent method. They also needed to decide what content to index; no to front matter and editorials and yes to articles and book chapters. The second project is to index the locations of all civil engineering disasters in the ASCE library and the Civil Engineering Database. The next implementations will be search, article recommendations, topic pages, and visualization using the taxonomy.

continued (from page 51)

- educating reviewers about ESL
- recruiting scientists who use ESL to serve on editorial boards
- publishing on topics of concern around the world
- providing resources to researchers at all career stages
- seeking submissions from diverse countries
- translating journal instructions into multiple languages
- promoting gold open access
- considering culture to choose the best training platform.

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Communicating with Readers and Engaging Them through Technology

Moderator and Speaker:
Ingrid Philibert
Executive Managing Editor
Journal of Graduate Medical Education
Chicago, Illinois

Speakers:
Patricia K Baskin
Executive Editor
Neurology Journals
Minneapolis, Minnesota

Sheehan Misko
Managing Editor
Clinical Chemistry
Washington, DC

Reporter:
Leslie Neistadt
Managing Editor
Journal of Athletic Training
Saint Louis University
St Louis, Missouri

Journal editors have always sought to engage readers. The current proliferation of new media offers a variety of ways to provide journal content beyond the traditional print issue to actively engage readers, including those whose needs may be outside the mainstream.

Ingrid Philibert of the *Journal of Graduate Medical Education* admitted she was initially reluctant to participate in new media. However, her journal was fortunate to receive an offer from ALiEM (Active Life in Emergency Medicine) for an online journal club. AliEM is part of the FOAM (Free Open Access to Medical Education) initiative, which includes video, blogs, and tweets. The initial live offering received 1,324 page views from 373 cities in 42 countries.

The *Journal of Graduate Medical Education* is also now partnering with Medstro, a social-media site with residents as its primary audience. That first foray was asynchronous and received 502 views and 11 questions and answers; the smaller response was attributed to the lack of a live component, a busy audience, and a topic with possibly limited appeal.

The *Journal* is developing both a practical guide for hosting and curating an online journal club and in-house capacity to promote, host, and curate Medstro discussions. The editors will continue to assess the technology and collect data on real-time and asynchronous online discussions.

Patricia Baskin of the *Neurology* journals described the launch of three subspecialty publications, two of which (*Neuroimmunology & Neuroinflammation* and *Genetics*) are online only. She noted that the single best way to engage readers is to give them the content they need, and indeed, the new journals expand content in popular subject areas. Providing content in different formats (e.g., apps, alerts, optimized mobile sites, local editions, podcasts) not only maintains the strength of the brand but also presents opportunities for diversifying the revenue stream.

Media coverage is another way to attract readers to a journal site. The *Neurology* journals' press office distributes one press release to the media each week. In 2014, 17 billion media impressions (the number of human eyes exposed to news about journal items) had occurred.

Altmetrics track online activity mentions and display the results visually, allowing authors to see who is viewing their work. Another feature is semantic search, which allows readers to search and flag items without using exact wording, either limited to the American Academy of Neurology site or extending to external sources, and to receive recommendations (à la Amazon). Stackly is a web-based tool for collecting, reading, annotating, organizing, storing, and sharing research content. A reader's personal database is stored in the cloud and can be populated with articles, books, images, music, posters, notes, and videos. Although Stackly can be used with a variety of sites, it "lives" on the *Neurology* site and always takes the reader back there.

Sheehan Misko of *Clinical Chemistry* described the need for tools that help trainees succeed early in their careers. The online Clinical Chemistry Trainee Council was started in 2011 to encourage young professionals to contribute to the association and the field. Most of the free educational materials come from *Clinical Chemistry*; among these are clinical case studies and guides to scientific writing in multiple languages. Available only on the Trainee Council, "Pearls of Laboratory Medicine" are short slide or audio presentations on specific topics or laboratory tests; 86 are currently available. The question bank assists trainees in preparing for United States and United Kingdom board examinations; more than 2,000 questions have been posted. The Council's podcast program has garnered more than 1 million downloads so far. Now with more than 8,000 members, more than 100 trainees have transitioned to members. To promote sustainability and growth of these offerings, the association is considering whether to impose fees for their use.

Given the array of new-media opportunities, even journals with limited financial resources can find cost-effective ways to leverage their content and promote reader engagement.

Dealing with Metadata: Content, Distribution, and Availability

Moderator:
Michael Friedman
Journals Production Manager
American Meteorological Society
Boston, Massachusetts

Speakers:
Todd Carpenter
Executive Editor
National Information Standards Organization
Baltimore, Maryland

Marjorie Hlava
President
Access Innovations, Inc
Albuquerque, New Mexico

Matt Stratton
Technical Lead, IT Operations
AIP Publishing
Melville, New York

Marcia Zeng
Professor, School of Library and Information Science
Kent State University
Kent, Ohio

Reporter:
Kelly Newton
Associate Production Manager
Proceedings of the National Academy of Sciences
Washington, DC

Marcia Zeng began the session with an overview of metadata: "structured, encoded data to describe characteristics of information-bearing entities, or things" that aid in the discovery and identification of those things. Metadata can be technical, descriptive, and administrative: for example, metadata for a photograph can include technical information (resolution and file size); descriptive information (what the image is, where it was taken); and administrative data (where the original is located and copyright or license details). Zeng also discussed "learned" metadata, such as Amazon recommendations based on user browsing and buying history. In Amazon's case, users of metadata also contribute to the metadata and, in doing so, help the system evolve.

Todd Carpenter spoke about standards. Metadata are necessary to navigate a digital environment and must be structured according to regular, defined standards, which, ideally, are governed by standards organizations. Each set of standards is highly specialized according to the purpose and type of data collected and the community and domain using the data. Not all attributes of a thing can or should be identified or described, but useful information should be provided. One can apply one's own "functional granularity" based on business needs. For example, a magazine publisher does not need to differentiate between copies of the same issue, but libraries do; each institution applies its own tracking data to the existing publication and issue information provided by the publisher. The International Standard Link Identifier (ISLI) has been developed to more effectively link the different standards, structures, and layers of metadata in a clear, machine-readable way. Carpenter stressed the importance of managing identifiers and metadata. Although difficult and expensive, maintenance is worth it; the alternative—poorly managed data—costs more in the long run.

Marjorie Hlava offered nine steps to implementing metadata in a workflow. The first five steps focused on setup and basic functionality: construct a taxonomy of subject metadata; apply it to legacy content for semantic enrichment; integrate indexing tools into preexisting systems, including websites and manuscript-submission systems; simplify metadata gathering and indexing and collect most information early in the process; and use indexing in searches for faster browsing and more accurate results. Step 6 involves metadata maintenance. As new concepts are introduced into a field or a field expands, the taxonomy will need to keep pace. The final three steps involve further leveraging metadata: develop add-ons based on the acquired data, such as auto-assignment of reviewers at submission and semantic fingerprinting for disambiguated author pages; enhance search features such as search suggestions and article recommendations; and use metadata-driven analytics to determine trends over time and to better understand both author and user behavior.

Matt Stratton offered practical production applications of metadata used at the American Institute of Physics (AIP). In AIP's submission system, metadata are collected via author-input forms (e.g., open-access choice, funding information, and keywords) or generated by the system itself (such as submission and acceptance dates). The submission system also collects metadata on reviewers, including quality and timeliness metrics and subject matter reviewed. AIP is developing functionality to cross-reference these two sets to automatically suggest reviewers for papers.

AIP's Scitation platform creates disambiguated author pages based on semantic fingerprints; the fingerprint pulls from common topics in an author's history across institutions and name presentations and excludes results from other authors with the same name or similar names. In the question-and-answer session, Stratton added that this feature was largely accurate but did require refinement, echoing both Carpenter's and Hlava's points about necessary maintenance. The website also collects learned metadata, including reader behavior, imported citation data, and article-level metrics. When users download a PDF, they see a cover page with article recommendations that change as the system acquires new data.

Clean, well-structured metadata provides countless immediate and potential benefits for content management and the development of new technologies and features. Maintaining the metadata can often be both expensive and time-consuming but is invaluable.

Statistical Review of Manuscripts: View from the Trenches

Moderator:
Kristi Overgaard
Editorial Consultant
Barrington, Illinois

Speakers:
Jason Roberts
Executive Editor
Headache: The Journal of Head and Face Pain
Plymouth, Massachusetts

Mary Beth Schaeffer
Managing Editor
Annals of Internal Medicine
Philadelphia, Pennsylvania

Eliseo Guallar
Professor, Department of Epidemiology
Johns Hopkins Bloomberg School of Public Health
Associate Editor, *Annals of Internal Medicine*
Baltimore, Maryland

Reporter:
Renee Pessin
Editorial Consultant
RDP Editorial Consulting, Inc
New York, New York

Jason Roberts discussed problems in statistical review as part of the peer-review process (i.e., assessment of study design elements such as appropriate inclusion and exclusion criteria, appropriate significance testing, power analyses, and correct application of statistical technique). Incorrect statistical application leads to a lack of reproducibility and, in turn, slows down scientific progress, wastes research funding and editorial pages, and results in retractions. Flaws in statistical methods are caused mainly by unrealistic expectations or lack of self-awareness on the part of investigators. Reviewers do not defer to statistical experts when they should, and editors do not necessarily require statistical review on a regular basis. Next, Roberts turned to the implementation process for journal statistical review. Using the 2009 implementation model of the journal *Headache* as an example, he explained as follows. First, it is important to integrate statistical review into the review process. The policy for statistical review should be communicated to all stakeholders. Rollout should be accomplished via a multipronged communication process, which for *Headache* included two editorials,[1,2] and simultaneous launch of new Instructions for Reviewers to outline the new standards. At *Headache*, statistical and methods reporting are now assessed for reproducibility and validation, and authors are required to upload relevant reporting guideline checklists. Each decision letter (for all manuscripts not rejected) includes information on statistical review as well as design and methods review. Statistical reviewers are instructed to "refine rather than reject" and be collaborative rather than adversarial. They are directed to recommend rejection only for those manuscripts with major problems, previous publication, or a study design that cannot achieve the desired goal.

Mary Beth Schaeffer of the *Annals of Internal Medicine* presented information about the *Annals* statistical review process. Reviewed manuscripts are discussed at weekly editorial meetings, and "approved papers" are assigned for statistical review (typically three to four per week). Statistical review assignments are to be completed within two weeks.

Finally, Eliseo Guallar, associate editor of *Annals of Internal Medicine*, spoke from the scientific editor's point of view. He summarized what to look for in statistical review. In the Introduction, the author should highlight deficiencies in previous research, explain how the current study can advance the field, and then clearly state the hypothesis (i.e., What is the research question?). In the Methods section (however it may be formatted for the specific journal), investigators should define the time frame; consider a figure or flow chart for clarity; state sources of participants; and describe the sampling design, response rate, selection (inclusion/exclusion criteria), compliance with ethical requirements, and potential for selection bias. They should also clearly describe data collection, main exposure/predictor/intervention variable(s), and mediators/modifiers/confounders, and outcome(s). Other potential statistical pitfalls include model selection, variable selection, the form(s) of variables, subgroup analysis, covariate screening model building, and measurement error (i.e., the overall effect of measurement error is not always to bias results toward null hypothesis).

Regarding other statistical issues, Guallar advised the following: Ensure that methods are appropriate for the study question and study design (study design should be stated in the Methods section and briefly in the abstract); avoid outdated/invalid methods even if pre-specified in the protocol; provide enough detail so that a knowledgeable expert can reproduce the analysis; and describe the software used for statistical analyses. For measurement of association and risk, check whether there is an association versus an effect and whether results are clinically meaningful. It is also important to report missing variables, missing outcomes, missing data, and between-groups differences. Statistical methods must be appropriate for the design; avoid methods that are now known to be invalid (e.g., last observation carried forward) or biased. Because validity and reproducibility are key, investigators must be willing to provide the following as appendix material when appropriate: study protocol; statistical codes; appropriate references for methods; and study data. Last, it is important to always check that the conclusions in the abstract and the end of the manuscript are supported by the data presented in the results. Guallar ended with a sage statement about the important contribution of statistical review to quality control in the peer-review process.

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Taking Author Instructions to the Next Level

Moderator:
Rebecca Barr
Manager, Copy Editors (US)
Nature Publishing Group
Nature America, Inc
New York, New York

Speakers:
Jacob Kendall-Taylor
Assistant Editorial Manager
Proceedings of the National Academy of Sciences
Washington, DC

Jody Hundley
Production Manager, Scientific Publishing
American Heart Association
Dallas, Texas

David Martinsen
Senior Scientist
Digital Strategy, American Chemical Society Publications
Washington, DC

Reporter:
John N Bell
Copyediting Manager
Journals Department, American Society for Microbiology
Washington, DC

Authors do not consistently consult instructions to authors (ITAs) and frequently have problems complying with requirements as a result. The relevance of this topic to all publishers was reflected in the attendance at this session (standing room only). ITAs have become catalogs of everything from scope to policy. Sprawling, difficult to navigate, repugnant to authors—how can we make ITAs more useful and palatable?

Rebecca Barr of the Nature Research Journals group of Nature Publishing introduced the topic of ITAs and described how the *Nature* journals treat them (*www.nature.com/nature/authors/gta/index.html*).

David Martinsen of the American Chemical Society (ACS) described ACS attempts to educate authors about the publication process. Through half-day workshops at national meetings and sending delegations of editors to Asian countries to discuss scope and publication ethics, ACS developed a medium for making information easily available to a wider audience: a 10-episode video series describing the publication process, "Publishing Your Research 101" (*acsoncampus.acs.org/resources/video/*). The series includes such topics as "How to Write a Paper to Communicate Your Research" and "Tips for English as a Second Language Speakers [sic]."

Martinsen described the complexities of crafting a video series and imparted some lessons learned, including budgeting more time than you think you are going to need and checking each episode one last time before you release it. He noted that China blocks YouTube and Vimeo, making it necessary to find an alternative to deliver the series there. He cautioned against wearing stripes on camera—this can cause a moiré pattern to appear to dance across the screen.

Two other ACS initiatives are ACS on Campus (*acsoncampus.acs.org*), which is ongoing, and a new effort, "Mastering the Art of Scientific Publication: the Webinar Series" (*pubs.acs.org/page/vi/art_of_scientific_publication.html*).

Jacob Kendall-Taylor works with electronic systems for *Proceedings of the National Academy of Sciences* (*PNAS*), which receives about 17,000 submissions annually. He has a vested interest in facilitating a positive submission experience for authors. He offered this advice to start: 1) Identify the points at which authors have difficulty preparing and submitting papers, 2) accept that authors do not read the ITAs, and 3) prioritize responses to problems that authors experience during submission.

Kendall-Taylor suggested conducting author surveys to learn which portions of the submission or review process pose problems. *PNAS* staff track emails and telephone calls for two-week or one-month periods to monitor author experiences. In addition to redesigning a submission website to make the process simpler for the author, Kendall-Taylor suggested thinking of ways to make author instructions "unavoidable without being cumbersome," such as installing pop-up help text boxes in the submission system (think about ordering something online and a prompt appearing, asking if you need assistance) with staff contact information and office hours in case authors need assistance during the process.

PNAS offers "Express Submission," in which authors provide minimal information (essential data only) upon submission. Upon manuscript acceptance, the author is asked for more information. Express submissions may take as little as 10 minutes to accomplish. *PNAS* created videos to illustrate their submission process, complete with voiceovers and screenshots showing a cursor moving through the menus (*intl.pnas.org/site/authors/submit-how.xhtml*).

Jody Hundley of the American Heart Association (AHA) described how AHA began offering a "hybrid model" for copyright in late 2014 for 11 of its journals. Authors needed to be educated about open access and what was meant by licensing their content. In addition to providing useful URLs and websites, the AHA presented copyright and license information in tabular form for the authors, along with a list of FAQs, explaining the options and defining the particulars and article publication charges associated with each (*www.ahajournals.org/site/openaccess/*). AHA updated the existing ITAs for these 11 journals to ensure standardized language among them.

If we can reexamine our ITAs critically, from the viewpoint of an author, we ought to be able to see ways to make them friendlier but still useful tools. We can take them to the next level.

Web Traffic: Ideas and Examples

Moderator and Speaker:
Judy Connors
Associate Editorial Director,
Managing Editor
Therapeutic Innovation & Regulatory Science and Global Forum
Horsham, Pennsylvania

Speakers:
Darren Taichman
Executive Deputy Editor
Annals of Internal Medicine
Philadelphia, Pennsylvania

Glenn Landis
Editorial Director
Blood
American Society of Hematology
Washington, DC

Morgan Sorenson
Managing Editor
Neurology: Neuroimmunology & Neuroinflammation
Minneapolis, Minneapolis

Karen Barry
Managing Editor, *Circulation*
American Heart Association
Boston, Massachusetts

Reporter:
Merete Kile Holtermann
Managing Editor
Journal of the Norwegian Medical Association
Oslo, Norway

As many journals shift focus from print to web, it seems as if all of us are talking about web traffic. In this session, moderated by Judy Connors, four speakers shared ideas on and examples of how to increase web traffic to journal sites.

Darren Taichman started the session by emphasizing the importance of relating traffic driving efforts to your journal's mission statement. "Bring important content to a target audience." His advice and examples were summed up in the formula: Traffic + Engagement = Success. Traffic originates from sites where the readers find links to your journal, so make sure you're aware of where readers visit prior to landing on your journal pages. Journals can help readers find their content by optimizing searching, making timely corrections (in PubMed and other places), and facilitating referrals. Taichman also described how emails with eTOCs and alerts with tailored content to subgroups have increased web traffic at *Annals*. Social media is only responsible for a small percentage of their web traffic, but it is still useful to create a "buzz" and attract attention.

Besides traffic, you need to engage the readers to stay on your site and interact. Examples of how to facilitate engagement include providing related content to articles and offering novel content such as videos, comics, and interactive tools.

Glenn Landis offered a different perspective to the session's topic. He warned us about websites and search engines competing to present our journal's content. "They want first dibs." Search engines like Google give readers previews of content and sometimes make it unnecessary to view the full journal page. Landis also told us to be careful with links to other sites, apps, and search engines that "push the readers away" instead of engaging them within your site.

The next speaker was Morgan Sorenson with the presentation title: "*Neurology* and Social Media: 'Likes' but Not Loves." The journal has been working to increase web traffic and the staff conducted a small study to see how social media affected the numbers. They found that less than 1% of their web traffic originated from social media. Even though these numbers were low, they will keep using social media to build a community, increase presence, and alert users to new features. However, Sorenson said, they will also focus on other ways to drive traffic to the website.

The last speaker, Karen Barry, presented a study from *Circulation* called "Intention to Tweet: A Randomized Trial of Social Media." In 2010, *Circulation* randomized their Original Research articles into two groups and promoted the articles from one group on Facebook and Twitter. By the end of the study period, there were no differences in page views between the groups. Still, Barry said that just as in Sorenson's example, *Circulation* continues to promote articles in social media because the "impact of social media on 'awareness' may not be reflected in article page views." And lately the journal has experienced an overall increase in visitors and sessions on the website.

Moderator Judy Connors concluded by describing the podcast initiative launched by Develop Innovate Advance to support its scientific journal, *Therapeutic Innovation & Regulatory Science*, which uses podcasts to provide the audience with a variety of ways to access the content. The podcast was described as easy and cost effective to make, and by linking back to the article on the website, the podcasts have a positive effect on web traffic and article downloads.

Many questions remain about driving web traffic to scientific journals. Should journals focus on increasing web traffic in general or on reaching their target audience? Nevertheless, sharing our experiences is valuable, and we left the session with many new ideas.

Dynamic Disruptors: A Series of Lightning Talks from Various Startups

Moderator:
Phill Jones
Head of Publisher Outreach
Digital Science
Edinburgh, United Kingdom

Speakers:
Peter Armstrong
Co-Founder
LeanPub
Vancouver, BC, Canada

Kaveh Bazargan
Director
River Valley Technologies
London, United Kingdom

Brian Bishop
Principal Product Strategist
ForeCite
London, United Kingdom

Michal Duczmal
Relationship Manager
Annotate.co
Edinburgh, United Kingdom

John Hammersley
Co-Founder, CEO
Overleaf
London, United Kingdom

Andrew Preston
Founder
Publons
Wellington, New Zealand

Greg Tebbutt
Head of Engineering
Sparrho
London, United Kingdom

Reporter:
Kelly A Hadsell
Director, Editorial Operations
American Association for Cancer Research
Philadelphia, Pennsylvania

Session Moderator Phill Jones kept his promise of providing an exciting, lightning-paced session. Each of the seven presenters was permitted to make a five-minute presentation which included a maximum of 20 slides and no second chances!

Brian Bishop was unable to attend in person but provided a video presentation of the web-based citation suggestion service ForeCite (*www.fore-cite.com*). Users are able to upload their manuscripts to the ForeCite system, which compares the manuscript against the more than 13 million citations in the system. The results of the comparison suggest articles the user may wish to cite based on the content of their paper.

Greg Tebbutt from Sparrho (*www.sparrho.com*) also provided a virtual presentation. "Founded in 2013 out of frustration by two Oxbridge scientists,"[1] Sparrho is a recommendation engine for scientific information. The system aggregates all sources regularly checked by an end user, along with another 18,000+ sources daily. A semantic understanding of the user and his or her field is created and builds newsfeeds of the latest developments in these fields for the user. Users can create their own "channels" and can personalize their feeds based on relevance.

Andrew Preston of Publons (*publons.com*) gave the first live presentation. Publons works with peer reviewers, editors, journals, and funding agencies to verify peer-review activity and allow cross-publisher recognition of reviewer services. Many reviewers attach their Publons information to their CVs in order to highlight their reviewing history for promotion or funding application. Currently, more than 37,000 reviewers are listed in the Publons database. Reviews from any journal are eligible for inclusion, and Publons formally partners with many publishers, including Wiley, Sage, eLife, PeerJ, and the American Society for Microbiology.

Peter Armstrong spoke about the philosophy of LeanPub (*leanpub.com*), which is to "publish lean" and publish books in progress (in e-book form) to obtain reader feedback. This system helps authors to redirect their efforts as necessary in revising the work, while also building traction with their audience, who receive notifications as revisions are made. Powered by the plain-text format Maruka, revisions can be made available within minutes after an author approves changes.

John Hammersley of Overleaf (*www.overleaf.com*), a LaTeX-based collaborative writing and publishing system, was the next presenter. Overleaf allows for collaborative rich-text editing (through the use of a WYSIWYG manuscript editor); integrated, streamlined publishing (through the product's integrated manuscript-submission systems); and both editorial and peer review in the cloud (through powerful change tracking, commenting, and project lifecycle management features).

Kaveh ("Uncle Kaveh") Bazargan of River Valley Technologies (*rivervalleytechnologies.com*) presented next. The company has developed an end-to-end publishing platform for STM. The system is composed of several standalone modules that work together and allow authors to create and submit valid XML files using the online platform. The publisher is then able to select the modules (e.g., peer review, copyediting, and proof correction) the paper will go through. These tools help to reduce the time to publication by allowing files to be published within 24 hours of acceptance.

Michal Duczmal from Annotate.co was the final presenter. Annotate.co provides secure PDF document collaboration and review on the web. Files of any type can be uploaded to the site, and the collaboration capabilities are available in a cloud-based model. The system allows for text overlay and eliminates the need for emailing different versions of a document and overloading inboxes, thereby providing better version control.

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From Metrics to Linguistics to Comics: Some Communication-Related Highlights of the 2015 AAAS Annual Meeting

Sara Carney, Christina B Sumners, Gina Marie Wadas, Iveliz Martel, Roberto Molar-Candanosa, Claire Ronner, Katelyn Werner, Barbara Gastel

Subtitled "Innovations, Information, and Imaging", the 2015 annual meeting of the American Association for the Advancement of Science (AAAS), held 12–16 February in San Jose, California, contained many sessions on visual and other aspects of conveying scientific information. The following are highlights of some sessions that may especially interest science editors and others engaged in the communication of science.

Scientific Visualization: Collaborations Between Museums and Scientists
By Claire Ronner

In science museums, visualizations are everywhere. From the traditional dinosaur diorama to hands-on activities and text displays, curators and scientists repackage complex information into easy-to-comprehend descriptions and explanations. During "Scientific Visualization: Collaborations Between Museums and Scientists", three seasoned museum communicators shared their innovative ways of approaching the depiction of scientific data.

At the Boston Museum of Science, Carol Lynn Alpert and the Amazing Nano Brothers tackled the "invisible, murky world of atoms and electrons" in an unexpected way: through juggling. A volunteer held a glow-in-the-dark balloon "nucleus" while the Brothers juggled "electrons" back and forth. Alpert said such a display reaches students in ways that textbooks cannot.

Toshi Komatsu agrees. Komatsu, director of digital theaters at the Lawrence Hall of Science at the University of California, Berkeley, incorporates storytelling when writing text to accompany the Hall's 2-meter "Science on a Sphere" display. The museum can project a variety of information on the sphere, from ocean currents to seismologic activity and climate-change patterns. Komatsu uses the narrative to tie science into the real world, "never dumbing it down but rather making it more interpretable for the public."

For Julie Urban and her colleagues at the North Carolina Museum of Natural Sciences, visualization isn't just another obligation—it's a key component of their research. The museum's research laboratories are enclosed in glass and completely visible to the public, blurring the distinction between scientists and visitors. "The public participation is shaping our science," said Urban. "We think a lot about how involving citizens in science changes how *they* think about science, but it changes how *scientists* think about science, too."

Engagement with Intent? Scientists' Views of Communication and Why It Matters
By Roberto Molar-Candanosa

Science-communication experts say that now more than ever scientists need to engage with the public. But what are scientists' views on public engagement, and what are their goals when they communicate? A panel of experts discussed those and other questions in the session "Engagement with Intent? Scientists' Views of Communication and Why it Matters". Panelists presented survey findings and insights from academic and professional experience in science communication.

Anthony Dudo, assistant professor of advertising and public relations at the University of Texas–Austin, presented preliminary findings from surveys conducted in 2012–2014 by AAAS and other entities. Findings suggest that, contrary to a common belief, many scientists care about and participate in public engagement. Those scientists, Dudo said, communicate mainly to inform the public and to correct misconceptions when the mass media cover science inaccurately. He also said that some scientists communicate to spark public interest in science and to nurture public trust.

Brooke Smith, of Portland, Oregon-based COMPASS (an organization that trains scientists to communicate with the public), shared similar insights from a professional perspective. Scientists generally contact COMPASS, she said, to learn to communicate with the public in a clear, concise, engaging way. Smith also explained that COMPASS trainees sometimes struggle when they have to communicate about their science in general terms and when they explain their fields' importance to the public.

Jeanne Braha, of the AAAS Center for Public Engagement with Science and Technology, said some scientists also seek to understand public concerns. However, she noted, scientists' demanding schedules often limit their participation in public engagement and some scientists also feel "too junior" to communicate with the public.

SARA CARNEY, IVELIZ MARTEL, ROBERTO MOLAR-CANDANOSA, CLAIRE RONNER, GINA MARIE WADAS, *and* KATELYN WERNER *are all students in or recent graduates of the master's degree program in science communication at Texas A&M University*. CHRISTINA B SUMNERS, *a graduate of the program, is communication specialist at the Texas A&M University College of Veterinary Medicine & Biomedical Sciences*. BARBARA GASTEL, *a professor at Texas A&M University, coordinates the science communication master's program*.

continued

Comics, Zombies, and Hip-Hop: Leveraging Pop Culture for Science Engagement
By Gina Marie Wadas

Move over, textbooks, PowerPoints, and lectures. Make room for the popular-culture worlds of comics, zombies, and hip-hop in K–12 classrooms. In lieu of traditional teaching techniques, such people as Judy Diamond, Julius Diaz Panoriñgan, and Tom McFadden are expanding the outreach of science engagement by implementing alternative routes to educate young students.

Diamond, of the University of Nebraska State Museum, is involved in the comic-book series *World of Viruses Biology of Human*, funded by the National Institutes of Health. The series are available as a free app at Apple or *worldofviruses.unl.edu*. In the *World of Viruses* series, the aim is to teach students the anatomy and physiology of viruses, not just the diseases associated with them. "The goal is to create a spark because from a spark of interest many things can happen," said Diamond. Sociologists evaluating the use of the science comics showed that students who read them were five times more likely to remember the information than those who read science essays.

Music was the common ground that helped McFadden, a middle-school teacher at Nueva School in California, to connect with his students. He works with them to create and perform hip-hop songs about science history. "It's partly about music, partly about hip hop, but mostly about creative confidence." During the session, one of McFadden's students said of his teaching technique, "It's a lot of fun. If I am able to write a verse, it means I know this stuff I am writing about."

Panoriñgan, a member of 826LA, a nonprofit tutoring program in writing, uses such activities as zombie tag to teach concepts in epidemiology. The game demonstrates the proliferation of diseases, control, and prevention as students try to avoid exposure to "zombieitis". To help his students to identify and understand the concepts, Panoriñgan incorporates epidemiologic topics that are ethnically and economically relevant to his students.

Metrics for Science Policy and Policy for Metrics
By Sara Carney

"Research has become too complex to be run on intuition," said Paul Wouters, director of the Center for Science and Technology Studies in Leiden, Netherlands. Wouters began the "Metrics for Science Policy and Policy for Metrics" session by discussing why metrics are used. Among reasons that he cited were the increased complexity and specialization of science and increased competition for funding.

Scientific journals have become gatekeepers, stated Bernd Pulverer, chief editor of *The EMBO [European Molecular Biology Organization] Journal*. Journals tend to choose some types of submissions, such as papers in high-citing fields and review articles, more than others. Those decisions can ultimately influence who gets funding and whose career advances, Pulverer said. Specifically, he mentioned the attention given to the journal impact factor, which reflects how widely a journal is cited. Often, the impact factor is erroneously assumed to indicate a journal's quality and thus the quality of the articles that the journal publishes, he said.

Pulverer emphasized the need to reflect current research more accurately by moving beyond current metrics. Metricians should consider such factors as how much mentoring someone does and how many data the person produces, he said. He also suggested changing the citation culture, using more diverse metrics, and providing incentives for increased participation in the peer-review process.

At the university level, such variables as enrollment and ranking are focused on, said Susan E Cozzens, vice provost for graduate education and faculty affairs at the Georgia Institute of Technology. Metrics on publications can also be important to universities because publications build careers and recognize scientific achievements, she stated.

From Art to Mathematics: A Visual Mode of Communication
By Iveliz Martel

Speakers at the session "From Art to Mathematics: A Visual Mode of Communication" showed how artwork can engage people in mathematics and communicate scientific concepts.

George Hart, of Stony Brook University, showed photographs of large mathematical sculptures that he created with shapes that were laser cut from such materials as wood, acrylic, and metal. The sculptures show balance, symmetry, and other concepts. "Math can be beautiful and creative. Math is not just for science and engineering or counting," Hart said. "It is a tool that can be used with everything, including art and design."

Hart also shared his experience in conducting workshops in which groups of people assemble geometric sculptures. He said that those activities "really create a community" and offer opportunities "to informally educate" people in mathematics.

Andrea Hawksley, of SAP Labs, explained how to make mathematically related models using everyday materials such as plastic sunglasses or hair ties. She described how dancing can also communicate mathematical concepts. "I find that [mathematical dance] is really helpful for people who otherwise are very intimidated by mathematics," she said. Moreover, Hawksley showed that by doing easy activities—such as preparing lemonade with different proportions of lemon juice, sugar, and food color—students can learn about the Fibonacci sequence and the golden ratio.

Henry Segerman, of Oklahoma State University, explained how to make 4-dimensional objects. He said that a good way to visualize the objects is to project their shadows onto a wall. He showed spheres and polytopes —geometric figures defined by lines and planes—in 4-dimensional spaces. Segerman explained that visualizing mathematical objects can contribute to pedagogy by exposing people to new ideas.

During the session, attendees had chances to touch 3- and 4-dimensional objects,

continued

try to make figures using hair ties, and move in the room to convey mathematical patterns.

The Science of Grammar and Vice Versa
By Katelyn Werner

Data: plural or singular? Your response to that question may say a lot about your field of study. Geoffrey Nunberg, professor in the School of Information at the University of California, Berkeley and radio guest on NPR's *Fresh Air*, addressed the subject in his lunch-hour talk, "The Science of Grammar and Vice Versa"—which he later titled, "We Don't Need No Stinkin' Linguists".

Chuckling audience in tow, Nunberg presented his findings on "The Great *Data* Kerfuffle", arguing that the debated use of *data* is in fact a systematic choice. How one uses data is not a "badge of belonging" nor a sign that writers are "slaves to style guides". Rather, each use reflects "tacit conceptual distinctions".

In a familiar scientific manner, Nunberg began with a hypothesis: The difference in plurality is intentional. He then tested his hypothesis with case studies, content analyses of journals and style guides, and a comparison of how different languages treat count and noncount nouns (e.g., *dog* vs *milk*).

His verdict: *Data* is used as singular (noncountable) when "drawing broad conclusions" from results and as plural (countable) when interacting "one-on-one" with specific collected items. This finding explains differences in usage between fields in that natural sciences speak more about individual data and social and computer sciences tend to refer to the whole data batch.

Nunberg mused that linguistics is often misunderstood. His discussion of *data* spoke to the usefulness and complexity of the discipline: "Language is ultimately wedded to reality, . . . but it's a very rocky marriage."

Using Cartoons to Convey Science
By Sara Carney

If you seek to communicate science in a way that is fun and engaging, cartoons may be the way to go. At the session "Using Cartoons to Convey Science", science cartoonist Larry Gonick said that cartoons tell a story that resonates with the viewer. He defined cartoons as simple drawings that convey complex information and noted that comics have an advantage over animation in that viewers can look at the panels side by side to see the concept broken down.

Anthropomorphism is a pitfall of cartoons, said Gonick. Although some anthropomorphism is needed to tell a story, some accuracy is sacrificed, he said. As an example, Gonick showed a cartoon of an enzyme breaking down a protein. If eyes are added to the enzyme, it can appear excited to chomp down on the protein and then look relieved when finished. The story is appealing, but the viewer must remember that enzymes do not have eyes.

Cartoons are fun and exciting while also being low tech and cheap to make, said psychologist Barbara Tversky, of Stanford University and Columbia University Teachers College. She also discussed the value of cartooning in the classroom to help students to understand and retain scientific concepts. Manu Prakash, a faculty member in bioengineering at Stanford University, said one need not be a professional artist to participate in cartoon-making. Prakash recounted his experience in recording himself cartooning to create an engaging and informative presentation. Cartooning is a way for people to experience science, he said.

Scientists Engaging with Reporters, the Public, and Social Media: Survey Findings
By Gina Marie Wadas

In 2014, the Pew Research Center conducted a survey of 3,784 US-based scientists who were members of AAAS. Results presented at the session "Scientists Engaging with Reporters, the Public, and Social Media: Survey Findings" regarded how scientists interact with journalists and the public and how much they use social-media outlets to discuss their work.

Some 87% of respondents indicated they should be involved in scientific public-policy discussions. "Dialog is critical," said session panelist Elizabeth Hadly, professor of biology and environmental studies at Stanford University. "We need to be willing to enter into a long-term dialog with all the stakeholders: community, scientists, and policy makers."

The survey findings also suggest that nearly all scientists engage with the public in some way and that most believe that there is a lack of knowledge about science among the public. Respondents indicated that media outlets do not report on science topics well enough and oversimplify findings.

Panelist Dominique Brossard, professor and chair in the Department of Life Sciences Communication at the University of Wisconsin–Madison, discussed the use of social media by scientists. "There is an increased use of social media and an understanding of the important role that they play, but they are not yet the norm," Brossard said. She suggested that reasons that scientists are not using social media are that they are too busy, do not know how to use them, or believe that their research is uninteresting to the public. She also said that scientists benefit from using social media because they increase the likelihood that their work is cited, bringing more attention to it.

The full survey report can be accessed at *www.pewinternet.org/files/2015/02/PI_PublicEngagementbyScientists_021515.pdf*.

Communicating Science: A Seminar
By Christina B Sumners

The AAAS meeting included a two-part "Communicating Science" seminar. The first session, "Scientists Communicating Challenging Issues", used climate change as a case study to explore, from both scientists' and journalists' perspectives, communication of potentially controversial views to the public.

Noah S Diffenbaugh, a climate researcher at Stanford University, spoke from a scientist's perspective. Although noting that he is most familiar with communicating through peer-reviewed publications, he said

continued

that he also feels a responsibility to share his science with the public inasmuch as it ultimately foots the bill for his largely government-funded research. Diffenbaugh sees himself as the person in the conversation "focused only on evidence" and said that it is important for scientists to make "policy-relevant", not "policy-prescriptive", contributions. He cautioned that once scientists "cross the advocacy line," they risk losing their credibility. However, Diffenbaugh also said that those risks are small compared with the opportunity cost; time spent in public engagement is time not spent in research or writing articles for peer-reviewed journals.

Lisa Krieger, a science writer with the *San Jose Mercury News*, shared a journalist's perspective on how to communicate challenging scientific issues to the public. One of the most important things, she noted, is that simply throwing more information and more statistics at the audience doesn't work. Instead, she places herself in the reader's position and asks, "What is it, and why should we care?" The answer is to make the story compelling, make it local, and explain what it means to the reader's home, job, or family.

The second session, "Public Engagement for Scientists: Realities, Risks, and Rewards", delved deeper into aspects of scientists' public-engagement activities. Session moderator Bruce V Lewenstein, professor of science communication at Cornell University, said that public engagement in science encompasses multiple types of initiatives:

- *Educational engagement* aims to excite people about science and possibly teach them something at the same time.
- *Participatory democracy* suggests that "science is embedded in our social system" and that the public can or should have some authority over science as an institution.
- *Citizen science* aims to engage people by involving them in scientific research.
- *Institutional engagement* refers to efforts of individual organizations to engender public loyalty.

Several presenters offered their experience with such initiatives. Heidi Ballard, professor in the University of California, Davis School of Education, discussed her experience with citizen science, noting that the process must be a "two-way street" and that a communicative, transparent, respectful relationship between scientists and public participants leads to the most fruitful and effective projects. Ballard described several types of citizen science, ranging from contributory (in which the public participates only in collecting or categorizing data) to co-created (in which community organizations work with scientists to develop and execute entire projects).

Anthony Dudo shared key results from recent survey research. His findings echoed several points that Diffenbaugh had made. He also noted that scientists are not equally equipped to engage with the public but that those who do engage tend to share similar attitudes, orientation toward (mass) media, and support from their colleagues.

Videos from the seminar can be accessed at *meetings.aaas.org/live-video-stream/#x*.

Turning a Science Crisis into a Communication Opportunity
By Barbara Gastel

Science-related crises pose public-communication challenges. Yet, handled well, they can increase favorable visibility. Three cases in this regard were the focus of "Turning a Science Crisis into a Communication Opportunity", organized and moderated by Katie Yurkewicz, of Fermi National Acceleratory Laboratory.

The first case regarded the unlikely finding that neutrinos had traveled faster than light. When word reached journalists before the planned scholarly announcement, much mass-media attention followed; later, evidence emerged that the observation was an artifact. Speaker Antonella Varaschin, of Italy's Istituto Nazionale di Fisica Nucleare (INFN), said that the coverage increased awareness of neutrinos, helped to show the process of science, and promoted research.

The second case regarded a small radiation leak at the Japan Proton Accelerator Research Complex (J-PARC). Mass-media coverage was extensive and angry. Speaker Saeko Okada, of Japan's High Energy Accelerator Research Organization (KEK), said that those involved learned that journalists need information quickly and that emotion matters. She said that the interactions have increased coverage of research in J-PARC and KEK.

In the third case, a high-school teacher's claim that the Large Hadron Collider would cause a black hole engendered widespread public attention. Speaker Stephanie Hills, of the European Organization for Nuclear Research (CERN) and the Science and Technology Facilities Council (STFC), said that the facility responded to every mass-media inquiry. As shown in a video clip at the session, coverage by *The Daily Show* vividly helped to debunk the claim.

Summing up, Yurkewicz emphasized that "you absolutely must engage critics." Doing so during crises, the session showed, can promote effective science communication.

The 2015 AAAS meeting also included a session, "Integrity of Science", that focused on a US National Academies report being prepared on the subject. An account of this session, which contained discussion of integrity in scientific publication, appeared in the January–March 2015 issue of *Science Editor*.

Audio recordings of most sessions of the 2015 AAAS annual meeting and video recordings of some sessions are available; for information, see *www.aaas.org/AM2015*. The next AAAS annual meeting (theme: "Global Science Engagement") will take place 11–15 February 2016 in Washington, DC.

BELS: 25 Years Old and Going Strong

Thomas Gegeny
BELS President, 2015–2017

Next year, the Board of Editors in the Life Sciences (BELS) will celebrate its 25th anniversary. Founded by a group of CSE (then known as the Council of Biology Editors) members in 1991, the organization was established to evaluate the proficiency of manuscript editors in the life sciences through a certification examination and to award credentials similar to those obtainable in other professions. The BELS examination-based certification program

- Provides qualified manuscript editors in the life sciences a way to demonstrate their editorial proficiency.
- Offers employers and clients of manuscript editors in the life sciences a way to identify proficient editors.
- Establishes a standard of proficiency for editing in the life sciences.

The BELS certification examination is a 3-hour multiple-choice test of life-sciences editing in English. Overall, the examination resembles the standard tests used in many professions to certify practitioners. The certification program is designed to provide evidence to employers or clients of editors that a BELS-certified editor has an acceptable level of skill and knowledge relevant to editing in the life sciences. Editors who successfully complete the certification examination may use the designation ELS (Editor in the Life Sciences) after their names to indicate a degree of professional credibility. In fact, editorial job postings regularly received by BELS list the ELS credential as a qualification desired in potential candidates.

More than 150 examination sittings have been administered worldwide, and more than 1,200 editors have earned the ELS credential, including members and leaders of CSE and other allied organizations. An advanced credential of Diplomate Editor in the Life Sciences, ELS(D), is based on portfolio review and has been awarded to 27 editors.

Note that BELS offers certification, not a certificate. Certification indicates a level of mastery or proficiency as demonstrated through an application or examination; it usually confers a credential or designation that can be used after one's name. In contrast, a certificate simply connotes completion of educational training through courses or workshops. A concise comparison of the distinctions between the two can be found online at *www.cfre.org/apply/certificate-vs-certification/*.

To qualify for BELS candidacy, applicants must have a bachelor's degree or equivalent from an accredited academic institution and at least 2 years of experience as a manuscript editor in the life sciences. The application consists of submission of a

(continued on page 67)

Table: Key topics covered by the BELS examination

Grammar	Use of language according to grammatical norms, for example, voice and tense of verbs, singular and plural of nouns, and cases of pronouns; placement and appropriate use of adjectives, adverbs, conjunctions, prepositions, clauses, and phrases
Punctuation	Proper use and placement of punctuation marks
Mechanics	Appropriate use of, for example, capitals, italics, lists, abbreviations, and acronyms; recognition of misspellings
Usage and diction	Appropriate word choice to ensure accuracy and clarity; recognition of problems with jargon, nominalization, redundancy, vogue words, and acceptable scientific terminology; knowledge of standards of proper usage
Syntax	Recognition of correct sentence structure; ability to correct faulty structure to ensure brevity and clarity
Organization	Recognition of logical sentence order
Internal consistency	Recognition of consistency in form, usage, and logic; ability to correct inconsistencies
Numbers	Knowledge of appropriate, accurate, and consistent presentation of numerical values in text; recognition of mathematical accuracy; recognition of standard forms of mathematical presentation
Bibliographic references	Recognition of incompleteness, inconsistency, or inaccuracy of bibliographic references; recognition of adherence to a model
Tables and illustrations	Knowledge of principles of graphic presentation of data, for example, appropriate use of graphic formats; terminology for parts of tables and figures; requirements for legends, captions, notes, and credit lines
Units of measure and scientific terms	Appropriate use of common scientific terms; choice of appropriate units of measure; ability to judge the relative accuracy of data as presented in a passage; consistency in use of terms and units (you will not be asked to convert to SI units)
Publishing requirements	Adherence to a journal's or publisher's instructions, for example, formatting references, using headings and subheadings, and preparing tables and figures (knowledge of a particular style is not tested)
Traditional principles and ethics of scientific inquiry, writing, and publishing	Fair use of copyrighted material; permissions, credits, and acknowledgments; issues of multiple authorship; ethical principles and procedures in animal and human experimentation

*Gatherings of an Infovore**

Barbara Meyers Ford

We in publishing consider a number of organizations important for our professional development. There are the membership societies for individuals, beginning with our own Council of Science Editors (CSE, *www.councilscienceeditors.org*) and including our sister societies:

American Medical Writers Association (AMWA, *www.amwa.org*)
American Society for Indexing (ASI, *www.asindexing.org*)
Association of Earth Science Editors (AESE, *www.aese.org*)
Editorial Freelancers Association (EFA, *www.the-efa.org*)
European Association of Science Editors (EASE, *www.ease.org*)
International Society of Managing & Technical Editors (ISMTE, *www.ismte.org*)
Society for Scholarly Publishing (SSP, *www.sspnet.org*)
Society for Technical Communication (STC, *www.stc.org*)
World Association of Medical Editors (WAME, *www.wame.org*)

And there are groups that focus on organizations as members:

American Medical Publishers Association (AMPA, *www.ampaonline.org*)
Association of American Publishers/ Professional and Scholarly Publishing Division (AAP/PSP, *www.publishers.org*)
Association of American University Presses (AAUP, *www.aaupnet.org*)
Association of Learned and Professional Society Publishers (ALPSP, *www.alpsp.org*).
Association of Medical Media (AMM, *www.ammonline.org*)
Open Access Scholarly Publishers Association (OASPA, *www.oaspa.org*)
International Association of Scientific, Technical and Medical Publishers (STM, *www.stm-assoc.org*)

In addition to those are the many nonprofit organizations that serve our community by assisting publishers and others in the transfer of information to collaborate, communicate, and cooperate to achieve our various goals. These have become more important with each passing year as the need for standardization in the use of new publishing technologies increases our challenges in attending to the information needs of our communities. This Infovore column provides information on the latter organizations, which are important contributors to the success of information development and dissemination. Knowing about them, using their products and services, and encouraging your members, authors, editors, reviewers, and readers to do so will lead to a more information-rich world.

To begin, there are three organizations critical to publishers being able to transfer information in digital form and those are the American National Standards Institute (ANSI), the International Standards Organization (ISO), and the National Information Standards Organization (NISO). Before looking at them individually, I must share with you the definition of standards that is used worldwide, because standards form the foundation for communication among groups that are important to publishing in the 21st century. From the ISO website, we learn the answer to the question, "What is a standard?" "A standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose."

ANSI, established in 1918, coordinates 125 standards developers across the United States by overseeing "the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector: from acoustical devices to construction equipment, from dairy and livestock production to energy distribution, and many more" (see *www.ansi.org*). Why is ANSI important to us? It serves as the connector to promote consistency between NISO here in the United States and ISO, which is headquartered in Switzerland and serves the world's standards needs.

ISO, established in 1947, develops worldwide standards to "ensure . . . that products and services are safe, reliable and of good quality". Some standards are developed by ISO committees, but many other standards percolate up from standards organizations based in other countries. In 2015, ISO members hail from 163 countries, and 3,368 technical groups focus on standards development in specific areas (see *www.iso.org*).

NISO, established in 1939, "identifies, develops, maintains, and publishes technical standards to manage information in our changing and ever-more digital environment. NISO standards apply both traditional and new technologies to the full range of information-related needs, including retrieval, re-purposing, storage, metadata, and preservation" (see *www.niso.org*).

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

continued

Many are familiar to those involved with scientific, technical, and medical communication. All NISO standards are freely available on its website. Here are a few that are especially useful to many types of publishers:

Z39.14	Guidelines for Abstracts
Z39.18	Scientific and Technical Reports—Preparation, Presentation, and Preservation
Z39.41	Placement Guidelines of Information on Spines
Z39.84	Syntax for the Digital Object Identifier
Z39.85	Dublin Core Metadata Element Set
RP-15-2013	Recommended Practices for Online Supplemental Journal Article Materials

After that overview of the work by the standards-development community and the first organization to display true cooperation by publishers and librarians, we now turn to the **Copyright Clearance Center** (CCC), established in 1978. The most important function of the CCC is that it "provides licenses to academic institutions, businesses and other organizations for the rights to share copyrighted material, while compensating authors, publishers and other content creators for the use of their works" (see *www.copyright.com*).

Some facts about the CCC should be noted:

- Its scope is global. The CCC has licensed a multitude of content users in more than 180 of today's world's 196 countries.
- The CCC is a cofounder and member of the International Federation of Reproduction Rights Organizations, an international network of reproduction-rights organizations that facilitates and supports bilateral agreements between nations for the exchange of rights and royalties worldwide.
- Since 2005, the CCC has dispersed more than $1.5 billion in royalties to rights-holders—authors, publishers, and others.

CROSSREF is another example of collaboration in our industry. Created by scholarly publishers "to make reference linking throughout online scholarly literature efficient and reliable and develop other services that are best achieved through collaboration, CrossRef is a DOI [digital object identifier] Registration Agency and is committed to long term sustainability" (see *www.crossref.org*). The CrossRef system is used by researchers, libraries, secondary publishers, journal hosting services, software developers, and technology companies. CrossRef provides a number of useful services, such as Cited-by Linking, CrossCheck, CrossMark, CrossRef Metadata Services, CrossRef Text and Mining Services, and FundRef. Use of DOIs supplies a permanent, reliable link, which aids researchers and librarians. It also adds value to electronic publications so that publishers meet their readers' expectations that online material will "contain outbound links to cited sources". The reach of CrossRef is extensive. Just look at a snapshot of its internal statistics:

CROSSREF INDICATORS (20 April 2015)

Total number of participating publishers and societies	6,096
Total number of voting members	3,317
Percentage of nonprofit publishers	57%
Total number of participating libraries	1,945
Number of journals covered	38,780
Number of DOIs registered to date	73,338,831
Number of DOIs deposited in previous month	483,190
Number of DOIs retrieved (matched references) in previous month	59,784,568
Number of DOI resolutions (end-user clicks) in previous month	124,765,975

Source: CrossRef website (accessed 21 April 2015).

A recent addition to organizations that offer useful services is **ORCiD**, also known as the ORCiD Registry or the ORCiD ID. It is "an open, non-profit, community-driven effort to create and maintain a registry of unique researcher identifiers and a transparent method of linking research activities and outputs to these identifiers. ORCID is unique in its ability to reach across disciplines, research sectors and national boundaries. It is a hub that connects researchers and research through the embedding of ORCID identifiers in key workflows, such as research profile maintenance, manuscript submissions, grant applications, and patent applications" (*orcid.org/0000-0002-1825-0097*). The ORCID Registry is freely available to individuals. Through the registry, you may obtain an ORCID identifier, manage your record of activities, and search for other registrants. Registering is simple. I did so as "Barbara Ford (aka Barbara Meyers Ford)" in a matter of minutes. If your authors register and receive ORCiD IDs, you can authenticate their identities at time of submission through the various workflow tracking systems, such as Editorial Manager, eJournalPress, and Manuscript Central. The idea is that you will no longer have confusion between two or more John Smiths, especially if they happen to work at the same university.

continued

CHORUS

The Clearinghouse for the Open Research of the United States (CHORUS) took FundRef (developed by the CCC) to the next level. It began operations in 2014 to increase access to published research. Spanning the distinct communities of individual researchers, their funders and publishers, and libraries and technology partners, CHORUS (see *www.chorusaccess.org*) serves as "an information bridge, supporting agency search portals and leveraging publishers' existing infrastructure to facilitate a simple compliance process, optimized search and dashboard services, and multi-party archiving and preservation capabilities". On 8 April 2015, Howard Ratner, executive director of CHOR Inc, the nonprofit membership organization of which CHORUS is the first initiative, reported that CHORUS is "…providing a path to sustainable and scalable public access that delivers on agency goals at no extra cost to taxpayers. We are currently monitoring and auditing public access and preservation/archiving arrangements for about 75,000 journal articles—24,000 of which are already publicly accessible—reporting on research supported by 22 US funding agencies."

Have I included all the organizations that serve the worldwide publishing community? I've really only skimmed the surface. Dozens more focus on specific types of publications, such as books, magazines, and digital products. Others focus on such functions as the editing and indexing groups that I've cited here. Still others have a subject orientation, such as medicine, science and technology, arts, and the humanities. And many more are regional, with at least one in almost every country. Wherever you find publishing professionals, you will find them networking with each other through formal and informal modes. Add the associations and societies that serve libraries, subscription agencies, technology companies, publishing service vendors, and other allied industries, and the numbers grow well into the thousands. I have often said that there is a nonprofit for everyone.

continued (from page 64)

completed form; a résumé or curriculum vitae; three letters from employers or clients describing and verifying employment; copies of transcripts, diplomas, or other educational documentation; and an application fee of US$50.

The topics covered in the BELS examination are summarized in the Table (see page 64). An online study guide (*www.bels.org/becomeeditor/BELSStudyGuide0724121.pdf*) reviews the topics, the examination procedure, and recommended resources and references that may be helpful in preparing for the examination. The guide also includes example questions with explanations.

BELS's sole mission is to certify editors in the life science; thus, BELS does not offer education or training in manuscript editing or in the specific kinds of content that the examination covers. However, a number of sister organizations (including CSE, the American Medical Writers Association, and the European Medical Writers Association) offer educational workshops and certificate programs that may be helpful in preparing to take the BELS examination.

As BELS looks toward its next 25 years, it is strategically focused on strengthening its infrastructure, including the provision of management support to bolster the historically all-volunteer organization. Building BELS's membership and continuing to strengthen and grow the certification program remain paramount objectives to ensure its continued relevance and recognition in the profession of life-sciences editing.

Member Profile: Andrew Willden

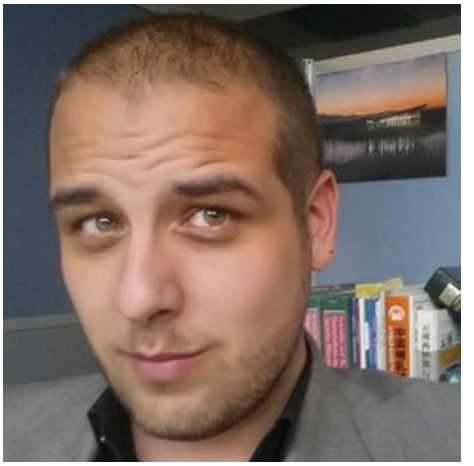
Michelle Yeoman

Working in a foreign country may seem daunting, but the rewards often outweigh the challenges. For Andrew Willden, associate director of Science Communications at the Kunming Institute of Zoology (KIZ), working and living in southeast China is a rewarding, life-changing experience.

Four years ago, Andrew began working as the only native English-language editor at the KIZ. He was the first non-Chinese national to be hired as administrative personnel instead of as a researcher or professor, and he had only one English-language colleague in a staff of about 400. Initially, he edited about 15 manuscripts weekly for approximately 40 research labs. After six months, he was promoted to communications manager and then communications director.

With a master of arts degree in history, Andrew found that his training in the humanities prepared him well to communicate science. Researchers learned that his unique perspective allows him to provide richer contexts for their work. He has a special interest in neuroscience, which often overlaps with his humanities research. "Neuroscience asks the same philosophical questions," he said. "What is the nature of consciousness? What is the nature of being human? How do humans differ from other organisms?"

As communications director, his main focus is to implement innovative programs to communicate his institution's research to a broader, international audience. Andrew and a colleague recently developed a five-year communications plan for seven institutions with about 1,500 researchers. The plan includes measures to attract more foreign researchers, empower students to write better in English, and develop a cross-institutional website that encourages collaboration for all life-science institutes in southwest China and eastern Asia.



Andrew Willden

One of Andrew's largest challenges is negotiating communication barriers, because English-language proficiency is sometimes problematic. Also, researchers from different countries and disciplines may approach research writing in fundamentally dissimilar ways. Andrew's chief goal is to translate the processes and procedures of Chinese research into a vehicle that's clear to a Western audience.

Another challenge is navigating cultural expectations. Direct criticism, even when constructive, is considered extremely rude in China. As a result, it may be seen as inappropriate for Andrew to directly suggest manuscript improvements to an author—for example, if the data do not support the manuscript's conclusions. Instead, Andrew must inform the author's subordinate, such as a graduate student, of necessary changes. The student then navigates the required social conventions by asking the author leading, suggestive questions.

Andrew's proudest professional achievement is helping his institution gain international recognition for its research. Last year, he compiled 10 years of data into a 300-page institutional review report, which was then evaluated by 10 scientists from international tier-one institutes. "It was like writing a book on the last 20 years of what we've done here," he said. KIZ is now the first Chinese institution outside of Beijing and Shanghai to be recognized as a tier-one research institution.

With his varied roles in communications, Andrew sometimes encounters unfamiliar topics. When this occurs, he finds the CSE community extremely helpful. For example, Andrew recently needed to reinvent his institution's flagship publication but was unsure how best to proceed. He identified CSE experts in layout and design by reading reports from annual meetings. He then contacted these members for specific advice and guidance. With their help, he rebranded his publication, which involved producing new covers, designing new article layouts, and restructuring administrative procedures for manuscript submissions.

One of Andrew's favorite aspects of his position is the potential for rapid career advancement. "Coming out of the humanities and switching into biomedical communications, I most definitely would not have become communications director after four years; it would have been more like 20," he said. China holds a wealth of career options for native English-language science communicators, especially multitalented individuals with interests in web design, graphic layout, and writing in varied fields. "China trains 60,000 researchers each year," Andrew said. "That's a lot of scientists who need help with their writing."

Member Profile: Ken Heideman

Stacy Christiansen

Ken Heideman is no fair-weather friend to CSE. A long-time member of the organization, he has worn many hats and continues to contribute in many capacities.

Ken was swept away by the tornado scene in *The Wizard of Oz* at the tender age of 4. He pursued meteorological studies through his master's degree and became a research meteorologist. His last position in meteorology was with the Air Force, and it was then, in 1998, that he became aware of a technical editor position for the American Meteorological Society (AMS). Ken had long enjoyed writing and thought this could be the ideal chance to combine both worlds.

Soon after joining AMS, the opportunity arose for him to become the manager of publications. With support from the organization, he learned much of this new position on the job. Ken joined the publishing world as a meteorologist, but after several years with the AMS publications, he felt he had transitioned to being primarily a writer/editor who was working with meteorology content. Ken still considers his manager of publications position his dream job. On June 1, he celebrated 17 years with AMS and notes that he enjoys his position more and more as time goes on.

Ken Heideman

In addition to his work at AMS, Ken also devotes his time and talents to CSE. He got involved first in the Short Course on Publication Management, offered each year at the annual meeting (and he still serves as a faculty member). Upon realizing he was with kindred spirits who were passionate about science publishing and publication management, Ken decided to get more involved with CSE. He joined committees, organized the Short Courses, served as the annual meeting program chair in 2009–2010, was elected to the board, was selected as CSE vice president, and then ultimately in 2012 became president of the organization.

Ken didn't stop there, however. He also writes "Solution Corner" for *Science Editor*, which addresses publication concerns and practical issues in each issue, and he led the team that searched for a new editor. Ken says that he really believes in CSE as an organization and the creative, talented, smart, and genuine people at its core. His recommendation for new CSE members is to get involved: join a committee (the Program Committee gives a good overview) or volunteer to help *Science Editor*.

Not only does Ken enjoy management work, he still enjoys the art of writing. He has written and recorded a few songs, pens poetry, and has a large collection of cat haiku. What is cat haiku? It's Ken's interpretation of the musings that might belong to cats, expressed in haiku form, which he hopes to publish.

Ken also keeps busy raising 2 teenagers ("I enjoy seeing them develop into their own people"), participating in cardio and strength training, playing tennis, and hiking.

In other words, Ken is not one to sit still. He likes rolling up his sleeves and learning new things, volunteering, and leading others, be they teenagers or large organizations of writers and editors.

Photos from the 2015 Annual Meeting, Philadelphia

Tim Cross, Anna Jester, Sarah Tegen, and Clive Thompson at the plenary address.

Daniel Nadolny and Carissa Gilman.

Angela Cochran, 2015–2016 President, and Tim Cross, 2014–2015 President, passing the gavel.

Morgan Sorenson and Christine Casey, first two graduates of the CSE Certificate Program, presented by Tim Cross.

Tim Cross with 2015 CSE scholarship winners Mariah Hanley, Rhea Williams, and Brittany White, and Glenn Landis, Membership Committee Chair.

Tim Cross with Jonathan Schultz, winner of the 2015 Certificate of Appreciation, and Ken Heideman.

continued

Tim Cross with Heather Goodell, winner of a 2015 Distinguished Service Award, and Ken Heideman.

Tim Cross with William Lanier, winner of a 2015 Distinguished Service Award, and Ken Heideman.

Tim Cross with Amy Brand, winner of the 2015 Meritorious Achievement Award, and Ken Heideman.

Membership Committee members and scholarship winners: Mariah Hanley, Detra Davis, Mary Beth Shaeffer, Anna Jester, Glenn Landis, Merete Holtermann, Rhea Williams, and Brittany White.

Calendar

2015

30 September	**BELS (Board of Editors in the Life Sciences) examination.** San Antonio TX. Registration deadline is 9 September. *www.bels.org*.
30 September–3 October	**American Medical Writers Association annual meeting**. San Antonio TX. *www.amwa.org*.
13 October	**International Society of Managing and Technical Editors annual European meeting**. London UK. *www.ismte.org*.
17–21 October	**American College of Clinical Pharmacy annual meeting**. San Francisco CA. *www.accp.com*.
24–28 October	**Regulatory Affairs Professionals Society annual conference.** Baltimore MD. *www.raps.org*.
29–31 October	**Mediterranean Editors and Translators meeting**. Coimbra Portugal. *www.metmeetings.org*.
3–4 November	**American Association of Dental Editors annual conference**. Washington DC. *www.dentaleditors.org*.
4–7 November	**American Translators Association annual conference & exhibition**. Miami FL. *www.atanet.org*.
6–10 November	**Association of American Medical Colleges annual meeting**. Baltimore MD. *www.aamc.org*.

2016

11–15 February	**American Association for the Advancement of Science annual meeting**. Washington DC. *www.aaas.org*.
6–9 April	**Association of Clinical Research Professionals annual conference**. Atlanta GA. *www.acrpnet.org*.
14–17 May	**Council of Science Editors annual meeting**. Denver CO. Contact: CSE: 10200 W 44th Ave, Ste 304, Wheat Ridge CO 80033; (720)881-6046; *www.CouncilScienceEditors.org*.
14 May	**BELS (Board of Editors in the Life Sciences) examination.** Denver CO. Registration deadline is 23 April. *www.bels.org*.
1–3 June	**Society for Scholarly Publishing annual meeting**. Vancouver BC. *www.sspnet.org*.
26–30 June	**Drug Information Association annual meeting**. Philadelphia PA. *wwwdiahome.org*.

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- Book Review: Pinker's *The Sense of Style*
- Annual Meeting Reports, Part II of II
- NISO: Why Standards Matter

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