Empowering with Evidence: Some Communication Highlights of the 2022 AAAS Meeting

Christina B Sumners, Kayla Barnes, Amanda Hohlt, Madison Semro, Duanduan Han, Abagail Chartier and Barbara Gastel

In keeping with its theme, "Empower with Evidence," the 2022 American Association for the Advancement of Science (AAAS) annual meeting, held online February 17–20, addressed topics in both science and its communication. Subjects of sessions on the latter ranged from peer review of journal submissions, to use of humor in popularizing science, to design of posters presenting research. The following are some highlights.

A Fireside Chat with Alan Alda

By Christina B Sumners

In conjunction with the AAAS annual meeting, AAAS Section Y (General Interest in Science and Engineering) held a business meeting, at which newly elected AAAS fellows associated with the section were recognized. These fellows included actor Alan Alda. Alda, who is also a visiting professor at the Alda Center for Communicating Science at Stony Brook University, answered questions in a "fireside chat" at the end of the business meeting.

When asked how he became interested in science communication, Alda said he was always interested in science, even if he didn't know it at the time. Not until his 20s, though, did he begin to read science avidly. Later, when he became host of the television show Scientific American Frontiers, he had the chance to speak to scientists one on one. "The scientists and I in each segment were having a genuine conversation," he said. "They wouldn't launch into lecture mode. ... What I realized is that we were improvising together." Alda would later use improvisation to formally train scientists to better communicate.

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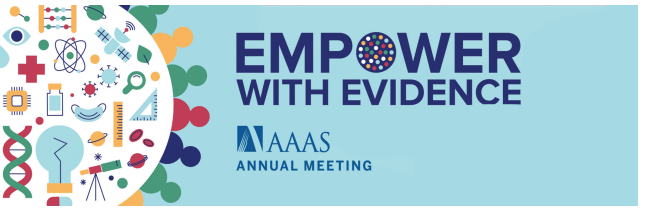

When he began these training sessions, Alda said, he thought they would help scientists communicate with the public and possibly with policymakers. What he had not expected was that they would help bridge the gap between specialties. "Scientists told me they were understanding each other better across disciplines," Alda said. Another thing that surprised him: Scientists said they understood their own work better after being encouraged to step back and look at the bigger picture and how their research fit.

When asked what he hoped to achieve through his work in science communication, Alda mentioned the beating that science has taken throughout the coronavirus pandemic. "Lack of communication is costing us lives," he said. "And that is a communication problem that would be nice to overcome." There's no magic bullet for doing so, he said, but listening must be paramount.

"I am so honored to be named a fellow. It's an honor to be present and listen to my fellow fellows tonight," Alda said. "I'm delighted that [Section Y] exists, and I'm delighted to be a part of it."

Being an Effective Reviewer or How to Avoid Being "Reviewer 2"

By Kayla Barnes

This workshop was intended as a comprehensive guide to help participants develop their skills as reviewers. The speaker, Diana Marshall of the Taylor & Francis reviewer training team, began by establishing the importance of reviewers and describing their role relative to editors, authors, and readers.

After introductory comments, Marshall explained that it is acceptable to reject an invitation to review. She then noted the steps a reviewer should take when beginning

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a review. It is best, she said, to get a general overview of the piece and then read from beginning to end before starting detailed work. An extensive peer review checklist was provided to guide reviewers through the process for research and nonresearch articles. Marshall presented next on comment structure; she included examples of summaries plus defined the difference between major and minor comments. A rereview, she said, should be considered as part of the commitment and should focus on evaluating how your comments were addressed; it should not raise any new concerns unless they relate to the author's revisions.

Midway through the workshop, participants were separated into breakout rooms, where they practiced evaluating the strengths and weaknesses of real reviewer reports of articles in *F1000Research*. The breakout rooms served as a way to network with others while immediately applying the presented information. Many participants could not return to the main session from the breakout rooms, as apparently a technical issue had arisen. Marshall would go on to wrap up the presentation by touching on the tone of reviewer reports and saying how to be polite yet objective and constructive. Marshall pointed participants to further resources from Taylor & Francis (https://editorresources.taylorandfrancis.com/reviewer-guidelines/) to round out this advice-packed session.

How to Make Basic Science Come Alive

By Amanda Hohlt

This session tackled challenges regarding audience engagement: How do you make a presentation more than just words on a screen? How can you interact with your audience? Dennis Meredith, an independent science communicator and author, answered these questions, among many others, and provided resources to help scientists enhance their communication skills.

Meredith began by stating the importance of an engaging title slide—if it's boring, you've already lost your audience. Next, he presented a scientific explanation: Humans are primates and therefore, do not learn only by listening.

If there's one thing to take away from this session, it's this, he said: "You have to engage in order to educate."

Much of Meredith's presentation consisted of examples. For instance, he used many pictures of cows—in costumes, artificially generated, and so forth. Doing so helped not only to keep his audience interested, but also to visually display the possibilities of whichever tool was being discussed. Meredith also provided links to visual resources. These included images, GIFs, molecular modeling technologies, screen capture tools, illustrations, and more. A list appears at http://dennismeredith.com/files/Explaining-Research-References-and-Resources.pdf. Meredith also noted additional techniques that presenters can employ: fiction techniques, metaphors and similes, humor, a professional appearance, pausing for emphasis, and perhaps the invention of a new term to help illustrate your point.

Meredith ended with a final word of advice—practice!

Are You JOKING???: Humor in Science Communication Practice and Research

By Madison Semro

"Using humor is a great way to bring people in," said Chelsea Parlett-Pelleriti, a statistics-focused content creator, professor at Chapman University, and panelist at this session. But, humor can be subjective and difficult to study, said Michael Cacciatore, a science communication researcher at the University of Georgia and another panelist at the session. Other panelists were science communication researcher Sarah Yeo (University of Utah) and Jason McDermott, comic artist and scientist (Pacific Northwest National Laboratory).

Humor can effectively engage your audience—as long as the joke is accessible enough for your audience to reasonably understand it, the panelists indicated. If you have to explain your joke too much, Cacciatore said, you can isolate parts of your audience. However, explaining the joke can also satisfy your audience's curiosity if the joke caught their interest, Parlett-Pelleriti noted.

Types of humor range from the lighter puns and anthropomorphisms to the more complex sarcasm and satire. Deciding what kind of humor to use requires careful consideration of your audience, panelists said. Lighter humor is best used when introducing your audience to new, nonpolarized topics, such as artificial intelligence or the human microbiome. In these cases, humor can help positively frame the topic and inspire your audience to learn more, Cacciatore and Yeo said.

However, darker humor such as sarcasm and satire can attract a wider audience and lead to more engagement, McDermott and Parlett-Pelleriti noted. Sarcasm can be effective in politically charged topics such as climate change; however, sarcasm also risks alienating sections of the audience. Parlett-Pelleriti recommended "punching up" to avoid this issue—for example, sarcastic humor about climate change should target large corporations rather than members of the public who eat meat.

The panelists advised "starting small" when incorporating humor into your science communication efforts. From there, you can identify kinds of humor your audience likes that also suit your voice.

Design Tips for Creating an Effective Scientific Poster: Easy Tips from Experts!

By Duanduan Han

In this workshop, Shiz Aoki from BioRender, a scientific illustration software company, provided advice on designing scientific posters.

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Aoki first discussed principles of poster layout. These included the following: The title should stand out from the rest of the poster to capture viewers' attention and keep viewers from walking away; white text on a black block is a safe choice. If an institution or company brand color is preferred, use the color pick tool (available in common graphics software) to copy the color and apply it consistently throughout the poster. Sections should be arranged from top to bottom and left to right, so readers can follow them intuitively. The margins and padding between sections should be consistent. Using a grid can help in aligning sections properly.

Among other points from Aoki: In poster sections, short abstracts can save viewers from "too long; didn't read" fatigue. Because the results are the most important part of a poster, adding a lightly shaded background to highlight this section can be worthwhile. Justified text alignment is recommended to create an organized look. Text hierarchy should be applied to the poster—from the title, to the section titles, to figure captions. Test-printing the poster at full size and displaying it on an easel is the best way to check text legibility and figure color. If printing cost is a concern, select a portion of the poster with various font sizes and print it on letter-size paper. Projecting the poster on a wall or large screen also can allow one to check text legibility. Aoki also noted several outdated features to avoid: rounded corners, drop shadows, gradients, word art, and fancy bullet points (such as arrows or hands).

At the end, Aoki demonstrated using the Poster Builder feature in BioRender to create a poster by employing built-in templates and prepared text and figures.

Does Science Communication Still Work?

By Abagail Chartier

At a conference full of specifics, the final panel (moderated by Holden Thorp, editor-in-chief, *Science* family of journals) addressed a broader question: Is science communication effectively reaching the public?

Environmental scientist Jane Lubchenco, of the White House Office of Science and Technology Policy, considered the past 25 years of science policy from a political standpoint. She noted that environmentally, two-way engagement with the public has increased, and emphasis has shifted from stating problems to becoming solution-driven.

Theoretical cosmologist Katie Mack, of North Carolina State University, observed that skillsets of scientists and science communicators generally differ. Scientists with both skillsets, she said, are "incredibly valuable" and should be utilized more often.

Joelle Simpson, medical director for emergency preparedness at Children's National Hospital, focused on the COVID pandemic and communicating with families in a crisis. The information, she said, must be understandable, reliable, and relatable so you can "meet each patient where they are" and help inform medical decisions.

Kathleen Hall Jamieson, director of the Annenberg Public Policy Center at the University of Pennsylvania, also focused on the COVID era. Jamieson emphasized successes—high turnout for vaccinations, continued confidence in scientists—and recommended identifying areas to improve on, such as minimizing susceptibility to misinformation and framing comparisons better.

Topics of discussion that followed included use of statistics, visualization, and humor. The main advice? Make it relevant to people's lives. Simpson emphasized putting statistics in context. Lubchenco discussed using analogies, metaphors, and visualization to improve climate change discussions. Mack and Lubchenco noted that knowing what can and cannot be joked about is needed, especially as humor tends to be shared on social media.

When asked about science communicators to keep an eye on, panelists mentioned climate scientist Katharine Hayhoe (professor at Texas Tech University and chief scientist at The Nature Conservancy), Randall Munroe (engineer-author-cartoonist creating xkcd), Lee Beers (medical director for community health and advocacy at Children's National Hospital), and Marshall Shepherd (meteorologist and professor at the University of Georgia).

Jamieson had the last word. Her message: "We don't have to be scientists to be science communicators. Everyone should be part of the scientific defense system."

The 2023 AAAS annual meeting, themed "Science for Humanity," is to be held March 2–5. Epidemiologic conditions permitting, it will include in-person components in Washington, DC, as well as online components. For more information, please see https://meetings.aaas.org/.