C-MORE hosts a Virtual Workshop on Science Writing

By Shimi Rii (Department of Oceanography, University of Hawai’i SOEST)

The morning (in Hawai’i, after-noon on the East Coast) started with a picture of a 7th grader describing a scientist before and after a visit to a science laboratory. The ‘before’ depicted a balding man in a labcoat, with green tornado-shaped liquid swirling out of an Erlenmeyer flask, and the ‘after’ showed a pretty, blue-eyed brunette dressed in a teal blouse and slacks.

“The thing is, if I asked my adult friends to do the same activity, they would draw the same thing,” joked the moderator, Shimi Rii, a Ph.D. graduate student in the Department of Oceanography at the University of Hawai’i at Mānoa. Rii went on to describe how the public’s perception of the scientific persona is disconnected from reality, and that it is the scientists’ responsibility to break down this barrier.

The goal of the 2.5-hour-long virtual workshop, hosted by the Center for Microbial Oceanography: Research and Education (C-MORE)’s Professional Development Training Program, was to help scientists communicate more effectively with the public by providing tips on utilizing narrative language and journalistic structure elements to describe scientific concepts. The workshop linked four academic institutions (University of Hawai’i, Massachusetts Institute of Technology, Woods Hole Oceanographic Institution, and University of California, Santa Cruz) using Polycom videoconferencing equipment, and three guest speakers called in via Skype to University of Hawai’i. There were 31 participants across institutions, including 1 undergraduate, 20 graduate students, 7 postdoctoral fellows, 2 technicians, and 1 early-career Research Scientist.

The first section of the workshop, entitled “Importance of Writing for Scientists,” addressed how the public’s characterization of scientists in modern times is distorted by the Albert Einstein-esque image burned into their brains from years of scientist depictions in popular culture. The “mad scientist” has yet to permeate the everyday lives of non-scientists, except during Halloween each year. Consequently, the general public remains in fear of large words and field-specific acronyms, primarily due to lack of exposure.

In addition, the word ‘science’ doesn’t mean the same to everyone. Science to scientists is the pursuit of knowledge of how things work, piecing together the big picture of the amazing world around us. Taking that knowledge one step further results in potential solutions to global challenges we face today concerning the health of our planet and people. In the news media, science represents a tool to address complex social problems. Thus, it is no surprise that in return for public funding, people have high expectations of scientists: to produce the best possible science, and to produce something that directly benefits society. Mix together fear, disappoint-
C-MORE (cont.)

ment, and skepticism, and the result is a general mistrust of scientists.

In her 1997 presidential address to the American Association for the Advancement of Science (AAAS), Jane Lubchenco, now the Under Secretary of Commerce for Oceans and Atmosphere, issued a call for a new “social contract” that committed scientists “to communicate their knowledge and understanding widely in order to inform decisions of individuals and institutions.” In order to “change the culture of Ocean Science,” scientists must “become bilingual” and tackle these central questions: 1) How do we balance good storytelling and scientific integrity to capture the public’s attention? 2) How do we develop and deliver a take-home message that people will understand and retain?

The first guest speaker was Judith Connor, Ph.D., Director of Information and Technology Dissemination at the Monterey Bay Aquarium Research Institute (MBARI). Connor, as she likes to be called, is an energetic woman who possesses the youthful vitality of a twenty-something-year-old embarking on her first research cruise. She commented on how she interfaces with the Monterey Bay Aquarium and how she uses science writing in educational materials such as curricula, natural history books, and annual reports, as well as in public outreach such as news stories, press releases, and exhibit development and graphics. She told the workshop participants about her career journey at MBARI, and how she learned more about marine biology while writing natural history books than she did during her Ph.D. program. She encouraged everyone from undergraduates to experienced scientists to get out there and share their science with the public.

The second section of the workshop, entitled “The Nuts and Bolts of Science Writing,” focused on the mechanics and structure of good science writing. In addition to types of articles (breaking news or trend story), scientists were introduced to the Inverted Pyramid of Journalists, which dictates that the most important information is placed in the beginning of the text. Therefore, a typical news story would start off with an attention-grabbing “lede,” followed immediately by the “nutgraf,” which is the ‘beating heart’ of the article. The “body” contains the details and scientific evidence supporting the nutgraf, typically presented by facts and direct quotes of the leading researchers in the field, and the article ends with a “kicker,” a snappy, moving, one-line ending that wraps up the article with a graceful bow.

Since scientists do well with protocols, much note taking ensued during this section. This was followed by an emphasis on using narrative language to turn the article into a compelling story. By using our five senses, the participants were encouraged to pay attention to details such as the type of tree and the dog’s name – not the pore size of filters or the brand name of the DNA extraction kit. Dynamic detail, when used correctly, can set the pace and create tension in the story; when used incorrectly, details become just a myriad of useless words.

The guest speaker for this section, George Johnson of the New York Times, spoke about his experience with finishing his most recent manuscript, The Cancer Chronicles, which combined personal experience and many years of research. He also commented on his recent article on lightning featured in the August issue of National Geographic Magazine, and on how he set up alternating scenes of being in the field and in the laboratory throughout the article. Fresh off the brain press from his book on cancer, he repeatedly referred to lightning as cancer, provoking small smiles from his audience: “We didn’t end up getting a shot of the cancer but it was okay.” His unintentional slip-ups symbolized to the participants the enormous toll research, any research, takes on a dedicated human being, scientist or non-scientist.

The final speaker for the workshop, during the third section entitled “Practice Makes Perfect,” was Tim Appenzeller, Chief Magazine Editor for Nature. A former science editor and writer for the National Geographic Magazine, he won the 2005 Walter Sullivan Award for Excellence in Sci-
ence Journalism from the American Geophysical Union for his article “The Case of the Missing Carbon.” He described from an editor’s point of view “What Editors Like and Dislike.”

“The trouble with editors is that you can’t escape them, they never seem to get your point, and they have no respect for your time,” informed Tim.

Calling in from his London home right around his children’s bedtime, Tim seemed relaxed and dedicated as he described the process of successfully pitching a story to an editor, dos and don’ts when filing a story, and dealing with edits. A question arose from the participants about the selection process by editors for which articles make it into a magazine, and whether the number of web views is factored into the process. Tim recounted that though web views indicate popularity with the general reader, it is usually a gut feeling of the editor by reading the pitches. However, he said that it is often the most unusual articles, such as a Buddhist statue carved into a meteorite, that end up getting more web traffic than expected.

As the participants thanked Tim for calling in, the workshop shifted gears to review the pre-assigned homework.

First, they reviewed four science news articles written about the hotly contested first usage date of fire. Articles were published in Associated Press, Nature News, New Scientist, and Science Now. Huei-Ting Lin, a graduate student at the University of Hawai’i, described how the Associated Press article seemed to her a collection of facts structured into short sentences, making it easy to read but not necessarily enjoyable. She indicated that the use of definite statements was unusual to her, since, as a scientist, she is used to using softer language, such as “suggested,” or “imply,” in relation to her data. This fueled a discussion of how, contrary to what scientists are accustomed to, dramatic and sensational language captures and generally appeals to the public. The article in Science Now took a different approach from the other three, by using a more narrative language in its lede and painting a picture of our ancestors roaming the fields. This lede evoked many different opinions on the various types of style and preference of each reader.

Next, the workshop participants shared the first 150 words, or the lede, of a news article about their own research projects. After hearing a few ledes, scientists agreed that the use of anthropomorphic analogies and illustrating a scene — a teabag for describing particulate and dissolved organic carbon (Donn Viviani, University of Hawai’i), using an oxymoron such as a giant virus (Chris Schvarcz, University of Hawai’i), standing at the bow of the ship and watching the ocean breathe (Julie Robidart, Ph.D., University of California, Santa Cruz) — allowed readers to relate to the article, thereby successfully arresting public attention. “Bring them in through their door, and send them out through yours,” advised Tim Appenzeller during his call. It truly was an amazing feat of organization and technology to be able to intimately discuss aspects of science writing over 5000 miles across the land and the sea.

The C-MORE Virtual Workshop on Science Writing ended with a “kicker”: “Let’s be the marine Steve Jobs,” a quote taken from Holly Bik of deepseanews.com, a website whose mission statement is to “demystify and humanize science in an open conversation that instills passion, awe, and responsibility for the oceans.” Workshop participants were encouraged to infiltrate the words in the community with scientists’ words, to start a dialogue with a non-scientist friend or family, and be representatives of the new culture of ocean science — one that is filled with less jargon, more hair, and a pen.

OCB hosts three C-MORE Science Kits in Woods Hole

OCB hosts three C-MORE Science Kits: Ocean acidification, marine mystery, and ocean conveyor belt.

Ocean acidification kit (grades 6–12)

This two-lesson kit familiarizes students with the causes and consequences of ocean acidification: Lesson 1 includes a simple hands-on experiment, a short PowerPoint, and optional readings with worksheets. In Lesson 2, students conduct a more in-depth experiment with electronic probes to simulate the process of ocean acidification. Learn more about this kit.

Ocean conveyor belt kit (grades 8–12)

This four-lesson kit introduces students to some fundamental concepts in oceanography, including ocean circulation, nutrient cycling, and variations in the chemical, biological, and physical properties of seawater through hands-on and computer-based experiments. Learn more about this kit.

Marine mystery kit (grades 3–8)

Students learn about the causes of coral reef destruction by assuming various character roles in this marine murder-mystery. As they determine who killed Seymour Coral, students learn the basics of DNA testing. Suspects include global warming, sedimentation, and other threats facing coral reefs today. Learn more about this kit.

To Request a Kit

Teachers along the eastern seaboard may use these kits for free. To reserve a kit, please submit a request at: http://cmore.soest.hawaii.edu/education/teachers/science_kits/requestform.htm