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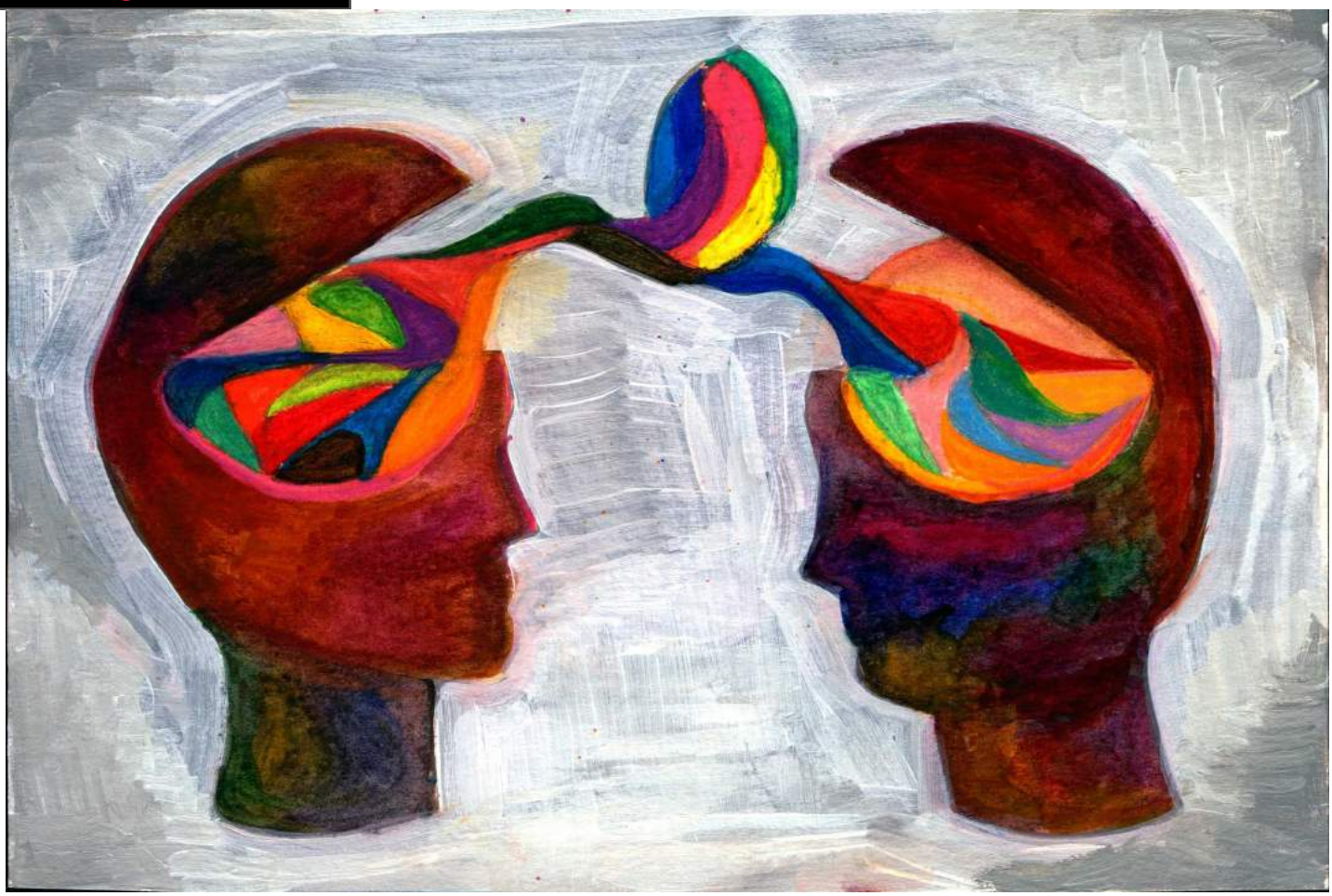

There's No Debate

How Do We Close the Gap Between Science and the Popular Press

By Brooke Ortel

Illustration by Ava Field

Despite the flood of information available online today, accessible with a few keystrokes, there remains a divide between the research of the scientific community and the general public. Research findings published in the scientific community belong to a body of literature that, for the most part, does not overlap with mainstream media. And when mainstream media attempts to cover scientific topics, its translation does not always accurately communicate research findings or their potential implications.

In light of the environmental issues we face today, it is important to consider the disconnect between the scientific community and the rest of society and to think critically about the role that science journalism can play in bridging this gap. To understand how the world is changing and why, the public, not just scientists, needs to gain some understanding of the science behind overwhelmingly complex issues such as climate change. This is where the difficulty lies. Media coverage of scientific issues is not always adequate in this respect, leading to the misrepresentation of research findings and confusion as to what, exactly, is going on.

Oberlin Professor Matthew Elrod, an atmospheric chemist, points out that a fundamental flaw in the reporting strategies employed by mainstream media is that "particularly for subjects in science that have implications on policy and therefore politics […] they assume that there are always two sides that are more or less equally valid, or at least need to be explored." But in the scientific community, it often doesn't make sense to give dissenting opinions equal weight. Dr. Elrod makes it clear that, "a scientist would never say that an opposition viewpoint on the Second Law of Thermodynamics deserves to be discussed…while science has legitimate controversies, it's not because scientists think that multiple correct answers exist, it's just that we haven't yet found the one explanation that explains all of the observations."

Elrod explains that scientists operate on the principle that eventually a consensus explanation will be reached, but "by definition, modern research topics are not in that category." While presenting two sides of a controversial topic as equally valid is a reasonable approach to covering politics, it is misleading to use this model for science journalism. Elrod points out that this tendency surfaces in the editorial pages of traditional newspapers, which often publish the same number of letters in support of action on climate change as those that counsel inaction by arguing that there is no scientific proof for climate change. The problem here is that these opinions are not equally valid in the way that differing views about politics are equally valid. He cites a study in which an academic journalist analyzed scientific papers on climate change and determined that 98 percent of the experts believed humans are responsible for climate change, "but if you read the average editorial page of a newspaper, you'd think it was 50 percent." As this example suggests, there is frequently a disconnect between how the scientific community

is actually divided on an issue and how the media portrays that division since it gives equal weight to perspectives that are rejected by the vast majority of the scientific community.

Dr. Elrod remarks that in his field of study, atmospheric chemistry, it is easy to convey the relevance of his research to non-scientists because it directly relates to environmental issues. The hard part, he says, "is that scientists tend to work on very, very small sections of very, very large problems." Often nonscientists are aware of the general symptoms of climate change, but don't realize that individual researchers' work actually focuses on much more specific issues, such as how the chemical content of the atmosphere is changing. Furthermore, describing how data is collected to someone unfamiliar with the complex, technical methods used in highly specialized fields is nearly impossible.

Fortunately, Oberlin professors are committed to teaching students how to overcome these difficulties. Dr. Jan Cooper of the Rhetoric and Composition Department works with students to develop the science writing skills they need to successfully present complex scientific topics to a general audience as well as to experts in their fields. When she first began developing her Writing in the Sciences course, Dr. Cooper interviewed colleagues in the natural sciences departments and found that, "they considered writing to be a very big part of what they do, even though it's not a big part of every class […] they felt a certain amount of responsibility to communicate about responsible science to the public and they thought that students who graduated from a liberal arts college ought to be able to translate the things they were learning about science for a non-scientist audience as well as for other scientists." Providing students with the opportunity to practice effective strategies for communication with a more general audience is one major focus of her class, along with preparing them to write more technical articles intended for an audience of scientists. She says that "it's actually harder in some ways to accurately portray complex scientific problems for readers who have little to no background in it. It's almost a trickier art to do that than it is to write to fellow scientists in the same field." She believes that what she "can do for science students is increase their knowledge of how to use language" to communicate effectively in writing.

Dr. Cooper warns that there is a delicate balance between overloading the reader with cumbersome, unfamiliar scientific jargon and oversimplifying the topic: when it "oversimplifies things and talks down to the reader, or uses a lot of clichés […] or makes extravagant claims for very new research," science writing is ineffective. In order to craft a piece of scientific journalism that successfully conveys research findings to a wider audience, she emphasizes that "you have to learn how to represent numbers and statistics accurately and sensibly." It's also necessary to understand the difference between a cliché and a "fresh, informative metaphor" that helps explain an unfamiliar concept or idea. Furthermore, writers must be careful "to give definitions for difficult terminology in a graceful way" so as not to overwhelm the reader with technical jargon. Cooper points out that although writing is often thought of as a solitary endeavor, that is a misconception, especially in the realm of published work. In writing about science for a general audience, it is particularly helpful to receive feedback before publication from a reader who is not in the same field as the writer; successful science writing "involves getting trusted readers to give you advice about where you're leaving a different kind of reader behind."

Dr. Cooper and Dr. Elrod both stress the importance of identifying a target audience and understanding the background, interests, and expectations of that audience. In the second half of her science writing class, Cooper helps students learn to transition "between communities of readers and…discover what the needs of different readers in different situations are" and then "apply their knowledge and skill in science to writing things that will meet the expectations of those different kinds of readers." Elrod points out that the term "general audience," taken to mean non-scientists, encompasses an overwhelmingly large array of different groups of people. Attempting to present information in a way that is accessible to all of them is extremely difficult because their different experiences and expectations impact how they "consume the information you're trying to pass on." Narrowing the audience can be an effective tool in more successfully communicating information to a larger group of non-scientists.

Both Oberlin professors also note the importance of learning to recognize reliability in media sources. The Internet makes knowledge acquisition easy—in fractions of a second, search engines deliver a seemingly infinite array of information on any topic imaginable—but many of these sources are not credible. However, biased media is nothing new, and as Dr. Cooper explains, obtaining unbiased information "just requires, as knowledge has always required, developing skills of testing reliability, developing a discerning eye for what you trust." Dr. Elrod adds that, "it's so easy to get information now that somebody who really cares about finding the best source" can do so.

But improving the level of understanding possessed by non-scientists would require substantial reform of the vehicles by which scientific research is conveyed to the public. People who care about finding accurate and unbiased sources will find them, even if it takes some searching. However, if this kind of information were more readily accessible, it might reach a wider audience—one that includes people who may be interested in environmental issues or medical advances, for instance, but who are not necessarily inclined to sift through the overwhelming variety of media sources to locate the best ones.

One suggestion Dr. Elrod put forth for improving the dissemination of research findings to the public is to create a nonprofit organization that is not funded by the government or influenced by partisan politics. If the media is truly going to play a "watchdog role" in alerting the public to environmental issues and informing them on current research, the transmission of information has to be separated from politics. As Elrod suggests, perhaps this might be more readily accomplished if responsibility for enforcing freedom of the press is shifted from private entities to public nonprofits created solely for the purpose of transmitting scientific knowledge. This kind of organization would be "dedicated to different kinds of information, from science news with an environmental bent to science news with a medical bent, [focusing on] things that people care about" and offering them an unbiased source of information.

Dr. Cooper points out that organizations of the type Elrod described already exist, just not focused exclusively on science writing. For example, the Reveal site of the Center for Investigative Reporting "works on issues that involve interpreting science, especially on environmental topics." Another site founded on similar principles is Pro Publica, which includes reporting on environmental and health topics. Cooper explains that "both of these organizations also contextualize the science they report on by discussing the political or economic implications of their topics. That is how they make the topics interesting to general readers." This seems ideal for a community of non-scientist readers: an unbiased source that also places scientific topics in context so as to make them relevant to everyday life. If the mainstream media could begin to move towards this model, perhaps the gap between the scientists and the public would not loom so large.