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Opinion

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More than ever, scientists need to engage with the public: the stakes are high and they may be for keeps

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Scientists of all stripes are failing miserably at one of the most important parts of our job—communication. On November 8, 2016, millions of Americans elected a man who denies human-caused climate change, and, in doing so, they voted against facts and against science. Donald Trump has vowed to withdraw from the international climate treaty negotiated last year in Paris, and says that once he is in power, it will be open season for oil drilling and mining on federal lands and in the seas. He has selected the outspoken climate change denialist Scott Pruitt as the new head for the US Environmental Protection Agency—a man who for many years has fought US President Barack Obama's environmental initiatives, and has even sued the EPA on several occasions, most recently over Obama's Clean Power Plan. This does not bode well for the environment and for science.

The situation is looking equally dire in other parts of the world, with nationalist, anti-immigration, and big business interests taking precedence over the preservation of our planet, its natural resources, and its ecosystems and species. To be an environmentalist, an academic, or a scientist of any kind in this polarized and pernicious political landscape risks being labeled an elitist, a liar, an ultra-leftist, and someone who is out of touch with the average person. Scientists cannot afford to shrug off these stereotypes and false labels and pretend that they are the opinions of a select few. In fact, we must acknowledge that in certain places these views are quickly becoming the consensus. We must accept that as scientists we are not engaging effectively with the public, with the very people who determine the fate of our research and learning institutes and their funding, and who will ultimately dictate the environmental and scientific policies of the future.

Now, more than ever, we need to reach beyond the borders of our laboratories, universities, and peer-reviewed publications and connect with our fellow citizens. This is arguably more important than that grant you are writing, that paper in review, and that prestigious conference presentation next month. All of us who work in education need to instill in our students a passion and talent for communication and outreach, and convince our administrators that public engagement is as significant as research dollars and awards. But how do we do this?

I do not have the answers, but I do know that throughout my scientific career—from undergraduate to PhD to postdoc to assistant professor—I have received very little training in communication. When my colleagues and I use the word "outreach" at departmental or faculty meetings, we are almost always referring to the exercise of attracting more students into our programs rather than informing the public at large about science. On my journey toward tenure, I have been told to seek more and more research funding, to take on increasing numbers of students, to publish, publish, publish. But not once have I been encouraged to do more public engagement activities.

Convincing voters and taxpayers of the importance of science and the urgency for protecting and studying the natural environment will not come from interacting with highly trained experts within our own fields. It will require us leaving the research centers and lecture halls and communicating with people outside of our own academic bubbles; speaking to them in an accessible, unpretentious, non-paternalistic, and non-judgmental manner; and using all of the resources that are available to openly connect with citizens, be it through social media, blogs, newspapers, radio, podcasts, or a soapbox on a street corner.

The culture around scientific outreach within academia needs to change. I can name twenty different journals in my narrow field of genetics, but I only know of two journals that specialize in science communication. I have given over thirty invited talks at universities or conferences over the past five years, but I have never once spoken at a library, community center, or high school. I have written dozens of research articles, review papers, and perspectives pieces (including this one) for peer-reviewed journals, but have only just started writing articles for the general public.

When I am not catching up on work, I spend most weekends in rural southwestern Ontario where my partner comes from. The towns are small and the people are friendly, kind, and hardworking, and most are quite conservative in their beliefs. In some ways, this area of Ontario represents Canada's "rust belt". Factories have closed, many of which were connected to the automotive industry, and unemployment rates are high. When I visit these towns and people, including my in-laws, I often get into friendly debates about politics, science, and religion. Our views on Donald Trump, climate change, and reproductive rights do not always align. But I am a guest in these communities, so I try to be open-minded

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and polite. However, this has not stopped me from trying my best to convince some of my in-laws about the veracity of global warming, the usefulness of vaccination, or the beauty of evolution. I have discussed these topics from every angle. I have argued my points quietly and gently, heatedly, and persuasively, and have even tried taking on the alternative view. But still, I have converted not a single soul to my side, and have inadvertently caused a few to become even more distrustful of my beliefs.

It is not just scientists who are having a hard time convincing the public of their worth; mainstream journalists, too, are increasingly being viewed with skepticism and distrust. CNN's chief international correspondent Christiane Amanpour received the 2016 Burton Benjamin Memorial Award from the Committee to Protect Journalists. In her acceptance speech [1] she said: "If ever there is a time to celebrate, to protect, to mobilize for press-freedom and basic good journalism, it is now". The same could be said for science. She went on to say: "We have to accept that we've had our lunch handed to us by the very same social media that we've so slavishly been devoted to. [Donald Trump] did a very savvy end run around us and used it to go straight to the people. Combined with the most incredible development ever: the tsunami of fake news sites (aka lies) that somehow people could not, would not, recognize, fact check, or disregard. . . . I feel that we face an existential crisis, a threat to the very relevance and usefulness of our profession". Again, the exact same things could be said for science and scientists.

On November 15, 2016, Oxford Dictionaries announced its international word of the year: "post-truth". The word is defined as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief". Editors noted that the use of the term "post-truth" went up 2,000% in 2016 as compared to the previous year. In a post-truth era, scientists need to be more vigilant than ever in connecting with the public and defending and promoting facts. If we work together and make science communication a priority for all, then perhaps we can influence Oxford Dictionaries' word of 2017. Perhaps we can cause a science communication cacophony (a "scicommcacophony"), which is the raucous, unrelenting sound of scientists united in effectively engaging the public.

Ms. Amanpour ended her speech by saying: "As a profession, let's fight for what is right. Let's fight for our values. Bad things, as we all know, do happen when good people do nothing". Let us echo these sentiments as scientists. Get out there and be heard.

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Reference

1. Committee to Protect Journalists (2016) International Press Freedom Awards, Christiane Amanpour. https://cpj.org/awards/2016/christiane-amanpour.php

