

ED33B-02: The Trap of Doomsday thinking or: How I Learned to Stop Worrying and Love the Debate Ankur R Desai

Act 1: Allegro

The flute player read a poem, then locked his eyes on us, took a deep breath, and burst into notes. Some soft, some loud. At first, nothing unusual. My three daughters, dragged along, were nonplussed. But then the tune changed. The flute took on an ethereal tone. One that none of us had heard before. There was fluttering and flapping sounds, like birds and rain. At one point, the flutist began to hum and play flute at the same time, in harmony. The song took on an aura of its own and when I looked at my kids, they were now rapt.

Afterwards, my kids wanted to see how they scored such a complex piece with so many non-traditional sounds. The flute player enthusiastically showed them the score to *Laconisme de l'aile* by Kaija Saariaho. It was full of bizarre notations and illegible, even though the kids all play musical instruments.

So, what does this have to do with this panel? Well, just like anyone who can keep a tune is a musician, anyone with curiosity or passion of natural world is a scientist. But professionals can make their instrument sing and see the world in a whole new light. If you show the same curious amateur scientist the score to your science, that is, your published manuscript or code, it looks nothing like the science they know. There's no link to how that collection of jargon and Greek letters leads to the discovery of new anti-particles deep underground, the color of dinosaur skin, or solves the mystery of the progression of ice ages.

Act 2: Adagio

I am no expert on science communication, but I'll share some things I've learned. I am a professor and climate scientist at a public university that has The Wisconsin Idea at its core mission, that great public universities have no borders on its knowledge and it is incumbent upon its educators to speak broadly to concerns of the state.

The flute concert was part of a local outreach event organized by my colleague, a professor of French horn who combines science talks and music around a common theme, free dessert, and a cash bar. On that night, the theme was Up, and I tried to talk about climate trends, CO2 trends, fashion and other trends to 200 people, and how we know a correlation or trend is real and not spurious.

Because of my carbon cycle and climate field research sites in northern Wisconsin, I also find myself in small rural communities talking about a subject many would rather it solve itself or maybe like that one angry fellow said on the radio, is some sort of hoax.

Regardless of the audience, whether educated college town inhabitants or lake cabin owners, we know from research that effective communication has to first address cognitive bias. Pre-conceived beliefs on a topic, as determined by who we believe, namely, our community, are hard to overcome, for everyone, scientists not excepted. We operate under a false framework if we believe that we provide just the facts and others will judge their merits and act on them. Some of the folks we think are the most science literate, those who proudly call themselves objectivists, rationalists, empiricists, are often the least willing to change minds with new evidence, regardless of political affiliation.

Sometimes, we even do damage since it's nearly impossible as a scientist to not delve in economics or policy when discussing a topic like climate change, and lacking a solid grounding in them, we fall to our own cognitive biases of how we think people and society work.

Rather, my experience in all cases has been that the best conversations happen under a curtain of curiosity and passion. And often in climate change, that curiosity is squashed by a message that mostly resonates fear and doomsday thinking, thinking that triggers reactions of being overwhelmed, alarmed to a point of anger, or alternatively disengaged, denying its existence, and falling back into earlier conceptions. It's like a bad horror film. Amusing, maybe enjoying the few scary moments, and then either pissed at how crappy it was or quickly forgotten as you move on to the next thing.

Act 3: Minuet

One of my favorite places to engage curiosity is at my field sites. A few years ago, I was working with a tribal college of the Menominee Nation, in one of the poorest areas of Wisconsin. I was asked if I'd bring a dozen students from the tribe's high school to my field station and have them conduct experiments with my graduate students. In three days, we experienced all the drama of a summer camp and I learned that I am not a great camp counselor. The powerpoints put them to sleep. The relentless mosquitoes sapped their energy while coring trees and digging soil pits. But I saw lots of small conversations happening among my students and the high schoolers. Quiet interludes while canoeing out on the lake to take water CO₂ concentration profiles. Most memorable was an evening bonfire, where high schoolers opened up about the challenges in their personal lives, leaving most of my more privileged graduate students in tears, while my grad students exposed them to lives in very different worlds and what it meant to be a scientist. They may have forgotten the details of the atmospheric carbon cycle, but one of two of those experiences must have sunk in for everyone.

Act 4: Allegro

So I conclude to note that science communication is performance. It's like a 3 act play or a 4 movement symphony. Conflict, complication, climax. There are well known arcs that connect with audiences emotionally. What is art but that which moves the soul. So should good science communication.

Participant reaction to outreach is emotion, even if the leader is not aware. Sometimes that emotion can be shock, sadness, boredom, nihilism. And climate change leads to emotions of fear, paralysis, doomsday. I now review presentations on their story arc and emotional resonance. I try to learn makes the audience curious and teach myself a thing or two about those items, whether that's local politics or deer hunting. I tailor talks to local conditions. I focus on successful resolution of past global environmental problems, with a mix of stories that are driven by private industry, active citizens, or government regulation.

I may not change minds or hearts, but I figure if I can keep an audience curious, and some come home with one or two, "hey who knew that?", they might come back to learn more. And like the flute piece, they may never understand the marks on the score, but they can be moved by them and appreciate what good music is, maybe even perform some themselves, and come back for more.