



## **After the Fact** | Conversations on Science—Science for All

Originally aired October 2, 2020

**Total runtime: 00:25:43**

### **TRANSCRIPT**

---

**Dan LeDuc, host:** During the pandemic, most of us are paying attention to the science of the coronavirus, trying to understand it and how it informs the advice we're receiving from public health experts. But what about normal times? What is the state of our national conversation on science? And who is doing the talking?

**Laura Lindenfeld, Ph.D., executive director of the Alan Alda Center for Communicating Science and dean of the School of Journalism at Stony Brook University:** We all grow up communicating. It's how we relate. We wouldn't have a society if we didn't communicate, and that includes verbal and nonverbal communication. I think when we train as scientists, we get some of the ability to connect trained out of us.

**Dan LeDuc:** That was Laura Lindenfeld. She's the executive director of the Alda Center for Communicating Science, which was founded by Alan Alda. Their work helps scientists become better communicators, and you'll hear more from her later on.

That ability to connect: A lot of us think scientists lack it. The Pew Research Center found that 54% of Americans think scientists are good communicators, and that means nearly half think, well, not so much. And that may get at how well people trust scientists. It can also directly affect the practice of science itself. After all, scientists need to communicate what they're working on to taxpayers and foundations and others who fund their work.

Would you pay for something if you didn't understand it just a little bit? But before we dive into how well scientists communicate, there's more to talk about—like, are we tapping the full potential of the scientific community? Are we attracting a diverse group of researchers who can think creatively, foster inclusiveness, and make discoveries that might not happen otherwise?

**Shirley Malcom, Ph.D., director of SEA Change and senior adviser, American Association for the Advancement of Science:** I don't think that we're going to be able to solve the problems that we have with regard to the economy, poverty, climate change, food security, pandemics—we're not going to be able to solve this unless we use all the talent that we—that is out there. That's really the crux of the matter.



**Dan LeDuc:** That's Shirley Malcom, who directs an initiative called SEA Change at the American Association for the Advancement of Science. Shirley knew she wanted to be a scientist from the day she saw Sputnik launched into space. It was a heady time for science, and space exploration was on all the front pages, but growing up during the civil rights era in Birmingham, Alabama, her science classroom might as well have been on the moon.

In addition to your own career as a scientist, you have devoted yourself to breaking down barriers and diversifying what we know as STEM education—science, technology, engineering, and math. Tell us about your own experience and how you first became interested in science.

**Shirley Malcom:** I'm 73 years old. I don't mind telling people. I prefer to be above ground, so that means getting to 73 is actually a good thing. So by telling you that, I situate myself in a history of the South—the Jim Crow South. It begins to help you understand some of the things that I went through as a child. Yes, you ride on the bus. You ride behind the board that says “colored” on one side and “white” on the other.

I was describing to someone the experience of the first bombing of my mother and grandmother's church in 1956, and how that was so traumatic. When I focus on it, I can still hear it in my head. When you're 10 years old on Christmas night, and all of a sudden, there was this shaking of the house and loud sound. The fact is that growing up in that kind of an environment tends to focus the mind.

Now, another thing happened, however, in 1957, and that was the launch of Sputnik—which, in fact, was my own sea change.

*[Audio from Sputnik 1 CBS NEWS Special Report on TV, October 6, 1957]*

Everybody was talking about science. Science was in the newspapers. It was above the fold in the newspaper. It was on TV. Everybody was talking about the fact that we needed to be able to achieve our goals in science, that this was a race for space, and that it wasn't just about the science. It was also about the ideology, communism versus democracy, that you were a patriot if you studied science and math and if you went into these fields.

We started actually having real science taught in our elementary schools. I discovered not only that I liked it, but I was good at it. Once I began to be drawn to the science, I began to discover other things about the science and about the kinds of questions that it could help answer. What is race? Are we any different? What are the kind of barriers to our



understanding of who we were as people, why differences might have mattered, and why different did not mean deficient? Those are powerful ideas, and I hope that any student who is able to be in school and study science realizes how empowered knowing it is to have a set of ideas and principles and ways of thinking given to you that will encourage you and allow you to make discernments, to make decisions that is based on something other than superstition, gut, or instinct.

**Dan LeDuc:** You help direct something called SEA Change at the American Association for the Advancement of Science. What does SEA Change stand for, and what are you trying to do?

**Shirley Malcom:** Well, what it stands for is STEMM—with two M's—I want us to understand that we are not going to have true excellence in science, technology, engineering, mathematics, and medicine until we are equitable, diverse, and inclusive in the way that we work. What we're trying to do is transform higher education institutions in ways that diversity, equity, and inclusion are supported within the STEM fields. We know that those are areas where we haven't done the best job in terms of being inclusive of women, of underrepresented minorities, of persons with disabilities, LGBTQ—we just have not been as inclusive.

**Dan LeDuc:** So what specifically can you do through SEA Change that can encourage this greater inclusion?

**Shirley Malcom:** One of the things that we try to do is work with colleges and universities to start a process of self-assessment. What do I understand about the research that is being carried out? Is it research that is only of interest to the researcher, or is it research that is important to the community? Have I listened to the community? Do I reach out to the community? Do I show up in the schools in the community? So beginning with self-assessment, identifying the real holes, the gaps, the barriers to achieving the kinds of change that you really want to achieve, and then putting in place an action plan—research-based, evidence-based strategies that may have been tried by other institutions in an effective way in order to begin to undo some of this. Or to have some of the outreach that you know that you need, or to connect to the schools that you would like to be able to help serve. Those are the kinds of things that require a deep commitment to equity, diversity, and inclusion from the beginning. But then you've got to tag on the actions in order to achieve that.

And there is research that is really telling us that the creativity and innovation that comes along with this diversity is really what we need in order to move to the next level. That is something that we have as the United States that makes us exceptional. In many cases,



other places have smart people but not necessarily this full range of diversity that is available to them, that can be utilized to really move the needle on the kind of innovation and the excellence that we're going to need in order to really solve those challenges of the 21st century.

**Dan LeDuc:** This summer's protests from the Black Lives Matter—it stemmed from issues relating to the criminal justice system rightly, but it obviously exposes a lot of other inequities that have been going on.

**Shirley Malcom:** Yes, it does.

**Dan LeDuc:** Will all of this firmament that the nation is feeling, you think, help the effort that you're trying to push?

**Shirley Malcom:** I think that it does in the sense that it shines a very bright light on systemic racism. It begins to allow us to have conversations that have been very difficult to have. You can't talk about systemic racism without talking about race, and you can't talk about that without talking about the experiences that most black people can recount to you of where they have been overlooked, or devalued, or assumed to be in the wrong place when they show up at a scientific meeting, for example. And I think that it's a lot easier to have that conversation now. So it has offered an opportunity for us to look at the institutions that have been—that are products of the past, and how they still maintain the vestiges of racial intolerance.

So I went to the University of Washington. I ran into all of the deficiencies that had shaped my education career. I finished high school with all A's, but the point was that the resources had not been put in place, because nobody assumed that there was going to be a little black kid who would come out of George Washington Carver High School who was going to be a scientist. There were very few classes that I took where there was anybody else who looked like me. And so I have been alone through this journey. Yes, I did the professor thing, and I actually had students who would come over to my office, I think, just to see that I actually existed. I was the only tenure track faculty member in the sciences who was black. Where was everybody else? I thought everybody else had gone to another school, and I found out from the numbers, from the national numbers that was not true. There were no everybody elses. It then became a cause, a way of trying to make sure that the next generation was not going to encounter what I encountered. And yet, with that commitment, that interest, we're still struggling with the problem.

**Dan LeDuc:** Do you sense that some things are getting better?



**Shirley Malcom:** Yes, for some groups and in some fields.

**Dan LeDuc:** What are a couple of the signs that give you hope then?

**Shirley Malcom:** The numbers are better, for example, in the biological sciences. They're better for women—a lot better for women. They're better for Latinx students. The numbers are increasing. The numbers had been increasing for black students in some fields, but not in all. We're still struggling in areas, for example, like physics, like computer science.

In spite of the employment opportunities and the opportunity for innovation and invention that these fields offer, we are just not seeing that people move into these fields. We are still looking at faculties that are undiverse, we are still looking at school systems that are not providing the resources and opportunities that are needed in order to go into these fields, we are still struggling with many of the same issues that I grew up with.

And so I guess I've come full circle, and that is to really try to take on a system that is not really serving all people well. And so even as I can be pleased about some of the gains that we have made, I also understand the emotional and other kinds of tolls that those individuals went through in order to arrive there.

I tell people I have grandchildren. I wasn't able to fix the things that needed fixing for my children. They went through the same things—many of the same things. But I can't leave without at least trying to fix it for the grandchildren.

*[Music Break]*

**Dan LeDuc:** And now back to how scientists actually speak about their work. One person who has taken a special interest in getting scientists to communicate better is the actor Alan Alda—you remember him from the long-running TV show “M.A.S.H.” He also has hosted the PBS series “Scientific American Frontiers” and helped found the Alan Alda Center for Communicating Science at Stony Brook University. Since 2009, the center has focused on helping scientists and other STEM professionals learn how to communicate their work vividly, clearly, and more effectively to diverse audiences. Laura Lindenfeld, who we heard from at the top of this episode, directs the center.

**Laura Lindenfeld:** What we're really after is a world that values and uses science. So we want to help scientists be able to make strong connections with different audiences. The center was Alan's dream. Alan is a big science fan. He's just fascinated by science. And he



spent a good chunk of his time when he was doing “Scientific American Frontiers” interviewing scientists and learning about how he might help them respond better to questions he was asking. He also learned a lot about how to ask better questions. And it occurred to him that improv, which is the school of training he had as an actor and the only training he had, might help scientists learn how to connect better and therefore communicate better. That was a little over 10 years ago. And to date, we’ve trained over 15,000 scientists from different areas of STEM and medical professionals to communicate their work with greater verve and passion.

**Dan LeDuc:** In 2016, Alan was awarded the National Academy of Sciences Public Welfare Medal and talked about the impact that improv training had on one of the Alda Center’s participants.

*[Audio of Alan Alda, recipient of the National Academy of Sciences 2016 Public Welfare Medal on May 1, 2016]*

**Dan LeDuc:** Let's dive into that improv. That’s not exactly what you expect from scientists, right? You know, I envision labs as these pretty precise places and methodology is followed, and improv seems like, “Hey, let’s wing it and see what happens.”

**Laura Lindenfeld:** Yeah, that’s true. It depends on how you think about improv. We’re not talking about standup comedy. We’re talking about being present and being genuine and being in the moment. Improv doesn’t mean you don’t make a plan; it means you come in thoughtfully knowing something about your audience, and you react accordingly as you see how what you are communicating lands with them. And it implies that you hold responsibility. And that when we communicate, it’s a partnership; it's not a one-way street. Let me take my wisdom and package it and hurl it at you. But rather, like you and I are doing, let’s riff off of each other and make meaning together.

**Dan LeDuc:** Sometimes simple communication skills aren’t necessarily as valued as, like, the substance of whatever it is you’re talking about. But one can’t exist without the other. And how well have scientists been doing? And what are sort of the traits that you see that need improving overall?

**Laura Lindenfeld:** We all grow up communicating. It’s how we relate. We wouldn’t have a society if we didn’t communicate, and that includes verbal and nonverbal communication. I think when we train as scientists, we get some of the ability to connect trained out of us. So in many ways what our training does is it helps us rediscover not only our joy and our own process of learning about science and about each other, but in



our ability to connect and really listen to people who think differently and experienced it a little differently than we do. As scientists, we learn our special language, and we're tested on it, and we have to prove that we know it. It's a very defensive culture. We're constantly having to demonstrate that we know better when we're applying for jobs or going through exams. And we forget that the language we adopt, the jargon, which I do not mean in a pejorative way. Jargon's a great thing. It's a kind of shorthand. We want to be able to get to the next step quickly. It doesn't transfer outside of the domain in which we work. So one of the key areas where scientists struggle is believing that the jargon they speak, and which becomes so naturalized to you when it's what you do every day, doesn't work when you're talking to people who aren't in your field. Communication's a kind of clay we form together; the rules are not completely set. So we're constantly improvising when we live, when we communicate.

**Dan LeDuc:** There is a part of the American public these days that is skeptical of experts, skeptical of science. Is that because scientists maybe haven't done a good enough job?

**Laura Lindenfeld:** I think what's at the core of this, and there's some really good social science research on this, is that we tend to believe things that align with our worldview and the culture in which we're situated. So in some cases—vaccination, for example—if someone really strongly just believes, and you come at them and you say, but you're wrong, look at this data, you're going to enhance their disbelief, not counter it. Whereas, you know, there are some cases in which a conversation's just going to make it worse, and maybe you need to know when not to even start and just build trust. I think if we could have one goal, it's to build trust with people who may not believe in what we do in the scientific community. Because if that trust is there, then maybe people's sense of community expands, and we become part of a larger community trying to support each other. So what I would ask the scientific community to do is to think about building trust with people who believe differently, rather than trying to argue and fight with them.

**Dan LeDuc:** You work with lots of scientists. Do you think they get it? That this level of trust thing is something that needs work?

**Laura Lindenfeld:** I do. When we first started out—I've been at the center a little over four years now—it was something that people tended to be aware of, especially if you're working in climate change or immunology/immunization, the areas that are more contentious. We're seeing a new generation of scientists come out who are very active on social media, and they embrace engagement as part of their work more readily than people who came through my generation or older. So I think there's a mindset now, especially with this pandemic that we're in, that people understand it's not enough for me to be the sage on the stage and throw facts out. We've got to engage a little more. I



do think there is stronger dedication to making sure that you as a scientist are listening. Are you really listening? Are you really understanding where people stand? We call it empathy; it's really what's at the core of communication. To communicate effectively and genuinely, you have to imagine what the other person thinks or feels. You've got to be able to transport yourself into their experience and imagine what it feels like to be them.

*[Music break]*

**Dan LeDuc:** We hope you have enjoyed these conversations on science. As you heard from the brilliant minds of our guests throughout this season, understanding and advancing science is paramount to shaping the future.

**Laura Lindenfeld:** Everything in our world is possible because of science: medical care, health, water, food, safety.

**Ira Flatow, host of the "Science Friday" podcast:** People should care about science because it affects everything they do in their lives. And they should care about it because they are paying for it.

**Carlo Rovelli, theoretical physicist and bestselling writer:** If they don't, they miss something beautiful about the world.

**Esther Krofah, executive director of FasterCures, Milken Institute:** The science is what gives us the possibility that when we have an illness or a disease, there is a potential for a treatment for that.

**France Córdova, former director, National Science Foundation:** Its goal is ultimately to look into ourselves and ask, why are we here? What is our origin? What is our purpose?

**Dan LeDuc:** If you liked what you've heard, please tune in for some bonus episodes featuring extended conversations with some of our guests. Visit [pewtrusts.org/afterthefact](https://pewtrusts.org/afterthefact) for more information. Thanks for listening. For The Pew Charitable Trusts, I'm Dan LeDuc, and this is "After the Fact."