After the Fact | Conversations on Science—Do Americans Trust Scientists?

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TRANSCRIPT

Dan LeDuc, host: The world is living a giant experiment right now. We're watching the scientific method at work in real time as researchers try to stem the spread of the coronavirus and find a vaccine that someday—soon, we all hope—can restore life back to normal. There have been fits and starts as scientists learn more about the virus and how it is transmitted, leading some people to be skeptical about any health advice they get. So who and what should we trust?

France Córdova, former director, National Science Foundation: People should trust scientists because we search for truth.

Ira Flatow, host of "Science Friday" podcast: People should trust scientists as much as they trust other people. Scientists are people. But the work that scientists do is constantly under scrutiny.

Sudip Parikh, CEO, American Association for the Advancement of Science: Just because you've earned a Ph.D. or an M.D. doesn't give you any more right to trust. What it gives you is knowledge, and you have a responsibility to share that knowledge in a way that is open, honest, and transparent, and that's what builds trust. You have to earn it.

Dan LeDuc: That leads us to our data point for this episode. According to a Pew Research Center survey, as of 2019, 35 percent of Americans—just a bit more than a third—reported a great deal of confidence in scientists to act in the public interest. That's up from 21 percent in 2016. Later we'll hear more about the data and what it means from the Pew Research Center's Cary Funk. But first, we turn to France Córdova, the former director of the National Science Foundation. This independent federal agency was created by Congress in 1950 to promote the progress of science and support basic research. An astrophysicist, Córdova was also NASA's chief scientist—not only the first woman to hold the position, but also, the youngest in history.

Dan LeDuc: So much of the public focuses on discovery and how science is going to influence their life. Scientists, of course, love the search. Does that explain a little bit of the dichotomy I think we sometimes feel between scientists and the public?

France Córdova: I have the view that, actually, people are quite fascinated by the approach that scientists take, and they're quite curious about it. I think many of the public television shows, for example, and books about science are very, very attractive to people and can help bring them into science and even become scientists themselves.

So I don't really take a dim view of things concerning trust. I think trust has to start with the scientists themselves. They have to really be truthful about their explorations, about what they discover. They have to try to be bias free and politically free, free of politics, and free of self-aggrandizement and just want to pursue the truth.

Dan LeDuc: You were president of one of the best engineering schools in the country and have been involved in education. But your role at the National Science Foundation and now your role with the Science Philanthropy Alliance is a little different. You're a bit more of a cheerleader. Would that be a correct way of saying some of this in terms of trying to let people understand the need and support for basic science in our society?

France Córdova: Yeah. I think you always go back to your roots, and in high school I was a cheerleader.

[LAUGHTER]

France Córdova: I think that there are definitely a large group of people who like to cheer. And that's a very, very important thing to do. And of course, it demands a different kind of skill set. But there's a step beyond cheering that is just incredibly important to do: what I call move the needle, to really make things change sociologically, culturally.

There are many, many disparities that abound, and they affect science as well as every other field of endeavor. I think it's important for institutions like the National Science Foundation to allow all sorts of approaches to blossom and to encourage them.

France Córdova: Scientific discovery comes through many, many different approaches. And by the way, I've heard a number of times that Isaac Newton did his greatest, most profound work during a pandemic. So crisis can also bring about the environment for making a great discovery.

Dan LeDuc: You were the chief scientist at NASA. That's pretty cool. What did you take from that role and how did that guide your thinking in the broader scientific community?

France Córdova: I really wanted to be a researcher, and that's it. I wanted to explore science deeply. I was particularly attracted to the cosmos. And my goodness, there's just so many mysteries that it offers. And so I was very, very focused on that, and I didn't want anything to take me away from that.

And so when I was given the invitation to join NASA as its chief scientist, I asked various close friends and colleagues if it was a good idea.

And all my department heads around the country who knew me, said, 'oh, what a bad idea. It'll take you out of your research.' Because they knew how engaged I was in that. But then I talked to some of my female colleagues, like a colleague who headed the history of science department at Penn State University, and my mother, who obviously knew me well. And people like that said, 'well, you can't talk about how important it is that women and underrepresented minorities go into science and then not take the opportunity to do something about that, to have a platform where you can be a role model for that, when you can actually effect changes in that.' So I accepted because of that. So that was the real change for me to think about the field of science and how I could bring that more out into the open.

Dan LeDuc: Do you think, in general, scientists do a good job of trying to explain what they do?

France Córdova: I think there's much, much more attention to that today than there has been in the past. Today, things are so much more opened up. Authenticity is easy to detect. And when they detect authenticity and that a person's really going after the truth, then the public can align with that. And if there's one positive benefit of the pandemic, it's that, because of the connectivity of everybody—the webinars, the conferences—there's much more inviting the public in to hear about not only what's being discovered but how it's being discovered and answering the public's questions.

I think things are really changing and they are changing rapidly in the direction of more access of the public to science.

[Music transition]

Dan LeDuc: Science requires a process, and evidence, and a set of values to guide us. As France Córdova says, there is a responsibility of the public to critically assess the information they are hearing and seeing, but it also requires trust—from the public, towards those who practice science. Ira Flatow, who hosts the public radio program "Science Friday," says that trust is often challenging to build.

Ira Flatow: Part of the problem that most people have with scientists is that scientists change their minds, and they change their minds because sometimes they look at the big data and they look at what the statistics say–and COVID-19 is a perfect example of that. What we know now about this pandemic is a lot different than what we thought we knew at the beginning. And it's only because we're collecting all this data and looking at all the statistics.

Dan LeDuc: And that ever-moving target is something people have to understand if they want to start applying science in their lives.

Ira Flatow: Yes. And they have to understand that this is not somebody pulling the shades over their eyes.

Dan LeDuc: Sometimes you hear that response—'well, I don't know if I can trust this guy. He told me this yesterday, and now he's telling me that today, so why should I listen to him at all?'

Ira Flatow: Because you have to understand that's how science works, because science, as I said before, is trying to take a picture of a moving target. I've encountered this in my career many times. If people have made their mind up about something, it's really, really, really difficult to change their minds.

But there are periods that we can go through—and I think we're going through that now with climate change—where the evidence becomes so overwhelming that we have a paradigm shift.

I think we're going through that a bit with COVID-19 now, where some people who were not believing that it was real have told me, 'you know, I just can't deny what my eyes are telling me anymore, so I'm actually changing the way I'm thinking.' And those paradigm shifts happen, and sometimes they may take a while.

Dan LeDuc: Cary Funk knows about that important connection between public trust and science. She surveys the public and scientists for the Pew Research Center.

Cary Funk, director of science and society research, Pew Research Center: What we study is really about the implications of science for society. And one thing that's really interesting is how science issues are increasingly a part of civic debates. There are social, policy, and ethical issues around all sorts of science issues, whether it's climate change, food safety, health applications, a coronavirus outbreak.

Science and technological innovation is a core way in which we're changing as a society. And that's really important to the mission of the Pew Research Center, to better understand the forces shaping American society and how it's changing over time.

One of the things we often do is ask about trust, or what we often phrase it as is confidence. The question is, trust to do what? Trust how? And so, we have often asked, how much confidence do you have in scientists to act in the best interests of the public? And we compare that trust in scientists with trust in other groups and institutions, like elected officials, and the news media or journalists, as well as the military, religious leaders, other kinds of groups.

Dan LeDuc: One of the very first studies you did really looked at the differences in how the general public views certain issues and how the scientific community might view certain issues. It was fascinating to me at the time, because these are the day-to-day stuff that we live in our lives. Is it OK to eat genetically modified food? Or eat food with pesticides? You found some real differences in how scientists view the world and how the general public views some of those things.

Cary Funk: Yeah, about five years ago when we really started actively designing research in this area, we did a survey of members of the American Association for the Advancement of Science, and asked them about their attitudes and opinions about a variety of different science issues. And what was so interesting was to see the gaps or the differences between what these members of the science community thought and what the general public thought. Particularly wide differences on issues like climate change or the safety of GM foods, on the benefits of childhood vaccines. And so it wasn't limited to any one topic or issue area. It was across the board. And what it really did was underscore longstanding questions in the scientific community about, how much does the public trust scientists and their work?

Dan LeDuc: What are you finding? How do scientists compare to those other groups? And has it changed over time?

Cary Funk: It has. This is what's particularly interesting, is that trust in scientists has gone up, particularly since the time of the coronavirus outbreak. So between 2019 in 2020, we saw a rise in overall confidence in scientists to act in the best interests of the public. That is really in contrast to what we saw for other groups and institutions. Trust is now higher—this strong level of trust or confidence is higher for scientists than it is for the military, which is the next most trusted group.

And that wasn't an obvious finding, really, in terms of what would happen from the coronavirus and how that would influence public trust. Just to give you an example, certainly, other groups were stable, and confidence in journalists actually went down over the same time period.

Dan LeDuc: Clearly the coronavirus and the pandemic seem to have had an influence on public perception of science. Is there any way of gleaning why public opinion has changed over that period and why there is this greater trust?

Cary Funk: What's really happening has been a very fast-changing public opinion climate. In mid-March, you saw that high degree of consensus. At that point what we saw was really strong public consensus among Americans to take unprecedented measures, to close down K-12 schools, to close down most businesses. And just four to six weeks later, what we have started to see is more and more political divisions over the need for restrictions, the need to lift restrictions, the idea of wearing masks, and other kinds of activities to try to mitigate the effects of the disease. I think one of the things that the data are suggesting is that scientists and public health recommendations to mitigate the effects of the disease are being closely tied with people's views about government handling of the outbreak. What has happened over time is that it's become more political. And that has been the dominant theme through April, May, June. And the truth is, with public opinion, it is a little measure of a spot in time. We don't know how things are going to keep playing out. We certainly have our eyes on how people's experience with the disease, where they live, is influencing how they see it and the threat to public health.

Sudip Parikh: In the 17th century, if you wanted to be a scientist, you could be a scientist. Everything that was known could be found in an encyclopedia type of book. It's not possible today.

Dan LeDuc: That's Sudip Parikh explaining how the progress of science over time has required more precision and jargon than your average person might easily understand. He heads the American Association for the Advancement of Science.

Sudip Parikh: And so now, science is removed because the necessity of speaking with precision creates jargon. And jargon takes it completely out of the realm of the lay public. It becomes a special skill set to be able to break out of the audience of scientists and break into the audience of the interested, of the allies of scientists, of the general public. And so we have to be able to hold up that mirror to ourselves and say science is a human endeavor. It's fallible. And the person they're talking to is a scientist, and that they're looking at research, looking at evidence, to try and answer questions to guide individual

decision-making, and that they're willing to share that with me—a trusted person in the community. And so we have to make sure that we are building those human interactions, those human trust points. And that has eroded over time as science has become much more removed from the everyday practical.

Dan LeDuc: And without those skills to communicate to the general public people can develop a sense of mistrust. We turn back to Cary Funk to explain how the Pew Research Center's data show what the public says scientists might do to counter skepticism.

Dr. Anthony Fauci, who's been central in all of this, and others have talked about a concern that they have that they see a bias against expertise among some segments in society. Just a skepticism. Have you been able to probe that skepticism at all? That's–I guess that's the subset of distrust that went into the trust question. And what's behind that?

Cary Funk: It's been a longstanding question in the scientific community about whether some people are more anti-science, whether there's a particular segment that is in opposition to scientific consensus. We haven't really seen that in our data, particularly if you look across issues. What we tend to see that there are groups of people who think differently around climate issues or around vaccine issues or food issues. But they're not the same people across all those issues. So it's not like there's a single segment that tends to be saying things consistently in that direction.

One thing we've done over time is to break down how you think about scientists in terms of particular groups. Because "scientists" is a very broad category. So maybe how you're thinking about a medical doctor is different than how you're thinking about an environmental scientist or how you're thinking about a food scientist. So we actually asked people about scientists in all of those categories. We looked at people who were practitioners, as well as people who were research scientists, and asked the public what they thought about them.

And what you get there is a very rich view of trust. And what we often see is that trust is multidimensional. How people think about the competence of scientists is different than how they think about the potential sources of mistrust.

When it came to the idea of mistrust, what we ended up seeing was a lot of what we called skepticism around public confidence that you could count on scientists to act with transparency or accountability if they did make a mistake. People told us that if they heard that the data was publicly available, that would increase their trust. If they heard

that there was a third party, an independent review of that data, that would increase their trust.

Dan LeDuc: During this pandemic, we're seeing the scientific process unfold before our eyes, right? Science is not linear. They think they have a conclusion, then two weeks later, new science comes in and looks at it and says, 'no, maybe we weren't quite right there.' That's not unusual in the scientific world. Are you going to be able to capture, in maybe some future polling, how people view the scientific process?

Cary Funk: We're very interested in how people see the scientific process. We have been learning all sorts of information we didn't know, including the idea that there is such a thing as coronavirus. There's lots of details behind that that we're being exposed to that we didn't know before. When we ask people how much of a role should public opinion play in science-related policy issues, we saw that go down over time. Perhaps because people are seeing some of the complexity of science, as well.

[Music break]

Dan LeDuc: As we noted when we began this episode, the complexity of science and the discovery process is playing out in real time for all of us during the coronavirus pandemic. In our next episode we'll look at the future of scientific discovery and how scientists are talking about other challenges in society today.

Pamela Bjorkman, Pew biomedical scholar and biochemist at California Institute of Technology: I think science is set up in an objective way in so much as any human endeavor can be objective. The things I find really interesting are people's ingenuity and perseverance to work together to get something done that will actually help people.

Dan LeDuc: Thank you for listening. For The Pew Charitable Trusts, I'm Dan LeDuc and this is "After the Fact."

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