

Host: Robert Frederick

The President of the United States, it's pretty clear, resists facts.

**Speaker: Gretchen Goldman**

The public is going to suffer if the politicization of science is normalized. We cannot allow that to happen. If science is not able to inform policy decisions, we will all lose.

Host: Robert Frederick

On this episode of The Conjectural, changing how we talk about science: from facts to values. I'm Robert Frederick.

At the annual meeting of the American Association for the Advancement of Science in February, the Union of Concerned Scientists invited a panel of speakers to talk about how to address the uncertainty about science's role in our federal government and the consequences of political interference.

Speaker: Gretchen Goldman

Under this administration we've seen so far, that...

Host: Robert Frederick

Gretchen Goldman is the research director for the Union of Concerned Scientists' Center for Science and Democracy.

Speaker: Gretchen Goldman

...President Trump isn't going to respect science or respect scientists. Right out of the gate, we saw gag orders placed on federal agency communications, we saw halts on grants and contracts and hiring freezes, and we've seen scientific information start to disappear from government websites.

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Also at risk is the loss of funds for R&D—research and development—says John Holdren, former director of the White House Office of Science and Technology Policy.

Speaker: John Holdren

I'm particularly worried about R&D at the Department of Energy, where some may survive, but clean energy and energy efficiency are likely to be slashed. I'm worried of course about the EPA, all the more after Mr. Pruitt's confirmation. I'm worried about the Food & Drug Administration and its regulatory authorities. I'm worried about the National Science Foundation, which, along with the NIH, is our biggest funder of fundamental research. And while maybe important programs at NIH will survive because they address the diseases that afflict members of Congress and their families, the funding at the NSF is certainly even more at risk. We already knew that many members of Congress don't understand that basic research is the seed corn from which all future applied advances will come. Basic research has been under fire at NSF for a long time, and that trend is, unfortunately, likely to be accentuated. Other things at risk....

Host: Robert Frederick

The title of the session was “Defending science and scientific integrity in the age of Trump.” But let’s be clear — is defending science about defending science funding? And what does it mean to defend scientific integrity? On April 23, 1990, speaking to the National Academy of Sciences in Washington D.C., President George H. W. Bush talked about scientific integrity this way:

**Speaker: George H. W. Bush**

Science, like any field of endeavor, relies on freedom of inquiry; and one of the hallmarks of that freedom is objectivity.

And now more than ever, on rich issues ranging from climate change to AIDS research to genetic engineering to food additives, government relies on the impartial perspective of science for our guidance. And as the frontiers of knowledge are increasingly distant from the understanding of the many, it is ever more important that we can turn to the few for sound, straightforward advice.

Host: Robert Frederick

So why is our current president resistant to turning to the few for sound, straightforward advice? And why is his administration curbing the freedom of inquiry, including severe funding cuts for science? In part, scientists aren’t speaking up. Or if they are speaking up, they’re only talking about facts, not values. There’s actually research about this.

Speaker: Naomi Oreskes

Now one of the things we find is that there’s a very consistent pattern:

Host: Robert Frederick

Naomi Oreskes is a Harvard University professor who specializes in the history of science.

Speaker: Naomi Oreskes

that the vast majority of scientists that we have studied and talked to have expressed a great deal of reluctance to take on any role other than simply stating the scientific factual information.

Host: Robert Frederick

Oreskes is a part of a research project funded by the National Science Foundation to study scientists who participate in scientific assessments for public policy — think tobacco as a cause of cancer, or the threat to life caused by the hole in the ozone layer. She gave a talk at the same scientific meeting as the Union of Concerned Scientists’ panel.

Speaker: Naomi Oreskes

Scientists often express the idea that there either is or needs to be a bright line between science and policy, and that speaking up in public threatens to dull that bright line. Therefore, you should do your work but you should not “go public.” And many scientists have said to us that they consider it very important not to “cross that line.” And they have said that if you do cross that line into the public sphere, you will lose credibility.

Host: Robert Frederick

But the problem with letting the scientific factual information speak for itself, is that the facts haven’t and don’t speak for themselves, says Oreskes, and that’s part of the problem, too, in defending science and scientific integrity.

Speaker: Naomi Oreskes

We live in a world where many people are trying to silence facts. And the arguments that these people are making are not just about the facts, in fact, they're mostly not about the facts at all. They're about the implications for those facts: the implications for their political beliefs and for values. And in my opinion, you cannot answer a question about values by letting facts speak for themselves.

**Host: Robert Frederick**

As an example, Oreskes — who is also co-author of the book The Merchants of Doubt, now also a movie — talked about the example of climate change.

Speaker: Naomi Oreskes

What we see is that the key ideology that informs most of climate change denial is belief in laissez-faire economics and the magic of the marketplace — the belief in the capacities of the market to solve problems efficiently and contrarily, or with that, skepticism about the capacity of the government to solve problems efficiently or even at all.

And I think this explains a lot of the Democratic-Republican divide because in general, to a first approximation, Republicans tend to be more skeptical about government than Democrats. And with that then goes a kind of fear — fear that the anticipated harms of climate change, like the harms of smoking, will be used to justify the extension of government reach into the marketplace and into our lives. And this, I think, helps to explain why climate change denial is so more prevalent in the United States than anywhere else in the world, because we have in the United States a deeply rooted belief that the government who governs best governs least.

Host: Robert Frederick

So if the government regulates carbon-dioxide emissions, the argument goes, then soon the government will regulate other things....

Speaker: Naomi Oreskes

...And we will lose our freedom. First, we'll lose our economic freedom, and then we will lose our political and personal freedom. Now, this argument can be traced back to the work of the Chicago economist Milton Friedman, but it was popularized particularly from the 1980s onward by President Ronald Reagan, who used Friedman's work to justify lower taxes, limited government, and deregulation. And it's an argument that has informed a very substantial amount of conservative thinking in the United States since then.

Host: Robert Frederick

So, when scientists inadvertently discover a serious problem — like climate change — and the solution requires some sort of government intervention, then those who see government intervention as a threat to their freedom, well, they reject the science and often attack the scientists, too. But Oreskes says that's not a reason not to speak up about science. Instead,

Speaker: Naomi Oreskes

...when scientists have been attacked it has not been because they crossed the line into policy. It was because their scientific research had revealed or affirmed or explained a serious problem like the millions of deaths from tobacco use, or the threat to life on Earth from stratospheric ozone depletion — serious problems that could not be solved by the private sector alone.

So the crucial point here is that the causal arrow is actually the reverse of what is often assumed or even alleged: scientists have not been attacked because they spoke out in public, rather they have become public figures because they were attacked.



So if you do important scientific work, not speaking in public will not necessarily protect you from attack. So my point here then is that science has not been politicized because we somehow crossed the line. Science has been politicized as an instrument to undermine it by groups and individuals who do not like what they see as the political implications, the social implications, of our findings, and this includes but is not limited to industries that cause these problems.

Host: Robert Frederick

So what to do? Well, just understand that scientists tend to speak in facts and those who deny science often speak in values — just drawing that distinction — it isn't enough.

Speaker: Naomi Oreskes

We, I think, have to speak to values, too. And because I think that the facts line up with some very good fundamental values that we share with all of our fellow American citizens — from Michigan to Idaho, from Utah to Maine, from Florida to Alaska: the value of fairness, which includes protecting innocent people from getting hurt; the value of accountability, that those who made a problem have an obligation to address it; the value of realism, accepting the reality that sometimes markets do fail, and sometimes there are problems that we have to address when the market doesn't work efficiently, or doesn't work at all; and the values of creativity and technological leadership and hard work — of rolling up our sleeves and getting the job done. Since when haven't Americans believed in the capacity, in our capacity to fix problems. These are values, and there are values that the market doesn't protect, like the basic, inherent dignity of all people and all creation.

Host: Robert Frederick

If I may add my own value, too: consider that the basic, inherent dignity of all people and all creation includes those who deny scientific facts. Treat them as you would want to be treated. Try responding to them and talking about science with them in the context of values that can be informed by scientific facts — the values of fairness, accountability, realism, creativity, technological leadership, hard work. It takes a bit of practice, but eventually it will be easier to talk about values than you might think because, after all, the scientific facts, well, they're on our side.

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