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OP-ED CONTRIBUTOR

## Welcome to the Age of Denial

By ADAM FRANK

Published: August 21, 2013 | 732 Comments

ROCHESTER — IN 1982, polls showed that 44 percent of Americans believed God had created human beings in their present form. Thirty years later, the fraction of the population who are creationists is [46 percent](#).

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Chloé Poizat

In 1989, when “climate change” had just entered the public lexicon, [63 percent](#) of Americans understood it was a problem. Almost 25 years later, that proportion is actually a bit lower, at 58 percent.

The timeline of these polls defines my career in science. In 1982 I was an undergraduate physics major. In 1989 I was a graduate student. My dream was that, in a quarter-century, I would be a professor of astrophysics, introducing a new generation of students to the powerful yet delicate craft of scientific research.

Much of that dream has come true. Yet instead of sending my students into a world that celebrates the latest science has to offer, I am delivering them into a society ambivalent, even skeptical, about the fruits of science.

This is not a world the scientists I trained with would recognize. Many of them served on the Manhattan Project. Afterward, they helped create the technologies that drove America’s postwar prosperity. In that era of the mid-20th century, politicians were expected to support science financially but otherwise leave it alone. The disaster of Lysenkoism, in which Communist ideology distorted scientific truth and all but destroyed Russian biological science, was still a fresh memory.

The triumph of Western science led most of my professors

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to believe that progress was inevitable. While the bargain between science and political culture was at times challenged — the nuclear power debate of the 1970s, for example — the battles were fought using scientific evidence. Manufacturing doubt remained firmly off-limits.

Today, however, it is politically effective, and socially acceptable, to deny scientific fact. Narrowly defined, “creationism” was a minor current in American thinking for much of the 20th century. But in the years since I was a student, a well-funded effort has skillfully rebranded that ideology as “creation science” and pushed it into classrooms across the country. Though transparently unscientific, denying evolution has become a litmus test for some conservative politicians, even at the highest levels.

Meanwhile, climate deniers, taking pages from the creationists’ PR playbook, have manufactured doubt about fundamental issues in climate science that were decided scientifically decades ago. And anti-vaccine campaigners brandish a few long-discredited studies to make unproven claims about links between autism and vaccination.

The list goes on. North Carolina has [banned](#) state planners from using climate data in their projections of future sea levels. So many Oregon parents have refused vaccination that the state is [revising its school entry policies](#). And all of this is happening in a culture that is less engaged with science and technology as intellectual pursuits than at any point I can remember.

Thus, even as our day-to-day experiences have become dependent on technological progress, many of our leaders have abandoned the postwar bargain in favor of what the scientist Michael Mann calls the “[scientization of politics](#).”

What do I tell my students? From one end of their educational trajectory to the other, our society told these kids science was important. How confusing is it for them now, when scientists receive death threats for simply doing honest research on our planet’s climate history?

Americans always expected their children to face a brighter economic future, and we scientists expected our students to inherit a world where science was embraced by an ever-larger fraction of the population. This never implied turning science into a religion or demanding slavish acceptance of this year’s hot research trends. We face many daunting challenges as a society, and they won’t all be solved with more science and math education. But what has been lost is an understanding that science’s open-ended, evidence-based processes — rather than just its results — are essential to meeting those challenges.

My professors’ generation could respond to silliness like creationism with head-scratching bemusement. My students cannot afford that luxury. Instead they must become fierce champions of science in the marketplace of ideas.

During my undergraduate studies I was shocked at the low opinion some of my professors had of the astronomer Carl Sagan. For me his efforts to popularize science were an inspiration, but for them such “outreach” was a diversion. That view makes no sense today.

The enthusiasm and generous spirit that Mr. Sagan used to advocate for science now must inspire all of us. There are science Twitter feeds and blogs to run, citywide science festivals and high school science fairs that need input. For the civic-minded nonscientists there are school board curriculum meetings and long-term climate response plans that cry out for the participation of informed citizens. And for every parent and grandparent there is the

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Behind the giant particle accelerators and space observatories, science is a way of behaving in the world. It is, simply put, a tradition. And as we know from history’s darkest moments, even the most enlightened traditions can be broken and lost. Perhaps that is the most important lesson all lifelong students of science must learn now.

*Adam Frank, a professor of physics and astronomy at the University of Rochester, is the author of “About Time: Cosmology and Culture at the Twilight of the Big Bang” and a founder of NPR’s 13.7 Cosmos and Culture blog.*

A version of this op-ed appears in print on August 22, 2013, on page A27 of the New York edition with the headline: Welcome to the Age of Denial.

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Andrew Patterson New York, NY

The push by religious institutions to have creationism and intelligent design taught alongside evolution in schools as legitimate competing theories, as well as the suppression of data linking man-made atmospheric discharges to climate change by industry are designed to preserve the status quo. Science, as a catalyst of change, has always upended institutions as it ushers in new ideas. We are on the verge of discoveries that may forever change the way we look at the universe and our place in it. It's clear that those with a vested interest in the institutions of today fear what this means for their futures. Science can make oil and bishops largely irrelevant rather quickly if left unchecked. You bet they're scared.

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PeterS Boston, MA

While science and engineering have advanced greatly, the education of most US citizens has failed to keep up. Most people cannot really comprehend the latest scientific advances and far from able to utilize them. People do not care for, or even fear, what they do not understand. At the same time, government scandals, from Watergate to the recent NSA leaks, greatly undermines the trust of the citizens in our government and established institutions, including the scientific community. Also importantly, our congress and administration are populated almost exclusively by lawyers; for many lawyers, they are

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