

Neil Tyson, The Scientism Guy

a new video aimed at a what he sees as a growing anti-intellectualism problem in the United States. It was released at the same time as the March for Science and many Earth Day demonstrations. He reflects on what he thinks made America great and what's stalling progress today. Science used to be respected, but today, there is a growing crowd of science-deniers who threaten our "informed democracy."

The real anti-intellectual move, however, is conflating science, the scientific method, and truth to be one and the same. Fundamentally, science is any human attempt at discovering truth. What is true exists independently from what humans believe to be true or how humans arrive at truth claims. The scientific method, the process of using repeated experiments in an attempt to validate or falsify the conclusions of previous experiments, is but one way humans attempt to discover truth.

The purpose of the video was to call out the obstinate, ignorant voters who deny what many regard as certain truths handed to them by a body of elite, trustworthy scientists. Yet Tyson and the marchers border on an equally dangerous view: scientism.

Scientism isn't scientific

scientism repeatedly, and closely guarded the boundary between economics and other sciences.

The scientific method is not universally appropriate. Consider an extreme case: if you measured a few right triangles and observed that the sides did not correspond to what the Pythagorean theorem says, would you toss the Pythagorean theorem, or would you reexamine your measurement method? Would you dismiss the logical geometric relation in favor of the scientific method?

The scientific method is particularly suited for the natural sciences. It's hard to recommend a different method than experimentation and observation to answer questions about chemical reactions, astrophysics, quantum mechanics, and biology.

The scientific method is unnecessary or even ill-suited in other areas, however. Consider these questions, and what sort of approach is appropriate to answer them: What is 17 divided by 3? All else held equal, what are the effects of an increase in demand for blue jeans? Who should I invite to my party? What are the effects of expansionary monetary policy on employment, prices, incomes, production, consumption, and borrowing? How should I treat people?

Of course, Neil deGrasse Tyson wouldn't recommend using the scientific method to answer all of these questions (hopefully), but the point is that empiricism and experimentation are limited in their appropriate applications. The scientific method does not have a monopoly on truth.

Always open to falsification

The scientific method has another large limitation: conclusions derived solely by experimentation are always susceptible to falsification by just one aberrant observation. For this reason and others, even wide consensus among

scientists should be met with at least some skepticism before the heavy hand of the government gets involved.

a big jump in diabetes diagnoses and obesity rates.

The National Malaria Eradication Program sprayed DDT in 4,650,000 homes and overhead by aircraft. Later, it was realized that DDT is carcinogenic and the spraying had a severe effect on the environment and wildlife, birds in particular. Birds of prey like the bald eagle are not considered endangered species anymore, and the ban on DDT is considered a major factor in their recovery. Even this conclusion is in question, including whether or not DDT is carcinogenic for humans, but the point is that the government itself backtracked on its own science-based solution to a problem. It banned a chemical it once sprayed indiscriminately.

the claims and predictions of various scientists around 1970. Earth Day had just started, and scientists were predicting rather apocalyptic scenarios, similar to what we are hearing today from climate scientists. To be clear, just because these predictions turned out to be “spectacularly wrong”, it doesn’t necessarily mean that modern claims are wrong. But it might explain a lot about the modern layperson’s skepticism, as opposed to sheer stupidity as Tyson suggests.

retractionwatch.com document the increasingly frequent cases in which academic journals must retract published research because the peer review process was a sham or when other fraudulent activity comes to light. A recent entry reports that Springer had to retract 107 papers on cancer due to fake peer reviews. Surprisingly, retraction doesn’t always mean fewer citations, as this top 10 list of most highly cited retracted papers demonstrates.

Skepticism and science are good friends

These examples reveal another larger issue with Tyson’s

argument. Tyson says, “every minute one is in denial, you are delaying the political solution.” The problem is that sometimes delays and denial are exactly what is needed. The scientific method requires time and attempts at falsification.

There is an inherent contradiction and arrogance in Tyson’s video. In one breath he is praising science and the way the scientific method works: “I get a result. A rival of mine double checks it, because they think I might be wrong.” But in the next breath, he declares to the doubter who also thinks some scientific conclusion might be wrong: “You don’t have that option! When you have an established, scientific emergent truth, it is true whether or not you believe in it.”

So the rival scientist is allowed to question the conclusions of other scientists because the conclusions might not be true, but nobody else is. We may not all be equipped with a laboratory, but we are all equipped with reason, experience, preferences, common sense (some more than others), gut instincts, some ideas about what is morally right and what is morally wrong, and our own areas of expertise. Surely these are not meaningless when it comes to judging the claims of a politically-connected technocratic elite and their policy recommendations.

Political connections bias science

researchers and [agencies](#) produced enough of Tyson’s “emergent truths” (which we are not to doubt) over the years to keep it that way. The effects of this [prohibition](#) have been devastating, including a prison system bursting at the seams, militarized local police, violent organized crime (legal and illegal), and more deaths than marijuana itself could ever cause on its own.

Indeed, when the government does or funds research, it seems to always arrive at the conclusions which involve the government getting larger in size and scope. To question these expansions is to question the science, and to question the

science is to mark oneself a stubborn idiot.

Tyson is trying to convince these stubborn idiots to learn some science. Only then, he says, will they become the informed citizens this democracy needs. But what if the skeptics aren't stupid? What if their skepticism is due to the perceived track record of the scientific community over the years (especially when the government is in the mix)?