

United States: Will science go rogue against Donald Trump?

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Scientists' anger and outrage at Donald Trump's climate-change denial and more is bubbling up in many forms, ranging from guerilla tweets to the call for a March for Science on Earth Day. Chris Williams, author of *Ecology and Socialism: Solutions to Capitalist Ecological Crisis*, makes the case that scientists must grapple with politics and resist political reaction in order to be more effective.

"Please let us remember that to investigate the constitution of the universe is one of the greatest and noblest problems in nature, and it becomes still grander when directed toward another discovery."

IN THE age of Trump, the person writing those words has much to teach us about the impending scientific struggles of our own time.

So spoke Salviati on day two of his debate with Sagredo and Simplicio in a hypothetical discussion imagined by the great scientist and astronomer Galileo Galilei, for his book *Dialogue on the Two Chief World Systems*, published in 1632.

In the *Dialogue*, Galileo puts forward his heretical view that the Earth and other planets revolve around the sun in opposition to the Catholic Church-sanctioned Ptolemaic system in which everything in the universe revolves around the Earth.

Galileo hoped that by adopting a conversational style for his argument, it would allow him to continue his argument about the true nature of the universe and evade the attentions of the Inquisition, which enforced Church doctrine with the force of bans, imprisonment and execution.

However, Galileo's friend, Pope Urban VIII, who had personally authorized Galileo to write the *Dialogue*, Pope Urban VIII, didn't allow sentimentality to obstruct power. Galileo was convicted of heresy and spent the rest of his days under house arrest—the *Dialogue* was banned by the Inquisition, along with any other book Galileo had written or might write.

Typically portrayed as the quintessential clash between religion and science, Galileo's conflict with the Papacy was, in fact, just as rooted in material considerations of political power as it was with ideas about the nature of the solar system and our place within it.

Amid parallels to today's conflict between Donald Trump and the scientific community over funding, research, unimpeded freedom of speech and the kind of international collaboration required for effective scientific endeavor, neither situation exists solely in the realm of ideas.

GALILEO'S CONTROVERSIAL and extended trial on charges of heresy coincided with the political and military problems faced by Pope Urban VIII.

Under pressure from what came to be known as the Thirty Years' War raging across central Europe between Catholic and Protestant armies, Urban was attempting to shore up and re-establish the might of Rome through the Inquisition, racking up massive Papal debt from increased military spending, while promoting rampant nepotism and corruption.

The analogy with the U.S. of 2017 and the political and economic situation is quite striking, as today's right wing seeks to assert its authority and impel the country politically and socially backward by launching attacks on immigrants, Native Americans, women and reproductive health, unions, and the gains of the LGBTQ, environmental and civil rights movements. These attacks have been extended across a broad swathe of society, encompassing both the arts and sciences.

After reports emerged in the first days of the Trump administration that he intended to defund the National Endowment for the Arts and National Endowment for the Humanities—responsible for 0.01 percent of the federal budget—Suzanne Nossel, writing in *Foreign Policy*, called this “an assault on the Enlightenment.”

Meanwhile, with the election of Trump and his comments on climate change, scientists in charge of the Doomsday Clock moved it another 30 seconds closer to midnight. This is the closest it's been to midnight since 1953, at the height of the Cold War and following the decision by the U.S. to upgrade its nuclear arsenal with thermonuclear weaponry.

“The Trump administration needs to state clearly and unequivocally that it accepts that climate change is caused by human activity,” theoretical physicist Lawrence Krauss said at a press conference announcing the Doomsday Clock time change. “Policy that is sensible requires facts that are facts.”

Unfortunately, fact-checking website Politifact has shown that 71 percent of Trump's public statements range from “mostly false” to “pants on fire” levels of absurdity.

WITHIN HOURS of Trump's inauguration, rumors began to circulate that government agencies such as National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA) had been ordered to scrub references to climate change from their websites. There were other reports of gag orders on the Department of Agriculture and a freeze on EPA grants.

NASA climate scientist James Hansen was famously gagged during the presidency of George W. Bush, along with hundreds of others at seven different federal agencies who were ordered against using the term “global warming.”

However, scientists at the EPA say Trump's mandate that any data collected by them—including information that is of direct consequence to people's health and that of the planet—must first undergo political vetting before being release to the public takes things much further down the road to outright censorship.

As far as gutting the EPA entirely, it's certainly not beyond possibility, considering that a key adviser to Trump and his head of transition for the EPA, Myron Ebell, called environmentalists “the greatest threat to freedom and prosperity in the modern world.”

One wonders if he had in mind an editorial in *Nature*, one of the world's leading science journals, which, under the headline “Scientists Must Fight for the Facts,” described Trump's energy plan as

“a product of cynicism and greed” for its adherence to talking points taken directly from the fossil-fuel industry.

As bad as our air, water and soil is today, we know before the EPA’s creation under Richard Nixon in response to a wave of gigantic pro-environment marches in the 1960s and ’70s, things were much worse.

IN RESPONSE to these attacks—and the resulting increase in stress and anxiety over job security—scientists have called a March for Science on Earth Day, April 22, in Washington, D.C. Like the giant Women’s March on Washington the day after Trump’s inauguration, the science march has already spawned calls for solidarity protests in other cities across the country.

One-fifth of scientists in the U.S. are immigrants, meaning the lives of thousands of scientists and science students have already been affected by the travel ban, leaving people traumatized, but also mobilizing for the protests. A petition drawn up by academics against the anti-Muslim immigration ban, Academics Against Immigration Executive Order has garnered more than 20,000 signatures, including over 50 Nobel Laureates.

The head of the largest professional science organization in the world, the American Association for the Advancement of Science, physicist Rush Holt described the change under Trump as taking long-standing attacks against science in the U.S. to another level: “In my relatively long career I have not seen this level of concern about science...This immigration ban has serious humanitarian issues, but I bet it never occurred to them that it also has scientific implications.”

But resistance from scientists is emerging from all quarters. As Republicans tried to pass a bill to sell off more public land to corporations and fossil-fuel interests, workers at the National Park Service went rogue around the country, setting up their own social media sites to combat disinformation and let the public know what was happening.

PREDICTABLY, THE March for Science has drawn controversy for “politicizing” science, even though scientists have signed a range of open letters calling for stronger action to combat climate change, and climate scientists have already held a rally in San Francisco in December last year protesting Trump’s election victory and his anti-science rhetoric.

By selecting Earth Day, the march is clearly connected to Trump’s specific and highly political attacks on government bodies and scientists associated with climate change research and other environmental concerns.

Despite this, renowned Harvard psychology professor Steven Pinker tweeted: “Scientists’ March on Washington plan compromises its goals with anti-science PC/identity politics/hard-left rhetoric”—apparently because the website included information about the importance of diversity and intersectionality.

Meanwhile, science writer Dr. Alex Berezow, who penned a blatantly political book about the supposed anti-science proclivities of the left, tells us he won’t be on the march because it doesn’t mention white men, Christians or privately-funded science research.

More seriously, Robert Young, one of the co-authors of a report on rising sea level and its impact on the coastline of North Carolina—which drew the ire of the real estate lobby and conservative politicians, along with scathing humor from Stephen Colbert—argued in the New York Times that the march is a bad idea:

A march by scientists, while well intentioned, will serve only to trivialize and politicize the science

we care so much about, turn scientists into another group caught up in the culture wars, and further drive the wedge between scientists and a certain segment of the American electorate.

On the other side of the debate, biologist Christina Agapakis tweeted, “Is it going to be a fuck yeah science facts march or a science is political and made by humans march?”

Agapakis importantly went on to argue that not having political demands doesn’t make any sense nor help achieve the goals of the scientists: “If 300 years of scientists pretending to be apolitical wasn’t enough to convince someone that climate change isn’t a hoax, then erasing political issues from the march isn’t going to change anyone’s mind either.”

As far as the substance of this discussion is concerned, one immediate and obvious question would be to ask who is “politicizing” science?

Given Trump’s rejection of climate change, his attacks on science, his appointment of the former ExxonMobil CEO Rex Tillerson as Secretary of State and his intended appointment of Scott Pruitt to head the EPA—a federal department which Pruitt spent his tenure as attorney general of Oklahoma suing over a dozen times—if anyone is “politicizing” science, surely it’s already being done by the president.

Indeed, when the editors of the thoroughly mainstream USA Today issue a statement calling for Pruitt’s rejection as head of the EPA because Trump “couldn’t have nominated someone more opposed to the agency’s mission,” you know you’re involved in politics.

Although Texas Republican Congressman Lamar Smith might disagree. The inveterate climate denier and anti-science champion—but nevertheless somehow chair of the House Committee on Science, Space, and Technology—has said that listening to President Donald Trump, as opposed to the media or scientists, was likely “the only way to get the unvarnished truth.”

TO TALK of a supposedly apolitical science is wrongheaded to begin with. Science has been political since its modern inception with the Scientific Revolution, which began in part with Galileo’s experiments on projectile motion for the highly political purpose of launching more accurate cannonballs.

Science is as much a cultural artifact of society as art, music or fashion. Of course, science is about investigating the natural world through rationalism and empirically verified investigation, but the questions asked by scientists, what they obtain funding to investigate, and the methodology they use are all contoured and distorted by the society within which they are embedded.

We can see that contradiction with climate change research itself.

The reason we know so much about the atmosphere and climate is because climate research grew out of the military’s need in the 1950s to track wind currents so it could predict where radioactive fallout would be most severe following nuclear war (which scientists working on the Manhattan Project had made possible in the first place).

In the U.S., that research gave rise to the building of the interstate highway system to facilitate military transportation and the evacuation of population centers—which in turn generated the phenomenon of the suburbs and the growth of a culture centered around the automobile and fossil fuels.

There is a difference and a contradiction between the philosophy and method of science based in empirical evidence and rationalism and how it is practiced in a class-stratified society, by people just

as subject to social prejudices and norms as anyone else.

Though some individual scientists may profess and even believe they are disinterestedly studying the way the universe works merely for the sake of it, science is part of class society. As such, it is faced with the same contradictions as any other facet of an unequal and exploitative social system.

However, because scientific explanation for the way the natural world works needs to correspond to objectively observable and experimentally verified facts and rationality, the contradictions inherent to it and the field's intrinsically political nature are often more clearly expressed than other areas of human culture.

AS HAS been repeatedly shown through history, science can be used to bolster the political status quo or help tear it down.

Famed American sociologist of science Robert K. Merton argued in the 1940s that science was a collective endeavor for the civic good, in which sharing of ideas within the scientific community and the wider public was a paramount consideration.

"The communism of the scientific ethos is incompatible with the definition of technology as 'private property' in a capitalistic society," Merton wrote. "Patents proclaim exclusive rights of use, and often, nonuse." According to Merton, science would come into conflict with rulers whenever efforts were made to enforce "the centralization of institutional control."

One of the most infamous stories in the history of science is scientists' role in justifying the characterization of racial superiority of the so-called "white race" with the rise of scientific racism in the 19th century—a precursor to Hitler's anti-Semitic policies of the 1930s.

Another example of science justifying the status quo: Social Darwinism is rooted in the idea that we are genetically predisposed to behave in greedy and selfish ways—these human attributes are naturalized in modes that just happen to coincide with the values necessary for capitalism to survive.

And of course, it was scientists and engineers who developed atomic weapons, nerve gas, pesticides and fracking.

Conversely, a better understanding of the natural world through science also gives us wondrous things: birth control, modern medicine and vaccinations, to list only a tiny fraction of the vast contribution to socially useful knowledge and technologies we have obtained through scientific experiments and theoretical development. We are going to need to apply this knowledge and technology to avoid dangerous, human-induced climate change.

THESE EXAMPLES illustrate what really irks Trump about science—and why the March for Science in Washington is such a crucial development.

Here it's important to be clear about what Trump isn't doing. He's not saying corporations or private funding for science should be cut, only government funding of science—particularly climate science, while carefully exempting the military. The question Trump is ultimately posing—and what scientists and everyone else need to understand—is this: Should there be any science in the public good?

Trump is not telling businesses to stop doing science. He wants the federal government to stop doing science in the public interest. He wants an end to fact-based discourse wherever the facts run counter to right-wing ideology.

Understanding his assault on science in this manner connects it to the wider Republican and

corporate attacks on public education and health care. It is the logical endpoint of capitalism in its most unrestricted form.

As such, it is an intensely political attack that can only be successfully repelled by a similarly political response.

We want and need more funding for all branches of science in the public good and an increase in research into areas of climate change, agro-ecology, renewable energy technologies, medical research and so on. We can only justify these on the grounds of our values, values that emerge from our political orientation and desire for just social outcomes with regard to health, clean air, and unpolluted soil and water.

This is really what scientists who are genuinely opposing the “politicizing” of science—as opposed to those with conservative politics using the complaint to oppose protest—mean: science can furnish us with facts about the way the physical world works, but it doesn’t tell us anything about what to do with those facts once we have established them.

For example, science and technology have furnished humans with the ability to hunt down and drive whales to extinction. But it tells us nothing about whether we should or not. Which is to say, science tells us nothing about what is right or wrong—that comes down to our values and is therefore an ethical and political question.

But most people would decry such a rigid attempt at fence-sitting, particularly when people’s lives and the health of the biosphere are at stake. And especially when one considers the already highly political nature of scientific research, grants and so on under capitalism. As radical educator Paolo Freire commented, “To sit on the fence in the struggle between the oppressed and the oppressor means to take the side of the oppressor, not to be neutral.”

THOUGH TRUMP is clearly attempting something even more extreme, we can learn much about state repression of publicly funded scientific knowledge, research and communication from the behavior of the conservative administration of Canada’s former Prime Minister Stephen Harper.

Under Harper, Canadian scientists were followed, threatened and censored, while libraries were closed and science research programs cut.

Noting that 24 percent of Canadian scientists reported being required to exclude or alter scientific information for non-science-based reasons, Robert MacDonald, a Canadian federal government scientist for three decades, commented:

“That’s something you would expect to hear in the 1950s from eastern Europe, not something you expect to hear from a democracy like Canada in 2013...And I think, by all indication, that’s what our sisters and brothers are going to be faced with down in the United States.”

The attacks, cuts and muzzling of scientists by the Harper government, particularly in any field even remotely connected to climate change, were extensive and systematic, undermining any claim to a democratic, truth-oriented administration.

Highlighting the purpose of the censorship, the Ontario Confederation of University Faculty Associations explained in the run-up to Canadian demonstrations by scientists in 2013:

In the absence of rigorous, scientific information—and an informed public—decision-making becomes an exercise in upholding the preferences of those in power.

In Canada today, as in most of the developed world, power has become increasingly concentrated in fewer hands— hands which are inevitably attached to the bodies of big business and the state. And in light of Prime Minister Harper’s agenda to rebrand Canada as the next energy superpower, it would seem that both the corporate interests and the state are focused on the expansion of the resource extraction industry in Canada.

In the federal capital of Ottawa, hundreds of scientists clad in lab coats carried a coffin in a funeral procession to mark the “death of scientific evidence.” This and dozens of smaller marches elsewhere had an observable impact on people’s perception of the Harper government.

In a lesson U.S.-based scientists should take to heart, the decline in popularity of the Harper government—and the subsequent electoral victory of Justin Trudeau’s Liberal Party, signaling a more positive, less hostile approach to science, if not a break with big business, including the energy industry—can be traced in part to the 2013 marches by scientists.

Hence, for all the naysayers in the scientific community who want empirical evidence about the efficacy of a political protest, look no further than the Canadian experience. According to one of the organizers with the group behind the protests, Evidence for Democracy—which is advising U.S. scientists on their march—commented, Trump’s attack on science:

“absolutely echoes what we saw under George Bush in the States and what we saw under Harper, except it’s so much swifter and more brazen than what we saw under Harper...But at the same time there’s been a huge resistance coming out of the scientific community and that’s been really heartening to see.”

MICHAEL MANN, one of the world’s leading climate scientists, Michael Mann has written that “scientists are, in general, a reticent lot who would much rather spend our time in the lab, out in the field, teaching and doing research.” Nevertheless, Mann went on to call for a “rebellion” against Trump, due to the severity of Trump’s assault.

As Dr. Prescod-Weinsten, a cosmologist and particle physicist at the University of Washington, commented: “What history has taught us is that...[w]hen we work with extremist, racist, Islamophobic or nationalist governments, it doesn’t work for science.” Nor one could add, for humanity.

The assault on science must be recast and seen as entirely political. It is being made in order to further the interests of fossil fuel-based corporations. Beyond that, it is part and parcel of a larger political project to drive society back and call into question all forms of publically funded scientific, fact-based research, data gathering and dissemination in the interests of ordinary people and the public good.

Which brings us back to Galileo and what should be the purpose of scientific endeavor.

One of the other things that so angered the Inquisition was that Galileo chose to write his treatise not in Latin, the language of academia and the well to do, but in the language of common people. Galileo quite deliberately wrote his book in Italian so that it would be widely read—before being banned, it was a best seller—and discussed.

Galileo was doing science for the common good—presenting a fact-based, better understanding of the world to more clearly inform people of how their world worked. As Bertolt Brecht wrote in his essay on “Writing the Truth,” “The truth must be spoken with a view to the results it will produce in the sphere of action.”

Scientists must be political in order to be more effective scientists, not less effective. The struggle is really about the question and need to further democratize science. That means scientists seeing themselves as “citizen scientists”—in the mold of Rachel Carson, Barry Commoner, Carl Sagan or Stephen Jay Gould.

For Commoner, scientists are obligated to rebel to fulfill their mission of science in the public interest and for social good. He wrote:

“The scholar’s duty is toward the development of socially significant truth, which requires freedom to test the meaning of all relevant observations and views in open discussion, and openly to express concern with the goals of our society. The scholar has an obligation—which he owes to the society that supports him—toward such open discourse. And when, under some constraint, scholars are called upon to support a single view, then the obligation to discourse necessarily becomes an obligation to dissent. In a situation of conformity, dissent is the scholars duty to society.”

If science is all about taking a critical eye toward the investigation of natural phenomenon for the betterment of humanity, then rather than seeing protest and public involvement as somehow detrimental to that project, these should be seen as at the heart of the process.

We must pose the question: What are the goals we want for society? How can we help society realize those goals? To effectively answer those questions, scientists must necessarily dissent from those in power who seek to stifle empirical research and do so by informing and involving laypeople to aid their cause.

Making the March for Science on Earth Day big and political as possible is the best way to help further that process, push back Trump’s right-wing agenda and enlist more people to support science in the public good."

Chris Williams

P.S.

* <https://socialistworker.org/2017/02/13/will-science-go-rogue-against-trump>

* For the integrated links, see Socialist Worker version.