The End of Science's Peacetime

In this opinion, a scientist argues that defending the practice of science against its adversaries will require dealing with uncomfortable truths.

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Initially, it was hard to separate truth from rumor, but enough has happened in recent days that the worry cannot be branded as paranoia. A string of events affecting federal agencies and programs, set in motion since the presidential inauguration, has sent the nation into a frenzy of uncertainty. The consternation is justified. Although science is hardly the only or most consequential sector affected, it was an early target for a reason: Science is a battleground in the modern war against ideas.

The first waves of interference included the suspension of public communication and study sections (groups that review grants) at the National Institutes of Health, and the aggressive dismantling of diversity, equity and inclusion, or DEI, programming at NASA. Other activities then followed: the freezing of global health funds and the breaking of communication between the U.S. Centers for Disease Control and Prevention and the World Health Organization. A broader federal pause on grant funds (that has since been reversed) left few questions about the administration's draconian intentions. The events signify the full emergence of an adversarial relationship between science and the state, a process that became especially visible during the Covid-19 pandemic.

Science and politics have a long history of conflict. But before 2020, science had — in my lifetime, at least — operated mostly in peacetime, as measured by public support and abundant resources. But with this long peace has come naïveté and an unwillingness to fix flaws that have plagued American science for many decades, attitudes which have left it vulnerable to nefarious political agendas. While some might say that now is not the time for self-reflection, I argue that we must recognize that current events serve as a social stress test for science, revealing its many underlying fragilities. Today, harm reduction is the only route to mitigate the damage to vulnerable scientists and the stifling of scientific progress. And I believe that out of the ashes will come something new, but it cannot look like the science of today and yesterday.

DEI efforts appear to be a main justification for many of the new administration's actions. This does not come as a surprise. Diversity initiatives have been a political target for several years, as have certain academic subjects that teach about inequality around race and gender. The goal is to make racism and sexism go away — not by fighting them but by erasing evidence of them, and marginalizing efforts to ameliorate their impact. By scapegoating DEI, the architects are executing plain old divide-and-conquer. People may appreciate efforts to diversify science — but not more

than they like their jobs. So, if removing Martin Luther King Jr. Day programming is what it takes to keep the lights on, then so be it. Better that the bad things happen to “them,” the thinking goes, than to “us.”

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Next to DEI, how research is funded might be the one area under the most scrutiny in recent times. On Dec. 1, entrepreneur and politician Vivek Ramaswamy authored a social media post that criticized NIH’s university funding model, in which universities can charge 70 percent overhead for grants awarded by the federal government. (Actual figures vary and are usually lower.) Ramaswamy contrasted that with funds awarded by private foundations, for which universities charge far less, quoting a 10 percent figure. He cast these figures in light of taxpayer funds going to university DEI initiatives. The caricature is one of hard-working Americans thinking they are funding cures for diseases but are instead subsidizing gender identity workshops.

And what makes Ramaswamy’s message especially craven? It’s that his anti-DEI rant is linked to a valid criticism of the interaction between federal funding and higher education, an opinion he shares with some progressive scientists, including myself. His post makes effective use of a disinformation tactic: deceptively fuse bad or misleading ideas to notions that everyone can understand or empathize with. The truth is that the funding model in science has been hopelessly broken for decades. And it feeds other problematic practices affecting the manner and sort of science conducted in laboratories around the world.

Sadly, science is full of other practices — college and graduate admissions, the science publishing cartel, hiring and promotion, professional hierarchy, institutional prestige, and classroom education — dictated by weird religion. All are riddled with cultural baggage that, I might add, have nothing to do with DEI. The baggage undermines merit and stifles scientific progress. And many of its rules are unwritten and informal, which has made it challenging to tackle head on.

One retort would highlight the impressive pace of discovery, authored by the brilliant minds who walk university hallways. It is undeniable that creative and impactful science happens and should be applauded. But one can just as readily argue that these people have succeeded despite the modern practice of science and not because of it.

If we fear eliminating something that we love because it is flawed, we can invoke the idiom “Don’t throw out the baby with the bathwater.” It teaches that, yes, science has flaws. But we cannot

discard it, as the alternative is to risk descending into a new Dark Ages. But what if we remix the idiom? In another version, the innocent baby isn't science, but responsible reimaginations of it. In that case, the saying still applies: We shouldn't discard the need to improve science because we fear the vile intentions from authoritarians. Sure, we must be clear about where we stand: Holding science hostage will have catastrophic effects on our progress. But now is also the time to consider new possibilities.

Because the government has gone so far as to delete CDC websites, remove data, and order the withdrawal of manuscripts, the scientific community needs to rapidly reconsider how it shares information and data. For example, the importance of preprint servers and the relevance of data democracy are no longer intellectual debates. We need more instruments to communicate and evaluate scientific findings in a manner that is transparent and encourages us to do our work with replicability in mind (rather than for clicks or citations). This last point is key: Scientific findings will be under more scrutiny than ever before. This might mean that we need to conduct more small-scale, carefully thought-out science with transparent methods and cleaner data. Note that this does not mean that the science itself need be less radical or transformative. One can just as easily argue the opposite: that large-scale, factory science (especially conducted in academia) encourages a herd mentality that stifles innovation as much as encourages it.

This suggestion is compatible with the need for new funding models. In some university jobs, scientists' basic livelihood is tied to their ability to secure government money (so-called "soft money" jobs), with their associated institution receiving a share of the bread. Smart scientists sign up to study the natural world and end up professional fundraisers for higher-education. To call it a scam might not be accurate, but it looks, walks, and quacks like one. Many scholars have studied and criticized the funding model of biomedical research. The system is indefensible as it stands, and yet, hardly a dent has been made in its core components.

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The model has persisted because of an academic system that has, in many settings, tied professional progress to the accumulation of federal funds. With this system no longer guaranteed, laboratories may have to build research programs that are more agile and that address specific questions rather than chasing the undercooked, often vacuous mysteries tied to large federal cash prizes and their associated professional spoils.

Conversations around publishing, data democracy, and funding are but a handful of the areas in need of healing. Changing the practice of science doesn't require black magic. But it does call for something that feels almost as supernatural: We must stand in support of science in the face of attacks and simultaneously admit that we've been doing it wrong.

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adversaries demand. For what might be coming, we'll need the best version of our army to defend a science that has given us so much. But as we reflect on its practice in an age of conflict, we must admit that we can do much better.

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