

<http://news.nationalgeographic.com/2017/02/trump-travel-ban-executive-order-scientists-visas-refugees-science.html>

Surprising Ways Science Survives Travel Bans and Gag Orders

Here's how previous government crackdowns on travel and communication have affected science—and how crafty researchers managed to resist.



Protestors gather on the National Mall in February to show solidarity with those affected by U.S. President Donald Trump's travel ban policy.

PHOTOGRAPH BY ZACH GIBSON, GETTY IMAGES

Editor's Note: This story has been updated to reflect the February 17 ruling of the Ninth Circuit Court.

The physicist and his wife were facing unimaginable danger. His accomplishments, which had earned him celebrity status around the world, weren't enough to shield him from the gathering storm clouds of war. His government saw him as an outsider, a rebel, an outspoken pacifist. They wanted him dead.

The couple became refugees fleeing a lethally racist regime. They went to the United Kingdom, living for a time under armed guard, before seeking more permanent asylum in the United States. The Institute for Advanced Study in Princeton, New Jersey, had offered him a job—and with it, a chance to survive and make a new life.

It was an agreement that worked out well for both parties: Albert Einstein gained his freedom, and the U.S. gained arguably the most famous scientist on the planet, who stayed here until he died in 1955.

On Thursday, the U.S. Ninth Circuit Court ruled unanimously to maintain the suspension on President Trump's executive order temporarily prohibiting refugees and citizens of seven predominantly Muslim nations from entering the country. For now, this means that refugees and citizens of the seven targeted countries may come to the United States, but it's possible the U.S. Justice Department will appeal the ruling and send the case the Supreme Court.

To be clear, the worst consequences of re-instating the travel ban will

likely be humanitarian in nature. In the two chaotic weeks since the order was signed, thousands of travelers have had their visas revoked, been turned away at U.S. airports, or barred from boarding flights.

But for decades, the U.S. has also been a place where foreign scholars could come for education, opportunity, and the freedom needed to excel in their fields—and scientists are among those getting caught in this disorganized dragnet. (See [“Haunting Photos Show Where Refugee Children Sleep.”](#))

“It’s mostly the uncertainty of things and being so vulnerable,” says [Salam Al Kuntar](#), a Syrian archaeologist based at the University of Pennsylvania. “There’s no way if I leave tomorrow that I could come back.”

History offers some insights into the long-term effects of closed borders, and perhaps surprisingly, science doesn’t always suffer. But it also teaches us about the perils of diminishing or turning away from scientific endeavors, which, when combined with increasingly insulated borders, could badly harm the reputation of the U.S. as a place to invest intellectual capital.

“No single country, however impressive its educational system, contains within its borders a preponderance of the world’s most talented individuals,” [a task force from the Council on Foreign Relations](#), co-chaired by former Florida governor Jeb Bush, said in a 2009 report. “Maintaining American economic and political leadership depends on maintaining that flow of talent.”

LOOKING BACK AT 9/11

The particulars of the travel ban have been in chaotic flux since Trump unleashed it on January 27. While [a restraining order](#) continues to be in place for now, experts worry that re-instating it could have far-ranging repercussions on scientific enterprise. In fact, the court ruled that the plaintiff

states have standing to bring the case because of the harms foisted upon public universities and their scholars by the travel ban.

“Science provides a universal language,” says Marga Gual Soler, of the American Association for the Advancement of Science’s Center for Science Diplomacy. “The United States has been able to attract the best international scientific talent by upholding the principles of openness, transparency, and the free flow of ideas and people.”

Take, for example, the aftermath of the terrorist attacks of September 11, 2001.

In the wake of the tragedy, the Bush administration tightened immigration controls, subjected travelers to extreme vetting, required adult males from 25 countries to present themselves for registration, and made it much more cumbersome for international students to obtain visas and enroll in American universities.



In the wake of 9/11, the California Air National Guard placed highly visible armed guards at local airports.

PHOTOGRAPH BY DON KELSEN, LOS ANGELES TIMES, GETTY IMAGES

Student visa applications dropped by 25 percent between 2001 and 2002, and the number of rejections rose from 25 to 34 percent between 2001 and 2003; and perhaps as a result of those post-9/11 policies, the number of international students enrolled at universities dropped for several years, says the 2009 report by the Council on Foreign Relations.

“Overall, the number of foreign students attending American universities would have been about 25 percent higher if the pre-9/11 growth rates had continued,” the report says. During that same time period, the report continues, international enrollment in the United Kingdom, France, Australia, Japan, and Germany surged as students went elsewhere.

Still, not everyone agrees that immigration policies were largely to blame for the drop in foreign students.

In a 2013 report, Lindsay Lowell of Georgetown University’s Institute for the Study of International Migration identifies a “perfect storm” of factors that were already ripe for decreasing foreign enrollment: the technology industry bust, declining wages, increasing college tuition, and just plain fear. Stricter immigration controls exacerbated the already existing problems, and international students were caught in the turmoil.

The driving factor behind the drop in students, Lowell says, was the declining robustness and attractiveness of the U.S. economy. “I think that pretty much drives most cycles in migration—or innovation, for that matter.”

Over the intervening 15 or so years, some of the travel restrictions have been loosened or abolished, the economy has somewhat recovered, and now —though the visa system is hardly perfect—the number of international students in the U.S. is once again continuing to grow. The latest statistics

from the International Institute of Education's [Open Doors Report](#) show that there's been a roughly 100 percent increase in enrollment over the last decade.

YOU MIGHT ALSO LIKE

[See How Pacific Islanders Are Living With Climate Change](#)

[Sleeping Bags That Do Double Duty](#)

[Rare Black-Maned Ethiopian Lion Caught on Video](#)

In the long run, experts agree that the relatively short-lived post-9/11 policies did little to impede the march of scientific progress.

“I’m not really sure I could say there were long-term effects on science and innovation, except in the sense that the situation reduced trust in the U.S.,” says [Al Teich](#) of George Washington University. “Looking back on it, it was a blip, an unfortunate one, but I don’t think it had any really destructive impacts.”

Since 2001, U.S.-led accomplishments have included [sequencing the human genome](#), sending a spacecraft [zooming by Pluto](#), melding technology with brains, [directly detecting gravitational waves](#), and tackling infectious diseases that have the potential to cause global pandemics. Immigrants and international scholars have played a role in all of those advancements.

That’s one reason to be optimistic about the U.S. remaining competitive, even though the Trump administration’s policies are creating hardships for immigrants, refugees, and many others trying to reach the country.

“The executive order has roiled perceptions for sure—it’ll take a bit

more to change behaviors,” Lowell says.

Another is that isolationist policies don’t always snuff out innovation, as is true in Japan, South Korea, and Taiwan.

“These countries have long been very insular toward immigrants, have very tiny immigrant populations, yet are advanced scientific nations,” notes John Skrentny, director of the Center for Comparative Immigration Studies at the University of California, San Diego.

But, he adds, “with all of that being said, I do think that the Trump administration and the current Republican Party are in many ways anti-science, and will have negative effects—possibly very serious—on the U.S. scientific enterprise.”

DISMANTLING EMPIRES

Skrentny worries that damaging the image of the United States as a destination for international scholars could be among the worst consequences of the Trump administration’s worrying trend toward denying both fact and science. “It will hurt us even with foreign students and postdocs who can still make it here,” he says.

Al Kuntar, who is a National Geographic explorer, understands all too well, as the language of Trump’s executive order makes it not only impossible to travel to the Middle East for her research, but also impossible to renew her visa when it expires. She once dreamed of making her home in the U.S. but now has to consider relocating, perhaps to refugee-friendly countries with strong academic cultures, such as Germany and Canada. (Read “Fleeing War, a Syrian Family Makes a New Home in North Carolina.”)

“I wanted to live here. I initially came here on a three-year fellowship thinking things would go back to normal in Syria,” she says. “It’s emotionally difficult, because—especially for someone who came to accept the loss of a

home country—to make your home somewhere else and then have to put your stuff in a suitcase and go and try to find a new home ... it's just difficult.”

Beyond the travel ban, critics say the Trump administration's refusal to acknowledge the existence of anthropogenic climate change, its threats to dismantle the EPA, and its culling of government data hint at a dangerous trend to corrupt and suppress science.

“Disrupting scientific exchange is not only damaging the United States’ scientific capabilities but also its soft—or smart—power, and eventually follows the tradition of declining empires,” says historian and science diplomat Dennis Schroeder of Harvard University’s Kennedy School of Government.

History is littered with more than a few examples of governments turning away from science, which has sometimes gone hand-in-hand with the fall of empires.

Consider what Westerners sometimes refer to as the Islamic Golden Age, a period between the eighth and 13th centuries, when mathematics, poetry, art, and science flourished throughout the Arab world.



Chairman Mao Zedong attends the celebration of the National Day in Beijing in 1962.

PHOTOGRAPH BY LYU HOUMIN,VISUAL CHINA GROUP,GETTY IMAGES

In Baghdad, the government established a House of Wisdom, which served as an intellectual and cultural epicenter. There, Jewish, Christian, and Arab scholars convened to converse and translate works from Greek, Indian, and Persian into Arabic, so that the spread of knowledge could transcend religious, national, and linguistic boundaries.

“The caliphates strongly supported the sciences and enabled academic and scientific exchange,” says Schroeder.

Then, in the mid-13th century, the Mongols invaded and hastened a decline already in progress due to factionalization and the growth of anti-scientific philosophies. They sacked Baghdad and demolished the House of Wisdom, making room for rising governance structures that prized religion over science and quelled centuries of intellectual momentum. The Golden Age was over, its future contributions to global knowledge lost.

A similar, although more intentional, fate befell China in the mid-20th century, when Chairman Mao attempted to purify the country and return it to old habits, customs, ideas, and culture. Academics were purged from universities, millennia of progress were reversed, and China is still struggling to regain its former leadership in the sciences, particularly in astronomy, where it was once a global leader.

Attempting to bend science to suit ideology also didn't go particularly well for the U.S.S.R. On one occasion in the late 1920s, the Soviets began

subscribing to bogus scientific theories championed by Party shill Trofim Lysenko, who had some very wrong ideas about how plant genetics and heredity worked, particularly as applied to agricultural practice.

As the government sought to prop up Lysenko, roughly 3,000 scientists who disagreed with him were imprisoned, purged, or executed. But unfortunately for Soviet citizens, genes don't really care about who the ruling party is, and as much as Lysenko wanted his fantasies to become reality, his misguided agricultural schemes refused to cooperate. Lysenkoism ended up exacerbating the ongoing famine and corrupting scientific truth, and it wasn't until the 1950s that genetic research in the U.S.S.R. started to recover.

More recently, Canadian federal scientists experienced what some describe as a nine-year "assault" on science by the conservative government. Perhaps most egregiously, scientists were prohibited from freely speaking with the press about everything from snowflakes to salmon. It wasn't until the country's new prime minister, Justin Trudeau, was elected in 2015 that scientists could begin to work more freely.

SUBTLE SUBVERSION

The case surrounding Trump's executive order on immigration is likely to end up in the Supreme Court, where the eight sitting justices could reach a 4-4 impasse. If that happens, the Ninth Circuit Court's decision will stand. But even if the immigration ban is reinstated, there are ways to learn from history and keep science alive.

Even amidst the paranoia of the Cold War in the mid-20th century, stubborn, crafty scientists managed to share information, particularly when it came to planetary science, says David Grinspoon of the Planetary Science Institute.

In the 1960s and 1970s, American and Soviet teams were both

attempting to study Venus, with the Soviets hoping to set a spacecraft down on the planet's hellish surface. Yet even from across an ideological divide, the two teams shared a common goal. And after each success or failure, the teams would find a way to share what had worked and what hadn't—in effect refusing to reinvent the wheel despite governmental prohibitions.

“Even though their masters were seeing things as an all-out competition, I think the planetary scientists really wanted the data and wanted the answers and really wanted each other's missions to succeed,” Grinspoon says.

Eventually, the U.S.S.R. managed to send 10 probes to the Venusian surface, and NASA sent one. To this day, they remain the only spacecraft to ever touch down on Earth's twisted sister.

Carl Sagan also managed to circumvent the chilly restrictions of the Cold War, and ended up publishing a book about extraterrestrial life with Iosef Shklovskii in 1966—even though the two never met. They would mail manuscripts back and forth, and the end result was a coherent tome that somehow managed to slip through the Iron Curtain.

“They discovered that they had really similar interests and had a lot of similar ideas ... and they produced it without ever having been in the same room, which is kind of a relic of that time,” Grinspoon says.

So it can be done, and there's still room for the situation to improve.

“Things could change overnight in the right circumstances,” Teich says. “It's hard to make a straight line prediction, a forecast based on current trends, because we don't know what these current trends really are and how long they're going to last.”



[Nadia Drake](#) is a science journalist who writes the National Geographic blog [No Place Like Home](#).

FOLLOW NADIA

[TWITTER](#)

Sign up for more inspiring photos, stories, and special offers from National Geographic:

SIGN UP

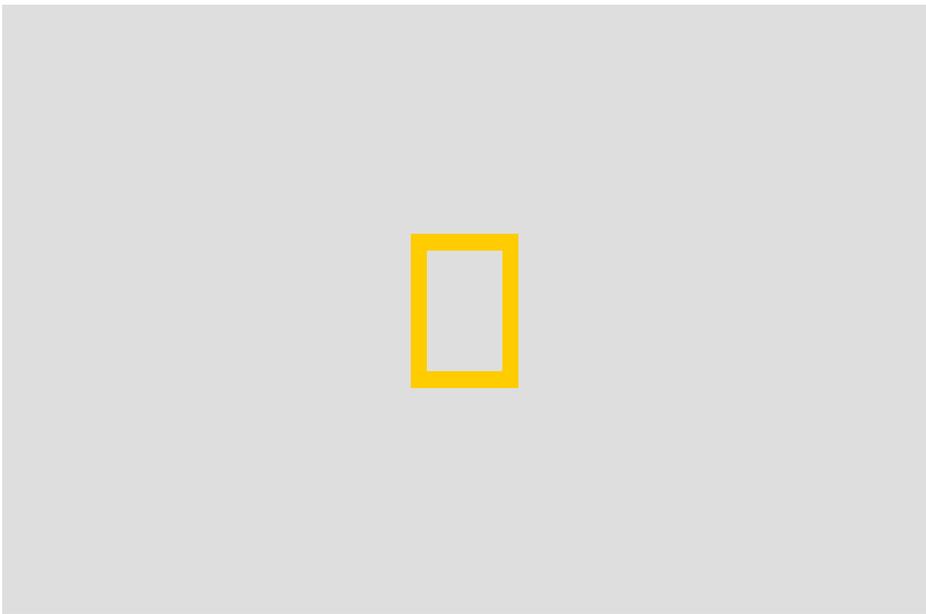
View our [Privacy Policy](#).

 COMMENT

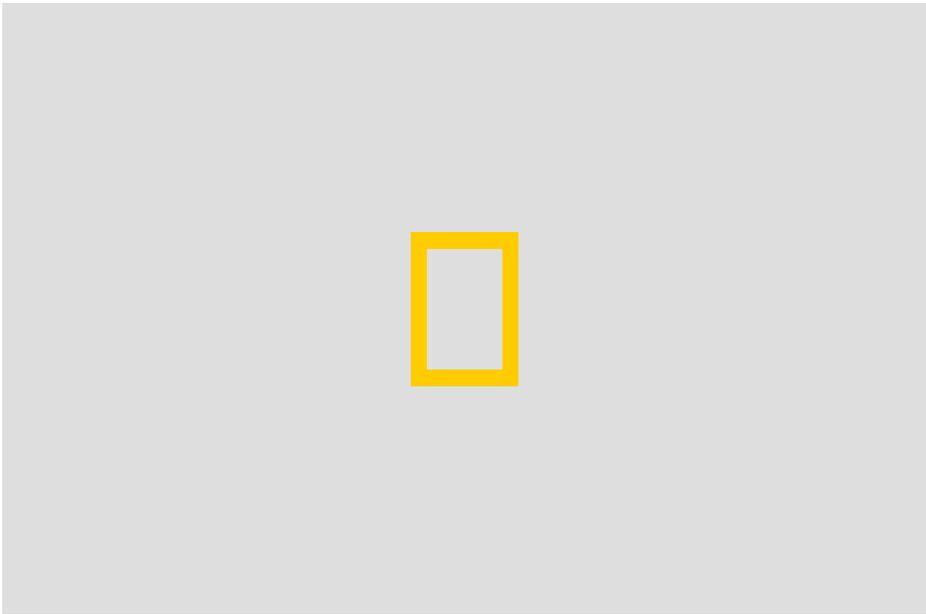
YOU MIGHT ALSO LIKE

7...





U...



A...

COMMENT ON THIS STORY

