Former NASA administrator discusses the catastrophic impact to basic science in Trump's "Big Beautiful Bill"

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The passage of President Donald Trump's "One Big Beautiful Bill Act" on July 4, 2025 was the death knell for basic scientific research in the United States. As part of the largest redistribution of wealth from the working class to the rich in the country's history, through a permanent $3.8 trillion tax cut, the bill has also zeroed out critical funding for ongoing research at NASA and the National Science Foundation (NSF).

A recent article by the American Astronomical Society warned, "this budget poses an existential threat to our disciplines," including planetary science, astrophysics, heliophysics (the study of the Sun), particle physics and mathematics, as well as a slew of educational outreach programs run by both agencies.

The cuts to every aspect of scientific research are also mirrored in the complete dismantling of public health programs during the ongoing COVID-19 pandemic, as well as the dismantling of the Centers for Disease Control and Prevention and the National Institutes of Health as agencies of public health and medical research. Among the sharpest expressions of this process is the inability of doctors and researchers to get adequate funding for studies into Long COVID, an array of often debilitating symptoms suffered by hundreds of millions worldwide as the result of contracting one or more coronavirus infections.

The *World Socialist Web Site* recently spoke to former NASA administrator Dan Weedman, 82, about the far-reaching and devastating impacts the cuts in the budget will have on science in the United States.

WSWS: How long have you been involved in astronomical research?

Dan Weedman: My career has spanned 60 years. I worked at either NASA or NSF from 1992 until 2002, serving as the head of NASA Astrophysics from 1993 to 1995 and as NSF program director for the National Optical Astronomy Observatories and the National Solar Observatory from August 1999 until September 2002.

That time includes a lot of critical moments in astronomy, including the first servicing mission for the Hubble Space Telescope in 1993 and the planning, development and launch of several missions, including the Advanced X-ray Astrophysics Facility, now known as Chandra, and the Space Infrared Telescope Facility, which got renamed to Spitzer.

I retired from NSF to join the research team on Spitzer, which launched in August 2003. I worked there for a decade and a half before the funds for research were zeroed out, and then ultimately the spacecraft was decommissioned in 2020.

Over that time period, you can compare the budgets quantitatively. My annual budget in 1995 was about $750 million. The budget for astrophysics for 2026 was cut by *66 percent*, to only $520 million. That's not adjusted for inflation.

At the time we had real money and all sorts of plans. Now the only things that are going to be funded enough to function are the JWST [James Webb Space Telescope] and Hubble. It's going to be devastating.

WSWS: The budget for NASA as a whole is being gutted from $24.9 billion to $18.8 billion, a reduction of 24 percent. The Science Mission Directorate is getting slashed by 47 percent, nearly half, planetary science by 32 percent and heliophysics by 46 percent. An article from the Planetary Society wrote that 19 missions are being axed. Can any science be done under these conditions?

DW: The only time such a reduction has happened was at the end of the Apollo program, which was five percent of the federal budget at its height. Now you have a situation in which NASA was getting maybe a tenth of that level of funding, and some areas are being cut to a quarter, half or two-thirds that already tiny amount.

That's why virtually every astrophysics and planetary science mission is getting canceled. The report from the AAS lays it all out, from Earth observatories like Chandra and Fermi, as well as missions across the Solar System like Juno at Jupiter and New Horizons, which took the first closeup imagery of Pluto and is now exploring the Kuiper Belt.

All of these are fully functioning spacecraft, some of which have been operating for decades. Chandra has enough fuel to last another decade and New Horizons has enough fuel for a possible second rendezvous with a body beyond Pluto. There are no other missions being planned to study X-rays or explore the outer Solar System, so they are shut down, that's it.

And there's a more fundamentally insidious part of this bill. Hubble is losing $8 million while JWST is losing $47 million. None of that can come from the engineers and the communications facilities, because you have to keep them both flying. So what happens is that cuts are from the research money that's going to astronomers that actually use and study the data collected.

It's explicitly zeroing out what is known as the Astrophysics Data Analysis Program, which is money that goes to people to analyze data that's already been collected. We have this incredible archive of data from all these missions going back for decades, and most of it is just sitting there unexplored. It was hard to get funding to use that data before, and now it will essentially be impossible. At least for US

researchers; there's an irony that these data are being very heavily used internationally, especially in China.

There's also an extremely anti-intellectual component. Outside the US, a lot of the basic science is done by institutions. Among of the most famous are the Max Planck Institutes in Germany. In China as well, as the research is done at government-funded facilities. But in the US, all research is tied to universities.

And Trump has been very aggressive in going after anybody and anything that's even peripherally involved with universities. So cutting research funding at NASA and NSF is also a general attack on academic studies.

WSWS: And that attack on culture has been a part of the US establishment for decades. It is also reflected in the only part of NASA's budget that got increased, which is manned spaceflight.

DW: First, we should be clear that any increase there does not mean there will be any money for science. Earlier in the administration, that would have meant money going to Elon Musk and his proposed NASA head Jared Isaacman, another billionaire. Now that Trump and Musk had their falling out, it's not clear who will take over. [Author's note: Trump has named Transportation Secretary Sean Duffy as interim NASA administrator.]

There's also the question of whether the whole Mars initiative will even happen. Really, the money is for Trump's political cronies. It's to send to home states of political allies. Billions of dollars are just going to disappear for political reasons as opposed to anything related to science. The entire motivation is just personal profit.

WSWS: Could you speak to the impact this will have on a mission that hasn't been launched, the Nancy Grace Roman telescope?

DW: There's some interesting backstory there. We were discussing Roman in the 1990s, back when it was known as the Wide-Field Infrared Survey Telescope (WFIRST), alongside a similar project funded by NSF, the new Vera Rubin Observatory in Chile. From a scientific perspective, they are both designed to do similar things, take all-sky surveys. The Rubin will do so in optical wavelengths while Roman is designed to do the same in the infrared.

The initial idea was to find as many supernovae as possible and try and pin down dark energy. And of course as the design progressed, their missions expanded, but that's essentially the goal of each instrument.

The problem that Roman has is that it is now very vulnerable because an argument can be made that both do the same thing, and Rubin is going to have an enormous amount of data well before Roman launches, which is slated for 2026 or 2027. And the fact that it's budget got cut from $407 million to $156 million, it may very well also get completely cut next year. That's more likely if the launch date slips, which it probably will with so much less money.

WSWS: To segue now into the NSF, could you explain what's happening there? The AAS article paints an even more dire picture.

DW: There, you can see the budget is even more about taking money from basic science and directly benefiting industry and commercial interests. The request focused on only three specific areas, artificial intelligence, quantum computing and biotechnology. And it explicitly said that any research must be in collaboration with "other federal agencies, industry and private foundations."

The budget request also stated, "NSF is prioritizing investments that complement private-sector R&D and offer strong potential to drive economic growth and strengthen US technological leadership."

There's so much in those few words. First, the budget is getting cut from $9 billion to just $3.9 billion. And that's happening across the agency and is expected to reduce the people getting funded from 330,100 to just 90,000. That's going to hit students especially hard, a 70 percent decrease in graduate students and a 79 percent decrease in undergraduate students. The number of personnel are going to be decimated.

Second, this is completely against the history of NSF. From the very start it was created to be independent and do basic research. There was not a commercial connection. At the time, there were plenty of companies doing research, like Bell Labs, and they did some great work. But NSF was set up to do the stuff the commercial labs wouldn't do because they didn't see any immediate profit in it.

That phrasing indicates there's a plan to basically turn NSF into a commercial research lab, to focus only on what has an immediate profit objective and then just abandon basic research.

This is going to destroy whole careers, as well as stop them before they get started. I'm especially concerned at the devastation this is going to have on graduate students, because so many rely on NSF grants for their funding. Now essentially no one is going to get anything unless they're in those three fields.

They're killing off the new generation of scientists, the seed corn, the people who will have ideas for the future. This applies to all the sciences, because the same thing is happening at NIH. Young people are bearing the brunt of this and it's the young people that represent the future. It's throwing away our scientific future in the US, it's as simple as that.

WSWS: In addition to the truly staggering workforce reduction, one cut that blew my mind was to LIGO, which is getting cut from $48 million to $29 million, and shutting down one site. That project started in 1992 and the data collected was responsible for a Nobel Prize in Physics.

DW: It's a perfect example of the ignorance of all this. LIGO is trying to detect gravitational waves, and you simply can't do it with only one facility. You need at least two to confirm any detection and to have any idea of the signal's source. There are other facilities internationally that are being brought online, but they don't yet have the sensitivity of LIGO.

What gives me hope is that young people like yourself are paying attention to what's happening and are trying to help. You can't let the attempts at demoralization work.

WSWS: Agreed, there's a fight to be had, for science and for society as a whole.