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Be careful Trump. Deporting Elon Musk would hand space travel to China

Rainer Zitelmann

Without Musk's SpaceX, the US would be second place to China. If Trump deports Elon Musk, he'll set US space travel back decades, writes Dr Rainer Zitelmann

Donald Trump has launched a fresh attack on Elon Musk, declaring that Doge, Musk's cost-cutting body, is "the monster" that "that might have to go back and eat Elon". On Truth Social on Monday, he continued: "Elon may get more subsidy than any human being in history, by far, and without subsidies, Elon would probably have to close up shop and head back home to South Africa. No more Rocket launches, Satellites, or Electric Car Production, and our Country would save a FORTUNE. [sic]"

Trump acts like an autocratic dictator, responding to critics with threats of punishment. Musk was quite right to criticize Trump's plans to continue the colossal debt orgy – as were some other Republican politicians, such as Rand Paul.

Trump may not know – or simply not care – that carrying out his threats, not least deporting Elon Musk, would set US space exploration back by two decades. November 14, 2011 marked a low point in US-manned space exploration when the American astronaut Daniel Burbank had to be transported to the International Space Station (ISS) aboard a Russian Soyuz rocket. The United States was no longer able to send its own astronauts into orbit having discontinued the Space Shuttle program. In the years that followed, American astronauts made 30 such flights to the ISS using Russian Soyuz rockets – until a SpaceX Falcon 9 rocket took Americans astronauts to the ISS on May 30, 2020, and at much lower cost.

Where did US space travel go wrong?

What went wrong? Despite the triumph of landing on the Moon, the US-manned space flight program failed. In the three decades from 1981 to 2011, the US Space Shuttle programme cost almost $200bn, but failed to live up to expectations. In his study, Dark Star: A New History of the Space Shuttle, Matthew Hersch comes to a sobering conclusion: "By every measure, the shuttle had fallen short of even the modest hopes that had surrounded it. And the shuttle remained flying only because every effort to replace it with a better-winged, reusable craft also failed."

Following two tragic accidents that resulted in the loss of 14 lives, the Space Shuttle program was discontinued, leaving the United States without any rockets of its own to transport its astronauts to the International Space Station (ISS). Things only changed with the emergence of Musk's SpaceX. Awarding contracts to the private company SpaceX was the only way NASA could move forward.

Musk succeeded in massively reducing launch costs. As Harry W Jones from the NASA Ames Research Center noted in his essay The Recent Large Reduction in Space Launch Cost back in 2018: "The average launch cost did not change much from 1970 to 2010… From 1970 to 2000 the average launch cost was $18,500/kg. A major drop in cost occurred in 2010 with the Falcon 9 at $2,700/kg. The Falcon Heavy reduced the cost to $1,400/kg. The Shuttle's launch cost was about 20 times that of the Falcon 9 and about 40 times that of the Falcon Heavy."

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Without SpaceX, the United States would be in second place, way behind its chief rival, China. In 2024, SpaceX launched almost twice as many rockets as China, the number two in space travel. Of 261 space missions worldwide in 2024, 134 were launched by SpaceX. If SpaceX were a country, it would by far surpass the second-largest country in the world, China, which registered 68 launches. Without SpaceX, the US would not even have managed two dozen rocket launches last year!

Of 12,952 active satellites in space, 8,530 have been deployed by the USA. However, 7,855 of these belong to Starlink, another of Musk's companies. If Starlink is excluded from the count, the USwould be left with fewer than 700 satellites in space, relegating it to fourth place behind Russia (1,559), China (906) and the UK (763).

Starship is a marvel of engineering, surpassing everything that has come before it. Starship's most distinctive feature is its reusability. Imagine if every airplane had to be discarded after a single flight – air travel would be out of reach for the vast majority of people. This is why Elon Musk has spent so long making sure his rockets are reusable. He has already achieved partial success with his standard carrier, Falcon 9.

Starship's first-stage booster and second-stage orbital spacecraft are both reusable. The booster returns to Earth shortly after launch, allowing for its reuse in future missions. Similarly, the second stage can return to Earth once its mission is complete, whether that be hours, days, weeks or months after launch. Some versions will never return to Earth again. They will remain – suitably equipped – at their final destinations as space station modules, refuelling stations in Earth's orbit, lunar shuttle vehicles, or as permanent bases on the Moon, Mars, asteroids or beyond. Whether the USA will succeed in getting to Mars without SpaceX is more than debatable.

What Trump refers to as subsidies – with his usual degree of hyperbole as the allegedly largest subsidies ever received by a human being in history – are in fact mainly NASA contracts for which SpaceX provides services that NASA could either not provide itself or only at a much higher cost. Cancelling or reducing these contracts would please China in particular – the very country that Trump has singled out as his main rival.

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