Reprinted from the Spring 2020 issue of Philanthropy magazine (PhilMag.org)

Philanthropy is Rocket Science

By Karl Zinsmeister

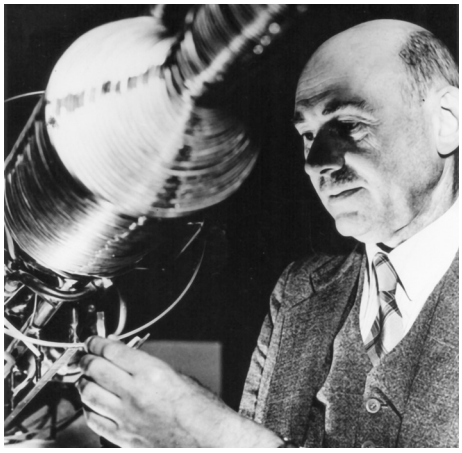
Private giving extends even into national defense

A 15-year-old boy opens a newspaper and starts reading a science-fiction story about travel between Mars and Earth. The next thing you know, he's spending all his time thinking about flying through space, and filling notebooks with scribbled ideas about how to make that happen.

Today, that's not an unusual story. But when the teenaged Robert Goddard began to have his high-altitude dreams, it was 1899, and space travel was only a fantasy. But Goddard was passionate, serious, and stubborn—the ingredients of invention.

As a student at Worcester Polytechnic Institute in Massachusetts, Goddard set out to make his imagined outcomes real, using science. He wrote speculative papers about high-speed travel in a vacuum. In 1907 he fired a cylinder filled with gunpowder in the basement of the college physics department. The resultant roar and cloud of smoke nearly got him expelled. Goddard continued on to graduate school at Clark University, and by 1912 he had worked out much of the math on using rocket propulsion to reach the moon.

But even after he became a professor at Clark, he had no luck at getting other academics, or journalists, or government research groups to take him seriously. In Washington, federal officials just smirked at his visions. He tried to recruit engineers from MIT and other universities to work with him, but no one would sign on.



NASA

In 1920, the *New York Times* printed a long editorial savaging Goddard for romanticizing moon travel. They said a rocket would be likely to explode, veer wildly, kill innocent bystanders. And the *Times* insisted that a rocket would fail altogether in the vacuum of space. "Professor Goddard," sneered the article, "seems to lack the knowledge ladled out daily in high schools."

Scorched by these attacks, and unable to get adequate government or academic funding, Goddard had to pay for many of his experiments out of his own pocket. The costs soon overwhelmed his salary. Then in 1929, he was introduced to philanthropist Daniel Guggenheim.

Americans know the Guggenheim family for building a mining fortune and founding a prominent art museum. But they also had a deep interest in flight and aerospace. Daniel's son Harry volunteered in World War I as one of the first U.S. Navy pilots. Starting in the 1920s, the family became America's patron saints of flight.

Nearly all of our nation's schools of aeronautical engineering on college campuses were set up by the Guggenheims—at MIT, Caltech, Stanford, Harvard, Syracuse, Georgia Tech, Michigan, and elsewhere. The Guggenheims also donated much of the money needed to make commercial flight practical. They gave large cash prizes for solutions to problems like bad weather and night landings. They paid for wind tunnels, and gyroscopes, and planes. They bankrolled weather-tracking services serving pilots, and gave loans for the purchase of the first commercial airliners.

And the Guggenheims adopted Robert Goddard. At the very moment the government and academic establishments were ignoring or mocking him, the Guggenheims provided the salary, materials, and research expenses that allowed the shy genius to prove out his theories.

With Guggenheim money, Goddard set up an experimental base in New Mexico where he worked quietly for two decades, out of the public eye and scientific mainstream. More than once he offered findings to U.S. military officials, but no one understood the importance of what he was developing. Until German V-2 rockets began to terrorize Britain during World War II.

Then Robert "Moony" Goddard was tracked down, and other scientists were astonished how much he had learned at his Guggenheim-funded base. Using Goddard's work as the starting point, U.S. rockets were soon lifting vital payloads into orbit. America became the world leader in space propulsion, and the multi-stage engines fathered by Robert Goddard allowed Americans to be first on the moon, first in roving Mars, first to probe beyond the planets.

The same federal government that had ignored Robert Goddard while he was living acknowledged, after his death, the nation's debt to him and his private backers—by awarding to his widow and his financial patrons at the Guggenheim Foundation what was then the largest-ever government intellectual-property settlement. Robert Goddard earned 214 separate aeronautical patents, and even today every rocket and plane takeoff depends on many of his innovations.

Without Guggenheim funding for the academic labs that got the U.S. into the air, and the Guggenheim sponsorship of Robert Goddard, it's quite possible the U.S. could have been an also-ran in aerospace. And if the pioneering discoveries in rocketry had been made in Germany or Russia instead of the sands of New Mexico, world history would have taken a different turn.

One lonely scientist and the far-seeing philanthropic family that gifted him resources made all the difference. P