

A Look at the Space Age: Past and Present

Christopher M. Williams-Morales '17

Department of History, Hampden-Sydney College, Hampden-Sydney, VA 23943

INTRODUCTION

Space is a world in and of itself that people know very little about. Due to having so little knowledge, we remain awe of its vastness. We are in awe of the exploits of NASA and its efforts in space exploration. That awe seemed to have come to an end when NASA completed its last exploration mission. Interest in the space age or space in general has died down considerably. That interest is on a slow and gradual rise thanks to the private sector. It has now taken an interest in space exploration. As NASA's time as the leader in space travel came to end, other companies emerged. These companies saw the possibility of being able to further the field of space travel technology. They saw the possibilities with a smaller price tag. Of the companies that have emerged, one stands out as the front runner in the field of private space travel: Space Exploration Technology Corp. (SpaceX). Both of these companies have ushered in a new space race. It is a race that expresses the importance of allowing the private sector to become involved in the space industry. Their continued efforts in this field will bring long term benefits such as possible interstellar travel and space tourism, though this will most likely be far into the future.

With this modern Space Age there has been a reinvigoration in the study of space travel technology. Both SpaceX and NASA have dealt with similar issues in advancing the field of space travel. The two entities created their own technology to make it to space. Perhaps the rise of SpaceX is the beginning of a private sector NASA that will continue to push the boundaries of space travel.

The First Space Race

Most people today are well aware of the fact that when we use the words "Space Race", we refer to the time during the Cold War when the Soviets and Americans competed to see who could get to the moon first. In the face of this new Space Age, I find it a necessity that we look back this time period and discuss what started this first space race. The participants of this race laid out the groundwork for the space race that is going on today. I will not provide an entire chronology of space exploration in this article. Instead, I will focus on the late 1950s into the early 1960s. I chose to focus on this time frame because this is the period where people not only saw great leaps in space exploration, but great leaps in technology to support space travel.

Historians have usually bookmarked the beginning of the space race with the beginning of the International Geophysical Year (IGY). The IGY was a large-scale team project to study how the planet worked. In order to carry out this study, the team invited nations to launch earth-orbiting satellites.¹ The US accepted this invitation on July 29, 1955. The USSR followed suit the day after.² The two men that led the effort for their respective country were Sergei Korolev from the USSR, and Werner von Braun for the US.

Korolev had already been creating a design for a satellite that he had named sputnik zemli.³ He had also been testing rockets for Stalin in order to catch the USSR up with the West in the Atomic Age as well. Korolev himself did not care for all this rocket and missile testing, but there is something to be said of the dividends of rocket testing. Stalin had ordered Korolev and his team to develop intercontinental ballistic missiles (ICBMs). With Stalin's death in 1953, Korolev had an easier time persuading the politburo to look into space exploration. This missile design would serve as the rocket that would jettison sputnik into space and drop it into earth's orbit.

Von Braun did not have that kind of fortune. President Eisenhower had decided to fund a rocket designed by the Naval Research Laboratory, the vanguard.⁴ He gave no funding to Von Braun's design. What resulted was a series of test flights that ended in failure. All four tests failed to reach desired altitudes. Meanwhile, the Soviets kept hinting at their success.⁵

That success became clear to the world in 1957. When American media outlets caught wind of what had happened, debate ran amongst the people. They wondered if the Soviets would dominate the world through space technology. Regardless, conversation erupted over the need to have American dominance beyond the planet as well.

In the year that followed the launch of Sputnik, NASA was founded to begin its efforts into developing space travel technology. The origins of the ideas for space travel technology comes from NASA's prior work for the military on high speed

¹ William Walter, *Space Age* (New York: Random House, 1992), 78.

² Ibid.

³ Walter, *Space Age*, 79.

⁴ Ibid.

⁵ Ibid.

aircrafts. In order to make it to space, NASA had to create the technology to help them get there. There was much groundwork to be done. Their work on the X-15 lay the groundwork for future projects that required aircraft to reach Mach speeds. As historian Roger Bilstein notes, the X-15 program created a shift in research focus.⁶



Figure 1: X-15 rocket powered aircraft
Wikimedia.com

With the production and testing of X-15 planes came the necessity of developing pressure suits to withstand high altitudes.⁷ Other industries benefited from this technological development. In order for the aircraft to survive in space, extensive use was made of alloys such as titanium and InconelX.⁸ Extensive use of such alloys became a standard production technique in the aerospace industry. NASA had to advance space travel technology by enhancing other fields of study. There simply was not enough technological development that could support the goal of NASA's space program. So NASA settled that problem itself. I have found this to be the case with SpaceX as well.

SpaceX enters the industry and the race

Space Exploration Technology Corp. was founded in 2002 by Elon Musk. Musk, an

⁶ Roger Bilstein, *Testing Aircraft, Exploring Space: The History of NACA and NASA* (Baltimore: The John Hopkins University Press, 2003), 60.

⁷ Ibid.

⁸ Bilstein, 61.

entrepreneur and founder of PayPal, took a huge gamble on the success of SpaceX.⁹ His biggest motivation for creating this company stems from his time donating money to NASA so they could build a greenhouse on Mars.

Whatever fortune he had, SpaceX received most those funds.¹⁰ Despite the available pool of funding, SpaceX dealt with failure after failure until 2012. On May 24, 2012, SpaceX managed to successfully launch their Dragon Capsule.¹¹ This success carries huge implications for the future of private sector space travel. The Dragon capsule is the first commercially built vehicle to not only successfully launch, but to also carry cargo all the way to the International Space Station.¹² But we must understand that this success should not fall entirely upon SpaceX. NASA still has a role in today's advances on commercial space travel.



Figure 2: SpaceX's Dragon Capsule, Wikimedia.com

Scholar Chad Anderson examines the relation that SpaceX has with NASA. Contrary to popular belief that private sector's interest in space travel is not private. As Anderson argues, "the success of SpaceX is in fact the result of a deeply collaborative effort with NASA".¹³ Anderson claims that the answer to commercial space travel is contingent upon

⁹ William D'Urso, "Launch success propels SpaceX to New Ventures," *Orange County Register*, April 22, 2014. Accessed February 13, 2017.

<https://hsc.illiad.oclc.org/illiad/illiad.dll?Action=10&Form=75&Value=26235>

¹⁰ Austin Carr, "SpaceX vs. Blue Origin: Fighting to win the Modern Space Race," *Fast Company.com* (August 2016): 72, <http://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?sid=a5c043f9-5fc6-45c3-a960-898b2e467f5c%40sessionmgr102&vid=2&hid=122>

¹¹ Chad Anderson, "Rethinking Public-Private Space Travel," *Space Policy* 29 (August 2013): 266, <https://hsc.illiad.oclc.org/illiad/illiad.dll?Action=10&Form=75&Value=25951> (accessed February 13, 2017).

¹² Ibid.

¹³ Anderson, "Rethinking Public-Private Space Travel," 267.

partnership.¹⁴ Perhaps therefore SpaceX is at the forefront of this new space race. Some would appear to think so. News writer Austin Carr spoke to members of NASA and private aerospace companies and many of them have concluded that SpaceX is in the lead of the new space race.¹⁵ At the very least, the government seems to think so. SpaceX has been earning numerous government contracts adding up to a total of \$4.8 million in revenue.¹⁶ With this kind of aid in revenue given to them by a government agency, a question of method comes to mind.

SpaceX's ability to rise so quickly in this now privatized industry is due to the groundwork it is willing to put in for a successful launch. As the vice-president of the Aerospace Industries Association, Frank Slazer, describes it "They do their own work. The biggest examples of that are rocket engines. Other launch companies don't make their own launch engines; they buy them from other companies".¹⁷ Thus, the price tag for every SpaceX launch drops considerably. One example is the SpaceX shuttle Falcon 9. Today launching the Falcon 9 would cost about \$62 million according to the SpaceX website. Then there are other companies such as the France-based Arianespace who have stated in press conferences that the cost of sending the Ariane 5 could be between \$100-\$137 million.¹⁸ As was the case with NASA, SpaceX is only able to go through with numerous launches because they also have to make huge leaps in space travel technology as well. The difference lies in the end goal. While not quite as ideologically driven as it was in the 1950s and 60s, this new space race necessitated the further advancement of the technology that NASA had been developing.

As of this year, SpaceX has continued to imitate the kind of success NASA had been meeting in its beginning. On February 19, SpaceX launched another rocket into space, carrying the 5,500 pounds of supplies, experiments, and other cargo in the dragon capsule.¹⁹ This launch has proven a few things. First, that SpaceX has managed to reuse

rockets. In December of last year, SpaceX landed a falcon 9 shuttle they had previously sent to space. Thus cutting down on the cost of launches.



Figure 3: Reusable Falcon 9 spacecraft, Wikimedia.com

The second benefit has to do with the location of said launch in February. That launch took place at the Kennedy Space Center Launchpad 39A. The space center now allows other private companies such as Blue Origin and Moon Express to use their launch pads. News writer Kenneth Chang describes how "Mr. Cabana recast Kennedy from a center dedicated to launching NASA rocket to what he described a 'multiuser spaceport'".²⁰ This could very well be the beginning of numerous launches by the smaller companies in the aerospace industry. With this success in hand, SpaceX intends to begin its first astronaut missions in early 2019.²¹

Conclusion

Former Administrator of NASA Michael Griffin argued that "the history of life in Earth is the history of extinction events, and human expansion into the solar system is in the end, fundamentally about the survival of a species".²² Perhaps this is what drives the Space Age. While many could argue that this is the case, we cannot ignore that such an attempt for prolonged survival will be years from now. When any of this will happen is anyone's guess, but the aerospace industry is on the right track towards

¹⁴ Ibid.

¹⁵ Austin Carr, "SpaceX vs. Blue Origin," 74.

¹⁶ Ibid.

¹⁷ D'Urso, "Launch success propels SpaceX to New Ventures," 2.

¹⁸ Peter de Selding, "Former Arianespace Chief Says SpaceX Has Advantage on Cost," *SpaceNews.com* (March 8, 2014), <http://spacenews.com/39906former-arianespace-chief-says-spacex-has-advantage-on-cost/>

¹⁹ Kenneth Chang, "SpaceX Launches Rocket Carrying Space Station Cargo," *The New York Times*, February 19, 2017. <https://www.nytimes.com/2017/02/19/science/spacex-launch-kennedy-space-center.html>

<http://sciencejournal.hsc.edu/>

²⁰ Chang, "SpaceX Launches Rocket Carrying Space Station Cargo".

²¹ Ibid.

²² Michael Griffin, "Science versus Exploration," in *The Next Space Age*. Ed. Christopher Mari (New York: The H.W. Wilson Company, 2008).

achieving its goals. With the help of NASA, companies like SpaceX will be able to push further and further into the depths of space.

Bibliography

- Anderson, Chad. "Rethinking Public-Private Space Travel," in *Space Policy* 29 (2013): 266-271
<https://hsc.illiad.oclc.org/illiad/illiad.dll?Action=10&Form=75&Value=25951>
- Bilstein, Roger. *Testing Aircraft, Exploring Space: The History of NACA and NASA*. Baltimore: The John Hopkins University Press, 2003.
- Carr, Austin. "SpaceX vs. Blue Origin: Fighting to win the Modern Space Race," in Fast Company.com. Accessed February 12, 2017.
<https://hsc.illiad.oclc.org/illiad/illiad.dll?Action=10&Form=75&Value=25951>
- De Selding, Peter. "Former Arianespace Chief Says SpaceX Has Advantage on Cost," in SpaceNews.com (March 8, 2014). Accessed February 11, 2017.
<http://spacenews.com/39906former-arianespace-chief-says-spacex-has-advantage-on-cost/>
- D'Urso, William. "Launch success propels SpaceX to New Ventures," in Orange County Register. Accessed February 12, 2017.
<https://hsc.illiad.oclc.org/illiad/illiad.dll?Action=10&Form=75&Value=26235>
- Walter, William. *Space Age*. New York: Random House, 1992