The Apollo Program: Vanity Project or National Voyage of Discovery?

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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During the Cold War, U.S.-Soviet tensions drove the development of space programs for both nations. In 1961, behind in the so-called "Space Race," President Kennedy, backed by a bipartisan majority in Congress, chose to commit the U.S. to a manned Moon landing. The resulting Apollo Program would cost around $257 billion in today's dollars (Dreier, 2022), an expense that made the program controversial. President Kennedy and NASA personnel represented the government's pioneers, in favor of the program for the symbolic and scientific value it had, both for the nation and for mankind. Others saw political and technological power in the act, namely Lyndon B. Johnson and other anti-Soviet proponents, who believed that control over space would determine military power for years to come. The cost of the program attracted critics, both inside and outside of the government. Civil rights activists demanded greater federal investment in domestic problems to relieve social inequality. Others believed that the Moon mission was a case of federal excess and overreach. Defense and space contractors favored the program for their own economic benefit, arguing that Project Apollo could lead to further advances by stimulating engineering research and development. These differing viewpoints call into question the validity of the presidential push for a Moon landing. Was Project Apollo seen as a brave voyage to bring mankind into the future or a national stunt that drew valuable resources away from Earth? The favorable public opinion surrounding Apollo in the modern day has diverted attention away from the program's critics, but many Americans were disappointed by the space program throughout the 1960s, and even the monumental first step on the Moon may not have been enough to justify the costs.

Review of Research

Hooks and McQueen (2010) attribute America's underdeveloped welfare systems to World War II's economic mobilization, namely in aircraft manufacturing. After World War II, the U.S. was one of the few Western countries that did not begin to employ comprehensive welfare programs, and Hooks and McQueen argue that the increase in high-paying manufacturing jobs caused by military growth contributed to a lower demand for social programs. Apollo's stimulation of the economy is often lauded as a benefit, though it is clear there can be unintended consequences of such growth. Turcat (2008) argues in favor of Apollo as a program that incentivized the growth of scientific industry, regardless of the program's ultimate success. Project Apollo contributed to the growth of many of the companies it was contracting, and universities were seeing more graduates with scientific degrees. Despite budget cuts in later years, the initial growth in R&D jobs and university technical programs had created a thriving aerospace industry which persisted even past the Apollo Program.

Gisler and Sornette (2008) aimed to show that the Apollo Program was a "societal bubble", an event of enthusiasm and innovation that did not yield significant return for the cost. They concluded that over-eager political officials showed favoritism towards the space program, and that their mobilization of the nation snowballed into a rush for the Moon that ultimately could not be financially or technologically justified. While the claim of a social feedback loop creating a bloated program is fair, the authors' argument that Apollo's long-term gains came at a massive financial loss does not accurately account for the technological returns that came from the aerospace industry it had promoted. In truth, it is difficult to financially measure whether Apollo was a success, as its benefits often subtly appeared years later, though the lack of immediate returns likely swayed public opinion at the time.

Witko examined how public opinion of defense spending was influenced by Soviet actions and the rhetoric used by political elites. He concluded that the public was not reacting to Soviet aggression, but to American politicians making belligerent statements, stating that "the public appears reliant on U.S. political leaders to make sense of complicated, international political events" (Witko, 2003). Witko deems this unsettling, as politicians with an interest in defense spending could manipulate public opinion for their own benefit, much like how many believed that the U.S. was deliberately upselling the threat of Soviet expansion into space. Siddiqi (2010) claims that the strictly U.S. or Soviet-centric examinations of the Space Race do not accurately capture the growth of space technology, and asserts that the use of nationalist rhetoric was largely to gain public support through embellishment. Siddiqi argues that the Space Race was not a "battle of ideologies" as was often claimed, but rather two similar space programs being spurred by the successes and failures of the other, and that national traits were less impactful than other factors, such as the individuals working on the projects.

Koman (1994) examines the space program of the 1960s as a propaganda piece, stating that the program had gained an "aura of near-sacredness" following Kennedy's assassination. The fervor brought by the desire for a national victory incentivized NASA to work quickly, which Koman posits to be the reason for high material and human costs, though acknowledging the boost in national pride that the Moon landing brought. Logsdon (2011) notes Apollo as a unique government endeavor which saw criticism from both liberals and conservatives, yet somehow persevered where later, more meaningful programs had failed. The complicated mix of social, political, and technological factors at the time allowed Project Apollo to come to fruition, while modern programs combating issues such as drug usage and global warming have not seen

the same success, despite a Moon landing seeming comparatively meaningless in the face of these dire issues.

Political Motivation and Social Reactions

Despite President Kennedy's rhetoric regarding the goals and reason for the Apollo Program, there is no simple justification for the project and its massive cost, as even he struggled to determine Apollo's usefulness. Kennedy's campaigning for the Apollo Program emphasized the symbolic value of such a mission: the United States could show dominance over the Soviet Union, and mankind could cross into unexplored territory. Initially, he petitioned Congress to fund a project dedicated to landing a man on the Moon, noting the "head start obtained by the Soviets with their large rocket engines" and that the USSR would "exploit this lead for some time to come" (Kennedy, 1961). Kennedy also insisted on the prestige of a Moon landing, claiming, "No single space project will be more impressive to mankind." This idea was often conveyed in speeches to the public, such as comparing the mission to an Everest climb (Kennedy, 1962). Progress was not quick, however, and Kennedy would grow uncomfortable with the growing cost, as seen in recorded conversations with James Webb and other NASA officials. Shortly after his speech at Rice University, Kennedy claimed, "we've wrecked our budget and all these other domestic programs" (JFK Library, 2001). JFK privately believed that the challenge of the Moon landing was beginning to sap too many resources for its potential return, despite the way he continued to promote Apollo. He worried about the image of the program, and during a discussion with Webb about the political ramifications of the project's cost he said, "Unless the Russians do something spectacular, the only way we can defend ourselves is if we put a national security rather than a prestige label on this" (JFK Library, 2011).

Kennedy's initial attachment to Apollo had forced him into a situation where he had to continue to support the program as costs grew and progress slowed, both out of personal belief and as a bid for reelection. Political opponents were quick to criticize Kennedy's administration, such as President Eisenhower claiming that Project Apollo had "diverted a disproportionate share of our brainpower and research facilities from equally significant problems, including education and automation" (Eisenhower, 1964). Even after reaping the political rewards of Apollo 11, President Nixon similarly urged that "space expenditures must take their proper place within a rigorous system of national priorities," showing a disagreement with Kennedy's extreme support for the space program (Nixon, 1970).

Apollo was hardly worth the money for many members of the public, especially due to ongoing turmoil in the nation. Ralph Abernathy, a civil rights activist, marched on Cape Canaveral with 2 mules during the Apollo 11 launch as a protest to the program. NASA Administrator Thomas Paine spoke to Abernathy, and recalled him saying, "The money for the space program… should be spent to feed the hungry, clothe the naked, tend the sick, and house the shelterless" (Launius, 2014). Getting a man on the Moon would not help developing communities, and Apollo's cost ensured that it was harming social projects. Gil-Scott Heron's (1970) song "Whitey on the Moon" criticized the space program for this reason, with lines such as: "I can't pay no doctor bills, but whitey's on the Moon." This is used to show the absurdity of the Apollo Program becoming one of the government's top priorities, as it offered no tangible benefit to citizens. Similarly, the song argues against Kennedy's claim that landing on the Moon would be a human achievement celebrated by all; rich white people wasting the nation's money off-planet was not necessarily an accomplishment for poor or minority communities on Earth. Even Mary Lou Reitler, a 13-year-old girl, sent President Kennedy a letter in 1962 asking why

the government was “spending billions of dollars on things we can get along without, while many refugees and other people are starving or trying to make a decent living to support their families.” In 1963, prominent conservative and anti-communist Clare Booth Luce warned that large numbers of experts were “voicing very serious second thoughts, not only about the high priority given to the program by the administration, but also about the validity of the ‘space race’ itself” (Luce, 1963). This lack of support from many scientific and political leaders demonstrates the mixed reception for Apollo, as the project’s motivations were easily questioned.

Even the eventful Moon landing was not enough to dispel the common criticism and doubt. Walter Sullivan, on the eve of Neil Armstrong’s moonwalk, said, “Project Apollo is bringing home to Americans the incongruity of a nation in which hunger and misery persist alongside booming prosperity” (Sullivan, 1969). He notes the shift in public opinion as the mission neared success, though, stating, “Project Apollo in the past has been conspicuous because of its cost. Today it is conspicuous because of its extraordinary achievement.” Public opinion soared in the wake of the landing, with Ferrel Guillory describing a man in his 40s saying, “I think I felt the same way that everyone else did, (it was) a magnanimous accomplishment for the human race,” lending credence to Kennedy’s belief that space travel was an achievement beyond nationality (Guillory, 1969). This enthusiasm did not last, however, as the following missions saw less attention. A public opinion poll in 1970 showed that almost 60 percent of Americans were not in favor of government funds being used for manned Moon missions (Launius, 2003). A 1971 article published in The Guardian predicted that Apollo 14 would not receive the same response that Apollo 11 had. “It is not that the repetition of hazardous adventures is necessarily doomed to anticlimax, but that the perspectives and priorities of the Western world have been modified dramatically” (“Once more to the moon”, 1971). The

author remarks that “the questions now being asked of new and expensive projects are not whether they are unique, exciting, or prestigious, but whether they are valuable in human, social, or economic terms,” showing that subsequent trips to the Moon had led people to question the worth of Project Apollo as the novelty began to wear off.

Cold War Tensions

Competition with the Soviet Union was a defining trait of United States foreign policy following the end of World War II, and the Apollo Program owes much of its existence to this Cold-War standoff. The successful launch and orbit of Sputnik 1 in 1957 had placed the U.S. at a disadvantage in space travel. Despite this, President Eisenhower was relatively apathetic towards the Sputnik launch, believing that the “over-all military strength of the free world is distinctly greater than that of the communist countries” (Eisenhower, 1957). While he acknowledged that the Soviets were “likely ahead … in some missile and special areas and … in satellite development,” he believed that “Earth satellites, in themselves, have no direct effect on the nation’s security,” showing concern only for the Russian missile technology. Eisenhower would approve development of new defense technology but wanted nothing “wasted on non-essentials”. C. D. Jackson, a U.S. psychological warfare advisor, disagreed with the president’s assessment of the importance of Sputnik, arguing that the psychological power of communists beating the U.S. to space “will have tremendous impact” and said, “This is the first time I have seen so many important options in Soviet hands” (Jackson, 1957). To the world, it appeared that the America had been beaten to space, and some believed that there would be technological ramifications. A Washington Post article claimed that “the Administration seems more intent on balancing the budget than keeping abreast in a race … of inescapable and deadly seriousness,” and questioned

"why the Administration did not sense the major reaction that would be created by the Soviet ICBM and earth satellite and seek to prepare for it" ("On Refusing to Race", 1957). Despite Eisenhower's attempt to stay out of a space race through assurances of safety, Americans were distraught by the threat of the Soviets' newfound long-range missile capabilities.

Lyndon B. Johnson was an active proponent of competition with the Soviet Union during Apollo, initially using this stance as an opportunity to capitalize on Eisenhower's weak response to the Sputnik launch to bolster Democratic strength. Johnson did hold genuine concerns with allowing Soviets to control Earth's orbit, and made these fears known in a statement to the Democratic conference in 1958, where he began by stating, "The peril of the hour is obvious" (Johnson, 1958). He remarked that "the Soviet has appraised control of space as a goal of such consequence that achievement of such control has been made a first aim of national policy" and "if the Soviet policy is correct in its approach … we face the judgement that our own position may be tragic." Johnson feared that the Soviet Union was motivated to reach space to gain power over the world, and that the United States' lack of resistance was a dangerous mistake. He claimed that "the urgent race we are in now – or which we must enter – is not the race to perfect long range ballistics missiles" and instead stressed that the "position of total control over earth … lies somewhere in space." Johnson also noted that the Soviet Union's conventional military was beginning to approach the strength of the United States', further emphasizing the need for a strong space program, and he urged the need for further development of American ICBMs. Publications wrote fearful articles when leaks came of the U.S. being supposedly unprepared to counter Russian missile technology, such as reports of "an America exposed to an almost immediate threat from the missile-bristling Soviet Union" (Roberts, 1957). These fears, combined with the Soviet Union pulling further ahead via the first manned spaceflight, led

Johnson to be one of Apollo's largest proponents, believing that total control over space and the Moon would fall into the wrong hands if America did not race to grasp it first.

Upon election, President Kennedy was largely influenced by Lyndon B. Johnson's advice regarding space, namely after attempts at cooperation with the Soviets had failed. Early in his term, Kennedy stated: "I do not believe that we want to permit the Soviet Union to dominate space, with all that it might mean to our peace and security in the coming years" (Kennedy, 1961). Much like Johnson, Kennedy believed that dominance over space would be important in a new era of warfare, comparable to how "in past centuries the nation that controlled the seas dominated the continents" (Kennedy, 1960). In a later interview, James Webb recalled that the "image that Russia could in fact produce the first manned fight" while America was "struggling in every possible way" to get inferior rockets off the ground led Kennedy to commit to a more committed space effort (Baker, 1969). The fear over what an uncontested hold of space could provide the Soviets would be used as marketing for the American space program, and specifically for the goal of landing a man on the Moon before 1970.

The orbital danger against the American people would soon disappear, however, as even before the U.S. was able to land a man on the Moon, President Johnson was advocating for the Outer Space Treaty, which aimed to ban nuclear weapons from space. The ratification of this treaty showed that the Soviet Union held similar fears about the weaponization of space. In a 1967 address to the Senate, he stated, "The future leaves no option. Responsible men must push forward in the exploration of space, near and far. Their voyages must be made in peace for purposes of peace on earth" (Johnson, 1967). Believing that spaceflight held too much power as a weapon, Johnson acted to secure the safety of the nation from any lunar threats, ironically removing the defensive need to race to the Moon. As such, he began to campaign for Apollo

through the late President Kennedy's pioneering rhetoric, as seen in his mention of America's "sense of exploration, symbolized most recently by the wonderful flight of the Apollo 8, in which all Americans took great pride" in his final State of the Union address (Johnson, 1969).

Research and Industry

Engineering companies sought Project Apollo's contracts to gain fortune and notoriety, and many modern aerospace companies gained their status through government contracts brought abought by the space program. Elliot Richard Jr. noted that Project Mercury had a profound effect on America's engineering industry, as it had "created a fast-growing market for aircraft, electronics, and chemical firms" (Richard, 1962). As contracts for Apollo were announced, he claimed that "the effect can only be to step up the opportunities for profit of the leading contractors," and that "the industry, it would seem, has nowhere to go but up" (Richard, 1963). NASA's contracts contributed to regional developments in the U.S., with California receiving "roughly half the entire research and development budget of [NASA]," further establishing the state's prominence in technical industries (Wilks, 1967). Companies accepting Project Apollo's contracts were not doing so without risk, however. Grumman's senior vice president stated in an interview: "If there are performance problems a firm can get a serious reputation problem … If anything happens to the first [lunar module] it will look like Grumman stranded the first men to land on the moon. That's why I thought perhaps we should not have bid on LM" (Kucera, 1973). North American Aviation reputation was damaged by the blame it received for the Apollo 1 fire, though engineers within the company believed they were being used as a scapegoat, claiming that NASA "could have made changes anywhere they found anything wrong" and "if the truth were known, NASA would be on the hot seat even more than

North American" (Gordon, 1967). Despite the early disaster, Apollo's later missions avoided any further loss of life, and the companies involved in the design of the lunar rocket (namely Boeing, Grumman, and Douglas) gained wealth and publicity, and such companies continue to flaunt their part in Project Apollo in modern marketing.

Apollo's effects on the growing aerospace industry were immense, and modern project management in engineering companies was influenced by the program's careful planning and management. In a 1963 dissertation, Bruce C. Juell postulated that the competition over Apollo's contracts demanded "that aerospace firms be aware of the requirements and pitfalls related to this industry and develop the management capability to meet that competition" (Juell, 1963). Juell believes that "the inefficient company will be out of the running for space projects," and that this drove engineering companies to improve their performance and marketing. Boeing president William Allen shared a similar philosophy, as his response to Apollo's early fatalities was: "Perhaps this will make people realize that we are not in the business of making shoes" (Simmons, 1969). The hardships on the road to accomplishing Kennedy's difficult task served to create and reinforce the managerial habits that would see companies achieve success in military contracting work in the following decades.

Conclusion

While initial worries over national security were valid, Apollo seemed to be a harsh overreaction to the Soviet threat, and the project ballooned out of proportion by the attachment of national and human pride. While Apollo 11's moonwalk was a historical moment for humankind that saw many around the world gathering to watch, subsequent missions did not hold the same excitement. Compounded with the landings' poor technical and financial returns, Project Apollo is best described as a misguided and bloated project. In the 1960s, the U.S. government scarcely promoted Apollo as a program dedicated to the growth of scientific and engineering industry, but rather as a matter of national prestige and defense.

Given that modern global intelligence, communication, and navigation systems all heavily rely on satellites, Johnson's predictions of space's power over Earth seem to have come true. The Outer Space Treaty had solved the lunar threat without the need for an expensive mission, however, meaning that Apollo's influence on space's role in modern defense is uncertain. While it is possible that American advances in space technology had scared the U.S.S.R. into accepting a treaty to keep space free of weapons, similar agreements to downsize nuclear arsenals instead point to a mutual fear of destruction being the root cause. In truth, Project Apollo was rightfully criticized for its less-than-convincing motivations, and the benefits it did yield were largely unintentional and impossible-to-predict at the time.

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