

The utilities of apollo

11



The Apollo 11 mission played an important role in the shaping of science and technology and it stands as a testament to mankind's ability to achieve greatness in spite of seemingly overwhelming challenges and obstacles. The Apollo 11 moon landing was a significant event that showed what humanity could accomplish. The success of Apollo 11 came at a time when American society was in crisis. Some people argue that this achievement of landing on the moon was mainly to beat the Russians to it in the space race and how the achievement was born out of hatred and distrust. This is not necessarily true, a growing fear of adjusting to a world in which United States technology and leadership was perceived as second best. This fear helped to fuel this great achievement. The Apollo 11 mission had a profound impact in the advancement of science and technology and the evolution of space exploration. It's clear that Apollo 11 was the crown of American space technology and is a major accomplishment in the history of space exploration.

The Apollo project was a series of missions designed to land a man on the moon and return him safely to Earth. Although earlier Apollo missions did achieve some success the grand achievement of a manned landing on the moon was Apollo 11. The following timeline for Apollo 11 was taken from the NASA Goddard Space Flight Center courtesy of Dr. David R. Williams: The liftoff of Apollo 11 happened on the morning of July 16, 1969. Apollo 11 was manned by a three man crew composing of Neil Armstrong, Edwin (Buzz) Aldrin and Michael Collins. On July 20, 1969 after a trip of four days Apollo 11 arrived at the moon. At 4: 18pm EDT the lunar module containing Neil Armstrong and Edwin (Buzz) Aldrin touched down on the moon. Aldrin in

communications to Earth stated "...the eagle has landed" (Aldrin, 1969). At 10: 56pm EDT Neil Armstrong emerged from the lunar module and became the first human to set foot on the moon. Armstrong summed it up by saying "That's one small step for man, one giant leap for mankind" (Armstrong, 1969). On July 21, 1969 Apollo 11 departed from the moon after spending 22 hours there. On July 24, 1969 Apollo 11 splashed down returning the three astronauts safely to Earth. (Williams, 2005). Millions of people around the world watched this historic event happen on live television and listened to it via radio broadcasts. With the success of Apollo 11 Kennedy's great vision became a reality and it was giant step in progress for humankind.

The Apollo 11 mission has directly affected society with the notion of space exploration and it had a profound effect on the future of space exploration. It all started on May 25, 1961 during the height of the space race, President John F. Kennedy's bold statement to Congress on urgent special needs was one that captivated the nation and set the events that followed in motion:

" First, I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him back safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish" (Kennedy, 1961).

This speech made by Kennedy in 1961 was the stuff of legends and ignited the dream of space exploration. Kennedy would further elaborate on this and offered the reason and explanation for such an undertaking during a speech

he made at Rice University about the nation's space effort on September 12, 1962:

“ We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too” (Kennedy, 1962).

This speech spoke to the hearts of the American people and was one of the finest speeches made by Kennedy to rally the support of the American public in favor of space exploration. Both of these speeches were a great boost to the American space program and the push for space exploration. At the time of these speeches NASA, the National Aeronautics and Space Administration had not placed a man in orbit around the Earth, let alone the moon.

Nonetheless NASA engineers and scientists rose to challenge. The past successes of the Mercury and Gemini programs guided by Kennedy's grand vision helped to develop the missions for the Apollo program and in the ultimate goal of landing a man on the moon and returning him safely back to Earth. While the Apollo program was during the Cold War with its political and rhetoric fears and concerns it was also a push to explore space and how that success was vital for America. The May 25, 1961 Kennedy speech was reinforced by the October 13, 1961 speech at the American Rocket Society by Vice President Lyndon B. Johnson. Johnson stated:

“ If I could get one message to you it would be this: The future of this country and the welfare of the free world depend upon our success in space. There is no room in this country for any but a fully cooperative, urgently motivated all-out effort toward space leadership. No one person, no one company, no one Government agency, has a monopoly on the competence, the missions, or the requirements for the space program. It is and it must continue to be national job” (Johnson, 1961).

This speech by Johnson clearly expressed the outlook the United States had on space exploration and it would do whatever it took to be successful and how important that success was. All three of these speeches helped the development of America’s space program and space exploration in general. The first two speeches made by Kennedy were to inspire the American public on this grand enterprise and how the exploration of space was necessary for America. The speech by Johnson was aimed at how important success was in this endeavor for America and how American leadership in space was necessary for the future of America.

The Apollo program and most noticeably Apollo 11 is a living testament to the triumph of human engineering in overcoming enormous challenges in spite of overwhelming odds. When Kennedy made the bold statement of landing a man on the moon and returning him safely to Earth in 1961 none of the technology and hardware or the workforce needed to achieve this goal existed. An article in the July 2009 issue of Mechanical Engineering, Burton Dicht stated “ In all, more than 400, 000 engineers, scientists, and technicians working for more than 20, 000 companies and universities contributed to Apollo’s Success” (Dicht, 29). This massive collaborative

undertaking was unheard of at the time and showed what can be accomplished by working together. The Apollo 11 mission united the people working on it with a common goal and belief that America would achieve it first. During the 1960s engineers and scientists were in great demand to overcome the vast engineering difficulties in the race to get into space. An article in the September 2005 issue of Mechanical Engineering, John Varrasi says “ At no other time were engineers prouder of their work, contributions, and professional and civic responsibilities. Each successive space mission was an achievement for engineering, for the nation, and for mankind” (Varrasi, 46). The 1960s were the glory days for engineering with almost unlimited recourses and funding all geared toward the exploration of space. In many ways the engineers and scientists were heroes in their own right for making the success of Apollo 11 a reality. With the limited computer power at the time some things could not be done by computer and had to be done by other means. Nick Smith in the July 2009 issue of Engineering & Technology talks with “ Buzz” Aldrin about the Apollo program, he quotes Aldrin as saying, “ We chose to use humans to aid things like re-entry, final closure breaking and docking maneuvers. We made use of humans, rather than try to automate everything and I think we made wise decisions when exploring how to do these things” (Aldrin, 77). This was a wise decision as the computing power at the time was still in its infancy and wasn't efficient in doing certain mechanical calculations or to make the needed corrective changes that arose in solving them. Apollo 11 was a great collaborative feat of human engineering and coordination and the success of Apollo 11 proved that American scientific and technological power would remain supreme in the area of space exploration.

Public coverage of the American space program through the press and television provided a great boost of support and enthusiasm that helped to retain national interest in the space program. Michael Beschloss in the book *Spaceflight and the Myth of Presidential Leadership* writes, “ public interest in space science, rocket technology, and detailed knowledge regarding space exploration had exploded. This, captured the American imagination, made them strongly support the space program because it promised the chance to establish American superiority in space” (Beschloss 63). All of this led to strengthen the influence the space program had on the American people and helped to combat the fears the public had that America would lose the resulting space race. The space race has been called many of things and some would dismiss it as commonplace of the Cold War era, in all reality it was just a heated rivalry between two opposing nations that played on political fears. Space and ultimately the moon was the battleground for this rivalry as each side strove to achieve superiority. For America the political goal was to prove to the world that American technology and leadership were superior. An article in the July 2009 issue of *Engineering & Technology*, Piers Bizony writes “ Neither Russia nor America at the time would have reached for space, let alone the moon, if that prize hadn’t beguiled the many millions of ordinary people they were trying to impress with their propaganda campaigns” (Bizony, 22). While this is one view of how the space program was seen it is true to a sense; the growing fear of adjusting to a world in which American technology and leadership came to be thought of as second best was seen as a real threat. If the Soviet Union could solidify its superiority in outer space, it would strengthen its influence and hold on the people of the world. This would have profound diplomatic and commercial

consequences for America and the American way of life (Oberger, 2009). This never happened, Apollo 11 succeeded in its mission of putting American astronauts on the moon and by doing so also succeeded in its purpose. Winning the race to the moon gave the American people a great sense of confidence and pride not to mention a sense of direction that America would lead the world in the exploration of space. This success of Apollo 11 came at a time when American society was in crisis and that success helped to sustain the nation through the turbulent years of internal turmoil that followed. Mark Albrecht, former Executive Security of the National Space Council in his book, *Falling Back to Earth* comments on Apollo 11, he writes, "It was an achievement that won the admiration of nations and fueled innovation" (Albrecht, 58). He further elaborates on this in a 2011 *Washington Times* article he stated:

" Since 1960, America's space program has been the crown jewel and Exhibit A of American exceptionalism. It has been a symbol of our spirit, ingenuity and technological prowess. It has fueled and sustained an economic expansion unparalleled in history and has powered the most awesome and unrivaled global military capability since the Roman Empire" (Albrecht, 2011).

The statement made by Albrecht clearly expresses how important the space program was during the 1960s and how its success changed the future of America and humanity forever.

While many have identified the moon landing as the crowning achievement of civilization, it is also a great technological feat and as such has had an

impact on culture. In the book *Societal Impact of Spaceflight*, Andrew Chaikin wrote “ the cultural impact of Apollo has been multifaceted. It was an event of international importance and yet it touched countless lives on an intensely personal level” (Chaikin, 53). This “ touching of lives” caused by Apollo was a turning point in the history of space exploration. It helped to boost commercial and economic growth. It helped to further education in the advancement of science, math and engineering. It also changed or altered worldwide views of how we see ourselves and how we perceive our place in the universe. For some of the American public the moon landing was a contradiction. Darren Jorgensen, Discipline Chair of Visual Arts for the School of Architecture, Landscape and Visual Arts of the University of Australia wrote an article in the 2009 issue of *Sociological Review*, he wrote “ Rather than an heroic victory for the American way of life, the broadcast represented the kinds of disorientation and self-doubt that this society was experiencing during the 1960s” (Jorgensen, 178). These feelings of alienation and self-doubt by the public were not surprising, at the time of the moon landing America was in turmoil and many questioned or opposed Apollo saying the cost for it could be better spent elsewhere and was out of tune with the urgent needs of Earth (Chaikin, *Societal Impact of Spaceflight*, 56). Apollo was a unique point in American history it undoubtedly had a profound effect on culture that pushed into the political and social aspects as well. The political and technological circumstances of the 1960s and the national priority of space exploration were all key elements in the success of putting an American man on the moon. This kind of culture shaping event would probably not be seen again as the next decade had its own problems to deal with, least of all the Vietnam War and the priorities shifted as the time

changed. John Logsdon, former director of the space policy institute and current member of the NASA Advisory council wrote in his book John F. Kennedy and the Race to the Moon, he wrote “ In undertaking the lunar landing program, John Kennedy linked the politics of the moment with the dreams of centuries and the aspirations of the nation” (Logsdon, 4). The Apollo project was the means for America to achieve its prestige in the space race and in the Cold War and its effect would be long lasting on culture and humanity. The Apollo mission unfired the American public in a way that gave them something they could be proud of. It was a great voyage of discovery and with coverage of the event provided by television, it gave the public the chance to follow along with and in a sense partake in the event. At the time nothing of the sort had ever been done, the implications and the outcome of the event had a huge impact and changed the culture of America and the world.

The Apollo 11 moon landing was a groundbreaking event that changed the world. It is a living testament to mankind’s ability to achieve greatness in spite of enormous odds and challenges. It showed what America could accomplish when united and working towards a common goal. While it was a race for superiority in the resulting space race, it also played a key role in the shaping of science and technology. The Apollo 11 mission proved America’s capability to advance science and technology. The nation was left in awe by the achievements made by the aerospace industry during the 1960s and ultimately the moon landing. Apollo brought about technological advances in computer circuitry and engineering along with numerous innovations that have improved our understanding of space and that has

affected modern society immensely. Apollo 11 and the moon landing event was a vast and cultural shaping force that undeniably inspired how science and the future evolve.

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