
Project Apollo, NASA, and Technological Versimilitude

by Roger D. Launius

There is no question that the success of Project Apollo in the 1960s helped to create a culture of competence for NASA that translated into a level of confidence in American capability, and especially in the ability of government to perform effectively, to resolve any problem. Something that almost sounds unthinkable in the early twenty-first century but such was indeed the case in the 1960s.

Recollections of the Apollo program's technology lead many to express wonder at the sophistication of the technical competence that made the Moon landings possible and the genius of those that built the rockets and spacecraft that carried Americans into space. Farouk el-Baz, a scientist who worked on the program, expressed well this sense of awe at the Moon landings: "Oh, the Apollo program! It was a unique effort all together. When I think about it some 40 years later, I still look at that time with wonder." He bemoans that "the Apollo spirit of innovation and can-do attitude did not last long."

This is all the more the case because of the relative lack of complexity of the technology used to go to the Moon in the 1960s. Many express wonder that there is more computing power in a pocket calculator than in the Apollo guidance computer. Others are surprised that something as simple as writing in space required the development of a new type of pen, with the ink under pressure so that it could write in a weightless environment.

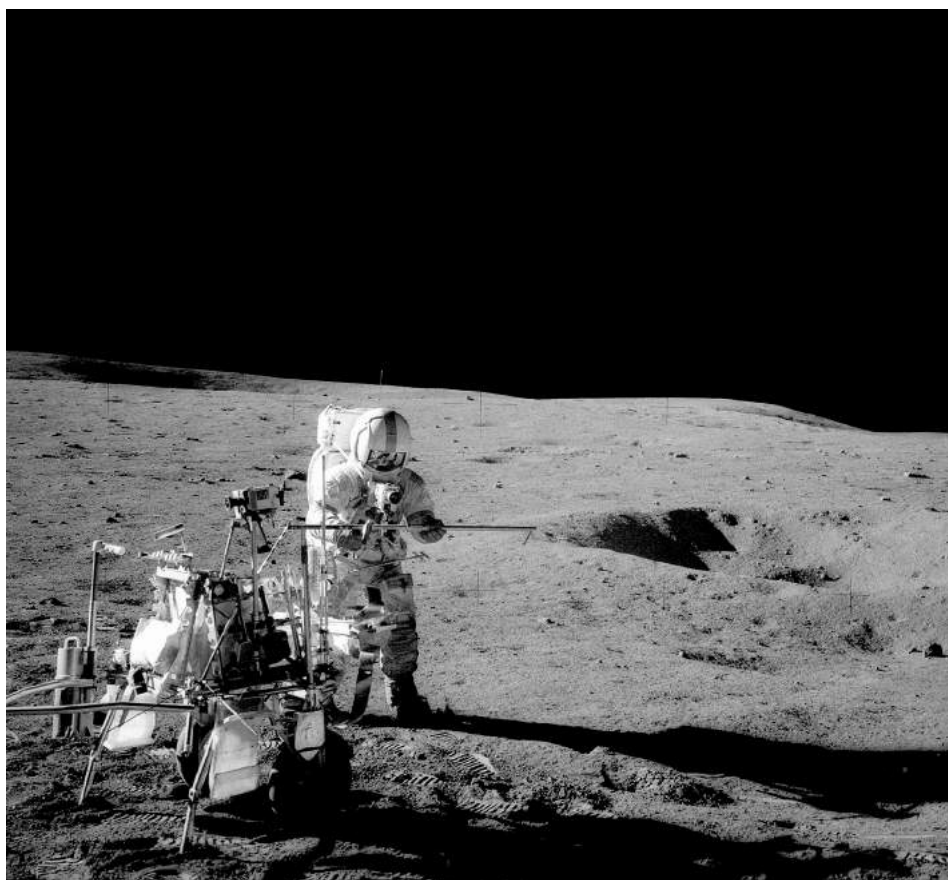
American belief in the technical virtuosity of NASA, an agency that could accomplish any task assigned it, can be traced directly to the experience of Apollo and its legacy of success. The success in reaching the Moon established a popular conception that one could make virtually any demand and the space agency would

deliver. This has remained a powerful image in American culture.

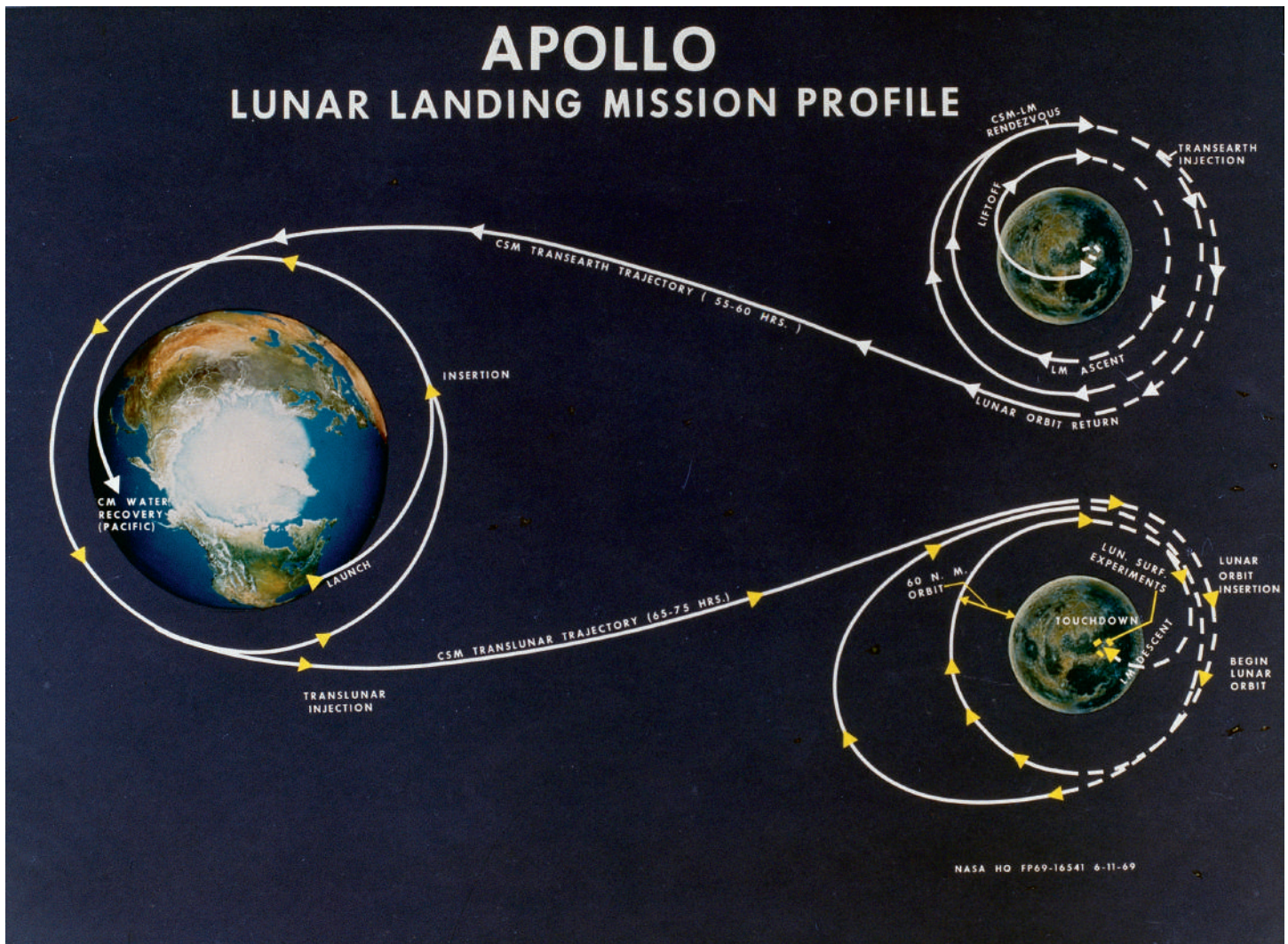
Despite tragedies along the way, including the near disaster of Apollo 13 and the very public *Challenger* and *Columbia* accidents that killed fourteen astronauts, the vast majority of the public remains convinced that NASA has the capability to succeed at whatever it attempts. The Moon landings established that image in the American mind and it has been difficult to tarnish despite the space agency's very public failures after Apollo.

Of course, there has also been concern about an undefined sense of declension

present in so many parts of recent American society. They have expressed a desire to recapture what may be conceived of as a can-do spirit and a genuine technological virtuosity that existed in the 1960s but has declined since. For one, Farouk el-Baz bemoaned that "the Apollo spirit of innovation and can-do attitude did not last long." He concluded: "This is why I believe that my generation has failed the American people in one respect. We considered Apollo as an enormous challenge and a singular goal. To us, it was the end game. We knew that nothing like it ever happened in the past and behaved as if it



Apollo 14 Modularized Equipment Transport (Source: NASA)



Apollo Lunar Landing Mission Profile (Source: NASA)

would have no equal in the future.”

The technology required to reach the Moon was certainly more complex than anything ever attempted before, but was firmly understood at the time that the program began. NASA engineers reasoned, first, that they needed a truly powerful rocket with a larger payload capacity than any envisioned before. As a second priority, they recognized the need for a spacecraft that could preserve the life of fragile human beings for at least two weeks; this included both a vehicle akin to a small submarine but one that could operate in space and a second spacecraft in the form of a spacesuit that allowed the astronauts to perform tasks outside the larger vehicle. Third, they needed some

type of landing craft that would be able to operate in an environment at the Moon far different from anything found on or near Earth. Finally, they needed to develop the technologies necessary for guidance and control, communication, and navigation to reach the Moon.

In every case, and this proved critical, planners at NASA understood the nature of the technical challenges before them in reaching for the Moon so they could chart a reasonable and well-defined technology development course for overcoming them.

For the generation of Americans who grew up during the 1960s watching NASA astronauts fly into space, beginning with 15-minute suborbital trajectories and culminating with six landings on the Moon,

Project Apollo signaled in a very public manner how well the nation could do when it set its mind to it. Television coverage of real space adventures was long and intense, the stakes high, and the risks of life enormous. There were moments of both great danger and high anxiety.

Project Apollo was a triumph of management in meeting enormously difficult systems engineering, technological, and organizational integration requirements.

Indeed, the Moon landing program came to exemplify the best Americans could bring to any challenge, and has been routinely deployed to support the nation’s sense of greatness. As one example Actor Carroll O’Connor perhaps said it best in the midst of the Moon landing effort in an

episode of *All in the Family* in 1971. Portraying the character of Archie Bunker, the bigoted working class American whose perspectives were more common in our society than many observers were comfortable admitting, O'Connor represented well how most Americans embraced the success of the Apollo program. Archie Bunker observed to a visitor to his house in the sitcom that he had "a genuine facsimile of the Apollo 14 insignia. That's the thing that sets the US of A apart from... all them other losers." In very specific terms, Archie Bunker encapsulated for many what set the United States apart from other nations: success in space flight.

More recently, another reference from popular culture points up the lasting nature of this sense of success granted the nation through its Apollo Moon landings. In the

critically acclaimed television situation comedy *Sports Night*, about a team that produces a nightly cable sports broadcast, one episode in 2001 included a telling discussion of space exploration. The fictional sports show's executive producer, Isaac Jaffee, played by Robert Guillaume, is recovering from a stroke and disengaged from the daily hubbub of putting together the nightly show. His producer, Dana Whitaker, played by Felicity Huffman, keeps interrupting him as he reads a magazine about space exploration. Isaac tells her, "They're talking about bio-engineering animals and terraforming Mars. When I started reporting Gemini missions, just watching a Titan rocket liftoff was a sight to see. In the process the Isaac Jaffee character affirms his basic faith in NASA to carry out any task in space exploration.

"You put an X anyplace in the solar system," he says, "and the engineers at NASA can land a spacecraft on it."

The technological virtuosity remains to this day. It has long supported an emphasis on nation greatness and offers solace in the face of other setbacks. At a basic level the Moon landings provided the impetus for the perception of NASA as a successful organization, and the U.S. as the world leader in science and technology. Might NASA and the United States return to those thrilling days in the twenty-first century.

Roger D. Launius is associate director for collections and curatorial affairs at the National Air and Space Museum, Smithsonian Institution, Washington, D.C.

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Virtually any topic involving space science, technology, exploration, law, or policy may be covered. Issues relevant to the civil, commercial, and military and intelligence space sectors alike are also welcomed.

Feature articles (600-3,500 words), op-eds (500-1,500 words), and book reviews (600 words or less) are accepted. Exceptions are handled on a case-by-case basis.

Articles must be submitted in Microsoft Word format, Times New Roman font, 10.5 pt. Other formatting is handled by the production manager during the editing process.

Submission of photos or other visual support is strongly encouraged but is not required. If graphics are submitted, the images must be provided in JPG format in high resolution of at least 300 dpi (CMYK for color and grayscale for black and white). PDFs may also be accepted, depending on the item. Caption(s) and source(s) of the image(s) must be provided.

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Articles must include: (1) a title; (2) a one to two sentence summary of the article for index purposes (optional); (3) if applicable, subheadings providing separation between major sections of the article; (4) a one to two sentence byline/author biography which will appear at the end of the article; and (5) the current mailing address of the author(s). Five complimentary copies of the issue in which the article appears will be mailed to each author. A PDF of the article will be emailed upon request only to the primary author. The full magazine is also available in PDF at www.astronautical.org.

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