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WHY RETURNING HUMANS TO THE MOON TAKES LONGER DESPITE 50 YEARS OF
ADVANCEMENT, FOSTERING EXTRAORDINARY PROJECTS

Abstract

On May 25, 1961, American president John F. Kennedy's speech marked the start of a challenge to send humans to the Moon, and on July 20, 1969, the goal was realized with NASA's Apollo-11. The developments and advancements leading to such a moment involved 8 years of intense missions to build up to the main target. On December 11, 2017, American president Donald Trump signed a directive for NASA to lead humans return to the Moon. NASA has been working on project Artemis to re-send humans to the Moon with an anticipated target date of September 2026. That is almost 9 years assuming no more delays - a year longer than the Apollo project. So why it is hard to repeat what was achieved over 50 years ago, despite the tremendous technological advancements? Why it is not easier and faster given that we have landed 12 humans on the Moon already? This paper reviews the nature of human space travel projects and the challenges facing such types of extraordinary projects. Such endeavors are known for their complexity and for running over budget and behind schedule. Nevertheless, human space missions add to the complexity of the project itself, and Artemis project could not be only compared to Apollo project, but to all lunar and cislunar missions. Several scientific aspects and factors are analyzed comparing (i) the stages of the Apollo and Artemis programs, (ii) the funding and geopolitical circumstances, (iii) the technological advancements and testing required, (iv) the existing heritage, and (v) the learning curve. Evaluating all those aspects helped clarify the extent of the effects of each of them. The assessment revealed that (i) the time-consuming nature of such projects, (ii) the multi-level technology involved, (iii) the gradual process required, (iv) the limited number of successful missions to safely establish a statistical level of confidence and (v) the human aspects seem to be the main reasons behind realizing that taking longer to redo the Moon landing is reasonable. To simplify, both the entirety of Apollo project and the entirety of Artemis project can be considered two testing occurrences in human Lunar missions. Furthermore, several similar successful missions are required before a dependable learning curve could be established with considerable time-saving possibility. At that point, human lunar travel and the involved stages could be built upon for deep space travel.