



## The Sensitive Dependence of Complex Systems on Initial Errors and The Discovery of Water on The Moon

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### Abstract

The Apollo missions and the analysis of the Apollo moon rocks introduced a new paradigm invalidating the pre-Apollo assumption that the moon was arid and an asteroidal origin for water in the Moon was advanced.

This study advances the hypotheses that consistent with the butterfly effect and the sensitive dependence of complex systems on initial errors it is likely that the discovery of water on the moon and the subsequent theories born from the Apollo rock samples are flawed. This is because of the less than perfect scientific integrity of both the Apollo missions and the rock samples. For instance, one of the moon rocks given to the Dutch prime minister by Neil Armstrong was later discovered to be made of wood. Equally, unsettling, is the observation that not a single image from the Apollo missions shows any stars, a physical impossibility. In 2001, the Institute of Medicine report authored by the nations leading experts on space medicine tactfully acknowledged that the medical data from the Apollo missions were less than accurate. The conclusions derived from data associated with the Apollo missions, including the origin of moon water, should be considered scientifically suspect.

**Keywords:** Apollo mission; moon water; moon rocks; astronaut safety; deep space

### Introduction

The Apollo moon missions fundamentally changed our views of the moon and introduced a new paradigm: An asteroidal origin for water in the Moon. The scientific conclusions derived from data associated with the Apollo missions, including the origin of moon water are scientifically suspect due less than scientifically reliable methods of data collection. In 2001, the Institute of Medicine report acknowledged that the medical data from the Apollo missions were less than accurate and that manned flights into deep space was unsafe because of yet unsolved health hazards to astronauts. Temperatures above 120 C made it impossible for the photographic equipment to operate on the moon. It was impossible for the Apollo images not to show any stars.

### The sensitive dependence of complex systems on initial errors and the discovery of water on the moon

The Apollo 11 mission and the historic moonwalk by Armstrong and Aldrin have been one of the greatest scientific achievements of mankind and continue to shape our knowledge of space. Of interest, based upon the analysis of the Apollo moon rocks a new paradigm has emerged invalidating the pre-Apollo assumption that the Moon was arid. A number of scientific studies indicated that planetary objects crashed into the Moon leaving their wet marks on the moon [1,2,3,4,5]. Apparently the Imbrian planetesimal was an Earth satellite swept up by the Moon during tidal recession or capture, or an asteroid deflected by Mars into terrestrial space. An asteroidal origin for water in the Moon was advanced suggesting comets containing water enriched in deuterium contributed significantly <20% of the water in the Moon. It has been observed that water plays a critical role in the evolution of planetary

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bodies and determination of the amount and sources of lunar water has profound implications for our understanding of the history of the Earth–Moon system [3].

Variations of hydrogen isotope ratios in apatite suggest sources for water in lunar rocks could come from the lunar mantle, solar wind protons and comets. We conclude that a significant delivery of cometary water to the Earth–Moon system occurred shortly after the Moon-forming impact [4].

Of importance, the Apollo moon missions fundamentally changed our views of the moon[5].

This study advances the hypotheses that consistent with the butterfly effect and the sensitive dependence of complex systems on initial errors it is likely that the discovery of water on the Moon and the subsequent theories born from the Apollo rock samples are flawed [5]. This is because of the less than perfect scientific integrity of both the Apollo missions and the rock samples [6]. For instance, one of the Moon rocks given to the Dutch prime minister by Neil Armstrong was later discovered to be made of wood [7]. Equally, surprising, is the observation that not a single Image from the Apollo missions shows any stars, a physical impossibility. Also, it seems physically impossible for the photographic equipment-both the Hasselblad camera and the Kodak film-to have operated flawlessly in daytime 120 C temperature on the moon surface. The photo evidence is worthy of emphasis for it shows the presence of artificial lighting evident by shadows in different directions incompatible with the sun being the single source of light.

In 2001, the Institute of Medicine report authored by the nation’s leading experts on space medicine tactfully acknowledged that the medical data from the Apollo missions were less than accurate possibly because of concerns regarding astronaut privacy and confidentiality. Also of importance the Institute of Medicine report acknowledged that the space suits would not protect the crew against radiation from solar storms which bombarded the moon in July 1969 [8]. It has been observed that the Apollo 11 astronauts did not show any signs of space sickness upon their return from the moon. Surprisingly they were able to walk without assistance and without any symptoms of post microgravity following eight days in microgravity. This was not biologically possible if indeed they had spent a week in deep space. Equally impossible was the striking absence of any sign of health hazards to the Apollo 11 astronauts despite the evidence that the space suits made of aluminum and Teflon could not have adequately protected them against radiation. Travel to the moon and beyond was impossible without passage through high radioactive zones and indeed the Institute of Medicine report acknowledged that the space suits would not protect the crew against radiation from solar storms which bombarded the moon in July 1969.

Taken together medical evidence suggests it was not possible for manned flights to go to the moon safely from 1969 to 1972.

More specifically no evidence of post microgravity response of the Apollo 11 astronauts and no radiation related injuries despite space suits insulated by aluminum and Teflon seemed biologically inconsistent [9,10].

## Discussion

It may be argued that the conclusions derived from the analysis of the Apollo Moon rocks are valid despite several documented imperfections of the Apollo missions. However, one of the misrepresentations involved an Apollo Moonrock which was made of wood. Is it possible to overlook this mishap without questioning the integrity of other Moon rocks? Also, there are serious unanswered questions of institutional integrity due to several scientific inconsistencies such as the starless skies of the Moon and less than accurate medical data from the Apollo missions. In summary, any scientific conclusions derived from data associated the Apollo moon missions, including the origin of Moon water, should be considered scientifically suspect.

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