

Apollo Moon Landing hoax accusations

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(Redirected from Apollo moon landing hoax accusations)

Apollo Moon Landing hoax accusations are claims that some or all elements of the Apollo Moon landings were faked by NASA and possibly members of other involved organizations. Some groups and individuals have advanced alternate historical narratives which tend, to varying degrees, to include the following common elements:

- The Apollo Astronauts did not land on the Moon;
- NASA and possibly others intentionally deceived the public into believing the landing(s) did occur by manufacturing, destroying, or tampering with evidence, including photos, telemetry tapes, transmissions, and rock samples;
- NASA and possibly others continue to actively participate in the conspiracy to this day.

Many commentators have published detailed rebuttals to the hoax claims. According to a 1999 poll conducted by the The Gallup Organization, what Gallup termed an "overwhelming majority" of the US public, some 89 percent, did not believe the landing was faked, while 6 percent did, while 5 percent were undecided.^[1]



Buzz Aldrin and Neil Armstrong in NASA's training mockup of the Moon and lander module. Hoax proponents say the entire mission was filmed on sets like this training mockup.

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Origins and history

Folklorist Linda Degh pointed out that the film *Capricorn One* may have given a "boost" to the hoax theory's popularity in the post-Vietnam War, post-Watergate era when segments of the American public were disinclined to trust official accounts. Degh writes that "The mass media catapult these half-truths into a kind of twilight zone where people can make their guesses sound as truths. Mass media have a terrible impact on people who lack guidance."^[2]

In his book *A Man on the Moon*, published in 1994, Andrew Chaikin mentions that at the time of Apollo 8's lunar-orbit mission in December 1968 such conspiratorial stories were already in circulation.

The first book dedicated to the subject, Bill Kaysing's self-published *We Never Went to the Moon: America's Thirty Billion Dollar Swindle* was released in 1974, two years after the Apollo Moon flights had ceased.

Predominant hoax claims

A number of different versions of the alleged hoax have been advanced. No one has proposed a complete narrative of how the alleged hoax could have been perpetrated, but instead believers focus on perceived gaps or inconsistencies in the historical record of the missions. Several of these ideas and their most readily identifiable proponents are described below:

1. **Complete hoax** — The idea that the entire human landing program was faked. Some claim that the technology to send men to the Moon was insufficient or that the Van Allen radiation belts, solar flares, solar wind, Coronal Mass Ejections and cosmic rays made such a trip impossible.^[3]
2. **Partial hoax / unmanned landings** — Bart Sibrel has stated that the crew of Apollo 11 and subsequent astronauts had faked their orbit around the Moon and their walk on its surface by trick photography, and that they never got more than halfway to the Moon. A subset of this proposal is advocated by those who concede the existence of laser mirrors and other observable human-made objects on the Moon. British publisher Marcus Allen represented this argument when he said "I would be the first to accept what [telescope images of the landing site] find as powerful evidence that something was placed on the

Moon by man." He goes on to say that photographs of the lander would not prove that America put men on the Moon. "Getting to the Moon really isn't much of a problem – the Russians did that in 1959, the big problem is getting people there." His argument focuses around NASA sending robot missions because radiation levels in space were lethal to humans. Another variant on this is the idea that NASA and its contractors did not recover quickly enough from the Apollo 1 fire, and so all the early Apollo missions were faked, with Apollo 14 or 15 being the first authentic mission.^[4] Yet, some believe the first and only landing occurred on December 11, 1972 with Apollo 17, as this was the first and final mission with a civilian scientist.

3. Manned landings, with cover-ups

- William Brian believes that the astronauts may have used "a secret zero gravity device" derived from technology found on a "captured extraterrestrial spaceship," but that NASA was compelled to cover up these facts and others relating to the gravity and the presence of atmosphere on the moon in order to maintain secrecy surrounding the alien space ship.^[5]
- Others believe that, while astronauts did land on the Moon, they covered up what they found, whether it was gravitational anomalies, alien artifacts, or alien encounters.^[6] Philippe Lheureux, in *Lumières sur la Lune (Lights on the Moon)*, said that astronauts did land on the Moon, but that, in order to prevent other nations from benefiting from scientific information in the real photos, NASA published fake images.^[7]
- Still, others believe that men did land on the moon, but that the photography was of very low media quality and in most cases unsuitable or even unusable that the U.S. government (NASA), since it had to present proof of the space program's success to justify taxpayers money in order to keep the program alive and not risk cancellation from U.S. Congress, altered, modified and even faked many of the pictures and video, launching a subsequent media campaign with great success. Advocates of this theory state that the equipment used to photograph (Hasselblad cameras privately modified by NASA) had no protection for the film against radiation nor intense lighting conditions present on the moon and in space.

Suggested motives for a hoax

Several motives are given by hoax proponents for the U.S. government to fake the Moon landings.

1. Cold-War prestige — The U.S. government considered it vital that the U.S. win the space race against the Soviet Union. Going to the Moon was risky and expensive (John F. Kennedy famously said that the U.S. chose to go *because* it was difficult.) Despite close monitoring by the Soviet Union, Bill Kaysing believes that it would have been easier for the U.S. to fake it, and consequently guarantee success, than for the U.S. actually to go.^[3] p. 29
2. Money — NASA raised approximately \$30 billion to go to the Moon. Bill Kaysing thinks that this amount could have been used to pay off a large number of people, providing significant motivation for complicity.^[3] p. 71
3. Risk — This argument assumes that the problems early in the space program were insurmountable, even by a technology team fully motivated and funded to fix the problems. Kaysing claimed that the chance of a successful landing on the moon was calculated to be 0.017%.^[3] pp. 26–40
4. Distraction — According to hoax proponents the U.S. government benefited from a popular distraction from the Vietnam war. Lunar activities suddenly stopped, with planned missions canceled, around the same time that the U.S. ceased its involvement in the Vietnam War.^[8] (However, the Apollo program was cancelled several years before the Vietnam War ended.^[9])
5. Saving face — To seemingly fulfil president Kennedy's 1961 promise "to achieving the goal, *before this decade is out*, of landing a man on the Moon and returning him safely to the Earth."

Public opinions

Opinion polls

A year after the first moon landing, *Knight Newspapers* conducted a poll of 1721 U.S. citizens and found that more than 30 percent of all of the poll's respondents were "suspicious of NASA's trips to the Moon" with the number rising to over half in some demographic areas. The *Newsweek* article that published the poll results noted that among the respondents were "an elderly Philadelphia woman who thought the moon landing had been staged in an Arizona desert" and a "housewife" whose suspicions were based on her belief that her television could not "receive signals from the moon." Another respondent said, "It's all a deliberate effort to mask problems at home . . . the people are unhappy - and this takes their minds off their problems."^[10]

According to a 1999 Gallup poll, about 6 percent of the population of the United States has doubts that the Apollo astronauts walked on the Moon. (Five percent had no opinion, while 89 percent believed the landings took place.)^[11] It asked, "thinking about the space exploration, do you think the government staged or faked the Apollo Moon landing, or don't you feel that way?" Six percent of respondents answered "yes, staged."^[11] ^[12], p. 156 "Although, if taken literally, 6 percent translates into millions of individuals," Gallup said of this, "it is not unusual to find about that many people in the typical poll agreeing with almost any question that is asked of them; so the best interpretation is that this particular conspiracy theory is not widespread." A 1995 *Time/CNN* poll also found that 6 percent of the people believe in a hoax^[12], p. 156. Fox television's 2001 TV special "*Conspiracy Theory: Did We Really Land on the Moon?*"^[13] may have given a boost to the idea, despite the allegation of many errors of fact and presentation in the program by the Web site called "Who mourns for Apollo?"^[14] Fox said roughly 20 percent of the public had doubts about the authenticity of the Apollo program after the show.

A Dittmar Associates poll in 2006 showed that among 18-26 year old college-educated students "27 percent expressed some doubt that NASA went to the Moon, with 10 percent indicating that it was 'highly unlikely' that a Moon landing had ever taken place."^[15]

James Oberg, an American journalist who writes about space (and has worked for NASA's space shuttle program), estimates that "perhaps 10 percent of the population, and up to twice as large in specific demographic groups" believe in the hoax or have some doubts about the Apollo program.^[16] "It's not just a few crackpots and their new books and Internet conspiracy sites," Oberg said in 1999. "There are entire subcultures within the U.S., and substantial cultures around the world, that strongly believe the landing was faked. I'm told that this is official dogma still taught in schools in Cuba, plus wherever else Cuban teachers have been sent (such as Sandinista [*sic*] Nicaragua and Angola)."^[17] In other sources Oberg has tied these beliefs to larger social phenomena: "Myths have a way of blossoming in the fertile soil of scientific discovery . . . from the time of the Phoenicians...to Marco Polo, and including mermaids and unipeds and all these mythological creatures that lurk at the edge of our exploration."^[10]

Other opinions

Charles K. Johnson, president of the International Flat Earth Research Society, challenged the idea that men had landed on the Moon, claiming that the landings were "faked in Hollywood studios", with science-fiction writer Arthur C. Clarke writing the script. He was of the opinion that the Apollo program was faked in part to promote what he believed to be the myth of a round Earth.^{[18][19]}

The International Society for Krishna Consciousness has published articles on its Web site in favor of hoax accusations, in part because it conflicts with their belief that the Moon is farther away from the Earth than the Sun is.^{[20][21]}

The late U.S. Senators Alan Cranston (D-California) and Strom Thurmond (R-South Carolina) were on record as having written to NASA passing on the concerns of their constituents.^[10]



One of the earthrise photos. The Flat Earth Society used these photos as evidence of a faked landing, since they show a spherical Earth.

Critiques of hoax accusations

Conspiracy theory

Hoax accusations have been characterized as conspiracy theories since believers claim that conspirators in the possession of secret knowledge are misleading or have misled the public in pursuit of a hidden agenda—namely, hiding that the Moon landings were faked. The term "conspiracy" has a perfectly straightforward meaning at law (although the term 'conspiracy theory' does not): any agreement by two or more persons to commit a crime. This is the central argument of the prominent critics of the conventional history of the Apollo program. The 2001 Fox special, which examined the issues on each side used that term in its title (*Conspiracy Theory: Did We Land on the Moon?*). However, the term "conspiracy theory" is highly charged, and many people consider it to be pejorative.^[22]

The Apollo Moon landing hoax accusations have been the subject of debunking and, according to the debunkers, have been falsified. An article in the German magazine *Der Spiegel* places the Moon hoax in the context of other well-known 20th century conspiracy theories which it describes as "the rarefied atmosphere of those myths in which Elvis is alive, John F. Kennedy fell victim to a conspiracy involving the Mafia and secret service agents, the Moon landing was staged in the Nevada desert, and Princess Diana was murdered by the British intelligence services."^[23]

Scientific method

Application of the scientific method to this scenario would allow each explanation of an event as a separate hypothesis, like this:

Real landing hypothesis: NASA's portrayal of the Moon landing is fundamentally accurate, allowing for such common errors as mislabeled photos and imperfect personal recollections.

Hoax hypothesis: NASA's portrayal of the Moon landing is an orchestrated hoax.

In this type of evaluation, any hypothesis that is contradicted by the observable facts may be rejected.^[24] The lack of narrative consistency in the hoax hypothesis occurs because hoax accounts vary from proponent to proponent. The 'real landing' hypothesis is a single story, since it comes from a single source, but there are many hoax hypotheses, each of which addresses a specific aspect of the Moon landing. The evidence regarding the Moon landings is met by hoax believers with skepticism, who label the NASA story as

unconvincing propaganda made by the establishment to cover up the alleged lie.

An example of such an exchange is the evidence for the landing of the *Apollo 11*, *Apollo 14*, and *Apollo 15* retroreflectors on the Moon. Scientists have reflected lasers off these to measure the distance between Earth and the Moon (see Lunar Laser Ranging Experiment).^[25] Hoax proponents such as Marcus Allen say that because the Russians placed mirrors on the Moon using robotic missions,^[26] the presence of similar mirrors should be explained by, for example, a secret American robotic mission with an express aim to place retroreflectors on the Moon to provide misleading evidence and corroborate that part of the Apollo missions.^{[23][27]}

Hoax claims examined

As mentioned above, many hoax claims focus on perceived problems with specific portions of the historical record surrounding the moon landings. Below is an overview of these claims as well as their associated debunking from various sources:

Missing data

1. Blueprints and design and development drawings of the machines involved, telemetry tapes, and the original high quality video of the Apollo 11 Moonwalk are missing.^[28] For more information see Apollo program missing tapes.

a) Dr. David Williams (NASA archivist at Goddard Space Flight Center) and Apollo 11 flight director Gene Kranz both acknowledged that the Apollo 11 telemetry data tapes are missing. Hoax proponents interpret this as support for the case that they never existed.^[29]

- *Only the Apollo 11 telemetry tapes made during the moonwalk are missing—and not those of Apollo 12, 14, 15, 16, and 17.^[30] For technical reasons, the Apollo 11 Lunar Module carried a Slow-scan television (SSTV) camera (see Apollo TV camera). In order to be broadcast to regular television, a scan conversion has to be done. The radio telescope at Parkes Observatory in Australia was in position to receive the telemetry from the Moon at the time of the Apollo 11 Moonwalk.^[31] Parkes had a larger antenna than NASA's antenna in Australia at the Honeysuckle Creek Tracking Station, so it got a better picture. It also got a better picture than NASA's antenna at Goldstone Deep Space Communications Complex. This direct TV signal, along with telemetry data, was recorded onto one-inch fourteen-track analog tape there. A crude, real-time scan conversion of the SSTV signal was done in Australia before it was broadcast around the world. The original SSTV broadcast had better detail and contrast than the scan-converted pictures.^[32] It is this tape made in Australia before the scan conversion which is missing. Tapes or films of the scan-converted pictures exist and are available. Still photographs of the original SSTV image are available (see photos). Also, about fifteen minutes of the SSTV images of the Apollo 11 moonwalk were filmed by an amateur 8 mm film camera, and these are also available. Later Apollo missions did not use SSTV, and their video is also available. At least some of the telemetry tapes from the*



Photo of the high-quality SSTV image before the scan conversion.



Photo of the degraded image after the SSTV scan conversion.

ALSEP scientific experiments left on the Moon (which ran until 1977) still exist, according to Dr. Williams. Copies of those tapes have been found.^[33]

- *Others are looking for the missing telemetry tapes, but for different reasons. The tapes contain the original and highest quality video feed from the Apollo 11 lunar landing which a number of former Apollo personnel want to recover for posterity, while NASA engineers looking towards future Moon missions believe the Apollo telemetry data may be useful for their design studies. Their investigations have determined that the Apollo 11 tapes were sent for storage at the US National Archives in 1970, but by 1984 all the Apollo 11 tapes had been returned to the Goddard Space Flight Center at their request. The tapes are believed to have been stored rather than re-used, and efforts to determine where they were stored are ongoing.*^[34]
Goddard was storing 35,000 new tapes per year in 1967,^[35] *even before the lunar landings.*
- *On November 1, 2006 Cosmos Magazine reported that some one-hundred data tapes recorded in Australia during the Apollo 11 mission had been discovered in a small marine science laboratory in the main physics building at the Curtin University of Technology in Perth, Australia. One of the old tapes has been sent to NASA for analysis. It is not known if the slow-scan television images are on any of the tapes.*^[36]

b) Hoax proponents say that blueprints for the Apollo Lunar Module, rover, and associated equipment are missing.^[37]

- *There are some diagrams of the Lunar Module and Moon buggy on the NASA web site as well as on the pro hoax web site Xenophilia.com.*^[37] *Grumman appears to have destroyed most of the documentation.*^{[38][39]}
- *Despite the questions concerning the existence or location of the LEM blueprints, an unused LEM is on exhibit at the Cradle of Aviation Museum.*^{[40][41]} *The Lunar Module designated LM-13 would have landed on the Moon during the Apollo 18 mission, but was instead put into storage when the mission was canceled: it has since been restored and put on display. Other unused Lunar Modules are on display: LM-2 at the National Air and Space Museum, LM-9 at Kennedy Space Center, and LM-16 at the Museum of Science and Industry in Chicago.*^[42]
- *Four mission-worthy Lunar Rovers were built, but three were carried to the Moon on Apollo 15, 16, and 17, and left there. After Apollo 18 was canceled (see Canceled Apollo missions), the other lunar rover was used for spare parts for the lunar rovers on the upcoming Apollo 15 through 17 missions. The only lunar rovers on display are test vehicles, trainers, and models.*^[43] *The "Moon buggies" were built by Boeing (the New Encyclopædia Britannica Micropedia, 2005, vol 2, p 319).*^[44] *The 221-page operation manual for the Lunar Rover contains some detailed drawings,*^[45] *although not the design blueprints.*

c) Bart Sibrel said "In my research at NASA I uncovered, deep in the archives, one mislabeled reel from the Apollo 11, first mission, to the Moon. What is on the reel and on the label are completely different. I suspect an editor put the wrong label on the tape 33 years ago and no reporter ever had the motive to be as thorough as I. It contains an hour of rare, unedited, color television footage that is dated by NASA's own atomic clock three days into the flight. Identified on camera are Neil Armstrong, Edwin "Buzz" Aldrin, and Michael Collins. They are doing multiple takes of a single shot of the mission, from which only about ten seconds was ever broadcast. Because I have uncovered the original unedited version, mistakenly not destroyed, the photography proves to be a clever forgery. Really! It means they did not walk on the Moon!"

It is also important to realize that those who wish to debunk the moon landings usually have some ulterior reason for perpetuating their theories; in the case of Bart Sibrel, this is the promotion of a film researched and produced by him.

The evidence offered in the reel of footage 'found' by Bart Sibrel is limited and it is important to note that the

extracts used have themselves been edited to remove portions that contradict and debunk his theory that the shots of a distant Earth seen by people on T.V. were faked. This portion of the film is never shown by hoax proponents. The NASA atomic clock referred to is not the same clock as that used during the Apollo missions. ^[46]

Technological capability of USA compared with the USSR

At the time of Apollo, the Soviet Union had five times more manned hours in space than the US.^[47] They had achieved:

1. First manmade satellite in orbit (October 1957, Sputnik 1).
2. First living creature to enter orbit (November 1957, Sputnik 2).
3. First to safely return living creature from orbit, two dogs Belka and Strelka, 40 mice, 2 rats (August 1960, Sputnik 5).
4. First man in space (April 1961, Vostok 1).
5. First man to orbit the Earth (April 1961, Vostok 1).
6. First to have two spacecraft in orbit at the same time (*though it was **not** a space rendezvous, as frequently described*) (August 1962, Vostok 3 and Vostok 4).
7. First woman in space (June 1963, Vostok 6, as part of a second dual-spacecraft flight including Vostok 5).
8. First crew of three cosmonauts on board one spacecraft (October 1964, Voskhod 1).
9. First spacewalk (EVA) (March 1965, Voskhod 2).

On January 27, 1967, the three astronauts aboard Apollo 1 died in a fire on the launch pad during training. The fire was triggered by a spark in the oxygen-rich atmosphere used in the spacecraft test, and fueled by a significant quantity of combustible material within the spacecraft. Two years later all of the problems were declared fixed. Bart Sibrel believes that the accident led NASA to conclude that the only way to 'win' the moon race was to fake the landings.^[48] In any case, the first manned Apollo flight, Apollo 7, occurred in October, 1968, 21 months after the fire.

- *NASA and others say that these achievements by the Soviets are not as impressive as the simple list implies; that a number of these 'firsts' were mere stunts that did not advance the technology significantly, or at all (e.g. the first woman in space).*^[49]
- *A close examination of the many flight missions reveal many problems, risks, and near-catastrophes for both the Soviet and American programs. A negative 'first' for the Soviets was the first in-flight fatality, in April 1967, three months after the Apollo 1 fire, as Soyuz 1 crash-landed. Despite that disaster, the Soyuz program continued, after a lengthy interval to solve design problems, as with the Apollo program.*
- *Before the first Earth-orbiting Apollo flight, the USSR had accumulated 534 hours of manned spaceflight whereas the US had accumulated over 1,992 hours of manned spaceflight. By the time of Apollo 11, the US's lead was much wider than that (see List of human spaceflights, 1960s.)*
- *Most of the 'firsts' above were done by the US within a year afterwards (sometimes within weeks). In 1965 the US started to achieve many 'firsts' which were important steps in a mission to the Moon. See List of Space Exploration Milestones, 1957-1969 for a more complete list of achievements by both the US and USSR. The USSR never developed a successful rocket capable of a Moon landing mission — their N1 rocket failed on all four launch attempts. They never tested a lunar lander on a manned mission.*^[50]

Photographs and films

Moon hoax proponents devote a substantial portion of their efforts to examining NASA photos. They point to various issues with photographs and films purportedly taken on the Moon. Experts in photography (even those unrelated to NASA) respond that the anomalies, while sometimes counterintuitive, are in fact precisely what one would expect from a real Moon landing, and contrary to what would occur with manipulated or studio imagery. Hoax proponents also state that whistleblowers may have deliberately manipulated the NASA photos in hope of exposing NASA.

1. Crosshairs appear to be behind objects.

- *Overexposure causes white objects to bleed into the black areas on the film.*

2. Crosshairs are sometimes misplaced or rotated.

- *Popular versions of photos are sometimes cropped or rotated for aesthetic impact.*

3. The quality of the photographs is implausibly high.

- *There are many, many poor quality photographs taken by the Apollo astronauts. NASA chose to publish only the best examples.*^{[51][52]}

4. There are no stars in any of the photos. The Apollo 11 astronauts also claimed to have not remembered seeing any of the stars in a press conference after the event.

- *The sun was shining. Cameras were set for daylight exposure.*^[12], pp. 158–160.

5. The color and angle of shadows and light are inconsistent.

- *Shadows on the Moon are complicated by uneven ground, wide angle lens distortion, light reflected from the Earth, and lunar dust.*^[12], pp. 167–172. *Shadows also display the properties of vanishing point perspective leading them to converge to a point on the horizon.*

6. Identical backgrounds in photos are listed as taken miles apart.

- *Shots were not identical, just similar. Background objects were mountains many miles away. Without an atmosphere to obscure distant objects, it can be difficult to tell the relative distance and scale of terrain features.*^[53] *One specific case is debunked in Who Mourns For Apollo? by Mike Bara.*^[54]

7. The number of photographs taken is implausibly high. Up to one photo per 50 seconds.^[55]

- *Simplified gear with fixed settings permitted two photographs a second. Many were taken immediately after each other. Calculations are based on a single astronaut on the surface, and does not take into account that there were two persons sharing the workload during the EVA.*



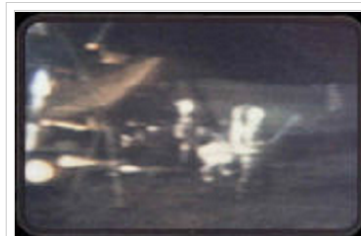
Photo of the Earth taken from behind the Apollo 11 Lunar Module.



The original Buzz Aldrin photograph.



The photo mockup made for the book *Moon Shot*. The second astronaut is located in the 'fold' in the middle of the scanned photo.



TV image of the actual scene.

8. The photos contain artifacts like the two seemingly matching 'C's on a rock and on the ground.

- *The "C"-shaped objects are most likely printing imperfections not in the original film from the camera.*

9. A resident of Perth, Australia, with the pseudonym "Una Ronald", said she saw a soft drink bottle in the frame.

- *No such newspaper reports or recordings have been verified. "Una Ronald"'s existence is authenticated by only one source. There are also flaws in the story, i.e. the emphatic statement that she had to "stay up late" is easily discounted by numerous witnesses in Australia who observed the event to occur in the middle of their daytime, since this event was an unusual compulsory viewing for school children in Australia.^[56]*

10. The book *Moon Shot* contains an obvious composite photograph of Alan Shepard hitting a golf ball on the Moon with another astronaut.

- *It was used in lieu of the only existing real images, from the TV monitor, which the editors of the book apparently felt were too grainy to present in a book's picture section. The book publishers did not work for NASA.*

11. There appear to be "hot spots" in some photographs that look like a huge spotlight was used at a close distance.

- *Pits in moon dust focus and reflect light in a manner similar to minuscule glass spheres used in the coating of street signs, or dew-drops on wet grass. (see Heiligenschein)^[57]*

12. Footprints in the extraordinarily fine lunar dust, with no moisture or atmosphere or strong gravity, are unexpectedly well preserved, in the minds of some observers – as if made in wet sand.

- *The dust is silicate, and this has a special property in a vacuum of sticking together like that. The astronauts described it as being like "talcum powder or wet sand".^[54]*

Ionizing radiation and heat

Challenges and Responses

1. The astronauts could not have survived the trip because of exposure to radiation from the Van Allen radiation belt and galactic ambient radiation (see Radiation poisoning). Some hoax theorists have suggested that Starfish Prime (high altitude nuclear testing in 1962) was a failed attempt to disrupt the Van Allen belts.

- *The Moon is ten times higher than the Van Allen radiation belts. The spacecraft moved through the belts in just 30 minutes, and the astronauts were protected from the ionizing radiation by the metal hulls of the spacecraft. In addition, the orbital transfer trajectory from the Earth to the Moon through the belts was selected to minimize radiation exposure. Even Dr. James Van Allen, the discoverer of the Van Allen radiation belts, rebutted the claims that radiation levels were too dangerous for the Apollo missions. Dosimeters carried by the crews showed they received about the same cumulative dosage as a chest X-ray or about 1 milligray.^[58] Plait cited an average dose of less than 1 rem, which is equivalent to the ambient radiation received by living at sea level for three years.^[12], pp. 160–162*
- *The radiation is actually evidence that the astronauts went to the Moon. Irene Schneider reports that thirty-three of the thirty-six Apollo astronauts involved in the nine Apollo missions to leave Earth orbit have early stage cataracts that have been shown to be caused by radiation exposure to cosmic rays during their trip.^[59] However, only twenty-four astronauts left earth orbit. At least thirty-nine former astronauts have developed cataracts. Thirty-six of*

those were involved in high-radiation missions such as the Apollo lunar missions. [60]

2. Film in the cameras would have been fogged by this radiation.

- *The film was kept in metal containers that prevented radiation from fogging the film's emulsion.* [12], pp. 162–163 *In addition, film carried by unmanned lunar probes such as the Lunar Orbiter and Luna 3 (which used on-board film development processes) was not fogged.*

3. The Moon's surface during the daytime is so hot that camera film would have melted.

- *There is no atmosphere to efficiently couple lunar surface heat to devices such as cameras not in direct contact with it. In a vacuum, only radiation remains as a heat transfer mechanism. The physics of radiative heat transfer are thoroughly understood, and the proper use of passive optical coatings and paints was adequate to control the temperature of the film within the cameras; lunar module temperatures were controlled with similar coatings that gave it its gold color. Also, while the Moon's surface does get very hot at lunar noon, every Apollo landing was made shortly after lunar sunrise at the landing site. During the longer stays, the astronauts did notice increased cooling loads on their spacesuits as the sun continued to rise and the surface temperature increased, but the effect was easily countered by the passive and active cooling systems.* [12], pp. 165–67 *The film was not in direct sunlight, so it wasn't overheated.* [61]
- *Note: all of the lunar landings occurred during the lunar daytime. The Moon's day is approximately 29½ days long, and as a consequence a single lunar day (dawn to dusk) lasts nearly fifteen days. As such there was no sunrise or sunset whilst the astronauts were on the surface. Most lunar missions occurred during the first few earth days of the lunar day.*

4. The Apollo 16 crew should not have survived a big solar flare firing out when they were on their way to the Moon. "They should have been fried."

- *No large solar flare occurred during the flight of Apollo 16. There were large solar flares in August 1972, after Apollo 16 returned to Earth and before the flight of Apollo 17.* [62][63]

Transmissions

Challenges and responses

1. The lack of a more than two-second delay in two-way communications at a distance of a 250,000 miles (400,000 km).

- *The round trip light travel time of more than two seconds is apparent in all the real-time recordings of the lunar audio, but this does not always appear as expected. There may also be some documentary films where the delay has been edited out. Principal motivations for editing the audio would likely come in response to time constraints or in the interest of clarity.* [64]



The relative sizes of, and distance between, Earth and Moon, to scale.

2. Typical delays in communication were on the order of half a second.

- *Claims that the delays were only on the order of half a second are unsubstantiated by an examination of the actual recordings. It should also be borne in mind that there should not be a straightforward, consistent time delay between every response, as the conversation is being recorded at one end - Mission Control. Responses from Mission Control could be heard*

without any delay, as the recording is being made at the same time that Houston receives the transmission from the moon.

3. The Parkes Observatory in Australia was billed to the world for weeks as the site that would be relaying communications from the Moon, then five hours before transmission they were told to stand down.

- *The timing of the first Moonwalk was moved up after landing. In fact, delays in getting the Moonwalk started meant that Parkes did cover almost the entire Apollo 11 Moonwalk.*^[65]

4. Parkes supposedly provided the clearest video feed from the Moon, but Australian media and all other known sources ran a live feed from the United States.

- *While that was the original plan, and, according to some sources, the official policy, the Australian Broadcasting Commission (ABC) did take the transmission direct from the Parkes and Honeysuckle Creek radio telescopes. These were converted to NTSC television at Paddington, in Sydney. This meant that Australian viewers saw the Moonwalk several seconds before the rest of the world.*^[66] *See also The Parkes Observatory's Support of the Apollo 11 Mission (<http://www.parkes.atnf.csiro.au/apollo11/>), from "Publications of the Astronomical Society of Australia" (The events surrounding the Parkes Observatory's role in relaying the live television of man's first steps on the Moon were portrayed in a slightly fictionalized 2000 Australian film comedy *The Dish*.)*

5. Better signal was supposedly received at Parkes Observatory when the Moon was on the opposite side of the planet.

- *This is not supported by the detailed evidence and logs from the missions.*^[67]

Mechanical issues

Challenges and responses

1. No blast crater or any sign of dust scatter as was seen in the 16mm movies of each landing ^{[3], p. 75}.

- *No crater should be expected. The Descent Propulsion System was throttled very far down during the final stages of landing. The Lunar Module was no longer rapidly decelerating, so the descent engine only had to support the module's own weight, which by then was greatly diminished by the near exhaustion of the descent propellants, and the Moon's lower gravity. At the time of landing, the engine's thrust divided by the cross-sectional area of the engine bell is only about 10 kilopascals (1.5 PSI)^{[12], p. 164}, and that is reduced by the fact that the engine was in a vacuum, causing the exhaust to spread out. (By contrast, the thrust of the first stage of the Saturn V was 3.2 MPa (459 PSI), over the area of the engine bell.) Rocket exhaust gases expand much more rapidly after leaving the engine nozzle in a vacuum than in an atmosphere. The effect of an atmosphere on rocket plumes can be easily seen in launches from Earth; as the rocket rises through the thinning atmosphere, the exhaust plumes broaden very noticeably. Rocket engines designed for vacuum operation have longer bells than those designed for use at the Earth's surface, but they still cannot prevent this spreading. The Lunar Module's exhaust gases therefore expanded rapidly well beyond the landing site. Even if they hadn't, a simple calculation will show that the pressure at the end of the descent engine bell was much too low to carve out a crater. However, the descent engines **did** scatter a considerable amount of very fine surface dust as seen in 16mm movies of each landing, and as Neil Armstrong said as the landing neared ("...kicking up some dust..."). This significantly impaired visibility in the final stages of landing, and many mission commanders commented on it. Photographs do show slightly disturbed dust beneath the descent engine. And finally, the landers were generally moving horizontally as well as vertically until right before landing, so the exhaust would not be focused on any one surface spot for very long, and the compactness of the lunar soil below*

a thin surface layer of dust also make it virtually impossible for the descent engine to blast out a "crater".^[12], pp. 163–165

2. The launch rocket (Lunar Module ascent stage) produced no visible flame.

- *Hydrazine (a fuel) and dinitrogen tetroxide (an oxidizer) were the Lunar Module propellants, chosen for their reliability; they ignite hypergolically –upon contact– without a spark. Hypergolic propellants happen to produce a nearly transparent exhaust. Hypergolic fuels are also used by several space launchers: the core of the American Titan, the Russian Proton, the European Ariane 1 through 4 and the Chinese Long March, and the transparency of their plumes is apparent in many launch photos. The plumes of rocket engines fired in a vacuum spread out very rapidly as they leave the engine nozzle (see above), further reducing their visibility. Finally, most rocket engines use a "rich" mixture to lengthen their lifetimes. While the excess fuel will burn when it contacts atmospheric oxygen, this cannot happen in a vacuum.*

3. The rocks brought back from the Moon are identical to rocks collected by scientific expeditions to Antarctica.

- *Chemical analysis of the rocks confirms a different oxygen isotopic composition and a surprising lack of volatile elements. There are only a few 'identical' rocks, and those few fell as meteorites after being ejected from the Moon during impact cratering events. The total quantity of these 'lunar meteorites' is small compared to the more than 840 lb (380 kg) of lunar samples returned by Apollo. Also the Apollo lunar soil samples chemically matched the Russian Luna space probe's lunar soil samples. In addition, unlike the Antarctic lunites, the rocks recovered from the moon do not exhibit the effects of atmospheric friction.*

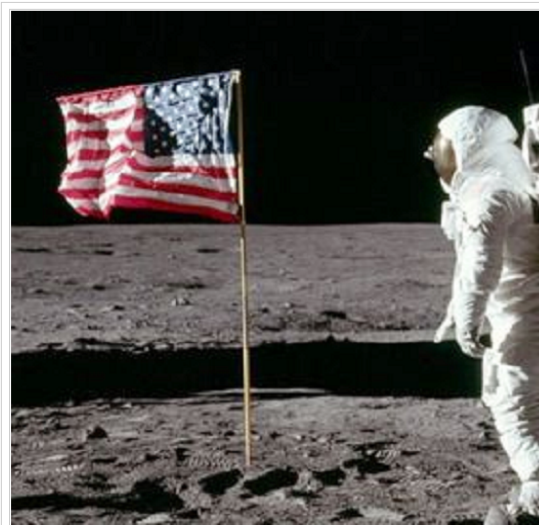
4. The presence of deep dust around the module; given the blast from the landing engine, this should not be present.

- *The dust around the module is called regolith and is created by ejecta from asteroid and meteoroid impacts. This dust was several inches thick at the Apollo 11 landing site. The regolith was estimated to be several meters thick and is highly compacted with depth. In an atmosphere, we would expect a rocket engine to blast all the surface dust off the ground for tens of meters. However, dust was only removed from the area directly beneath the Apollo landing engine. The important observation here is "atmosphere". Powerful engines set up turbulence in air which lifts and carries dust readily, far beyond the engine itself. However, in a vacuum, there is no air to disturb. Only the actual engine exhaust's direct pressure on the dust can move it.*^[12], pp. 163–165

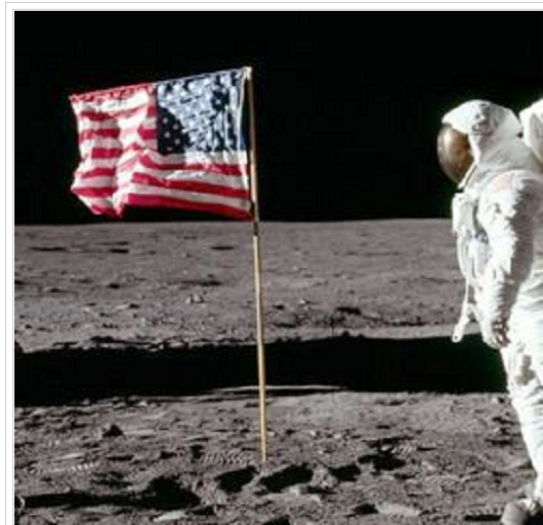
5. The flag placed on the surface by the astronauts flapped despite there being no wind on the Moon^[68]. Sibrel said "The wind was probably caused by intense air-conditioning used to cool the astronauts in their lightened, un-circulated space suits. The cooling systems in the backpacks would have been removed to lighten the load not designed for Earth's six times heavier gravity, otherwise they might have fallen over".

- *The astronauts were moving the flag into position, causing motion. Since there is no air on the Moon to provide friction, these movements caused a long-lasting undulating movement seen in the flag. There was a rod extending from the top of the flagpole to hold the flag out for proper display (visible under the fabric in many photographs). The fabric's rippled appearance was due to its having been folded during flight and gave it an appearance which could be mistaken for motion in a still photograph. The top supporting rod of the flag was telescopic and the crew of Apollo 11 found they could not fully extend it. Later crews did not fully extend this rod because they liked how it made the flag appear. A viewing of the videotape made during the Moonwalk shows that shortly after the astronauts remove their hands from the flag/flagpole, it stops moving and remains motionless. At one point the flag is in view for well over thirty minutes and it remains completely motionless throughout that period (and all similar periods).*

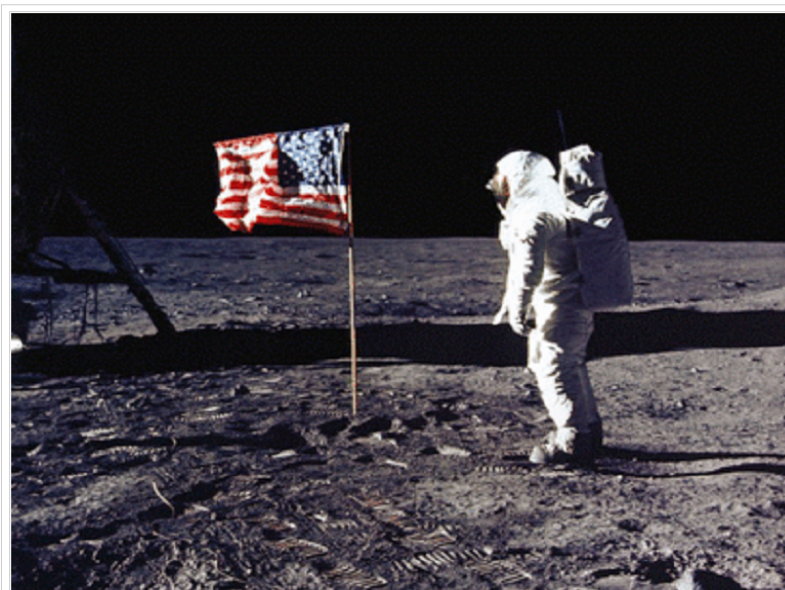
(See inertia.) See the photographs below.



Cropped photo of Buzz Aldrin saluting the flag (Note the fingers of Aldrin's right hand can be seen behind his helmet).



Cropped photo taken a few seconds later, Buzz Aldrin's hand is down, head turned toward the camera, the flag is unchanged.



Animation of the two photos, showing that the flag is not waving.

The flag is not waving, but is swinging as a pendulum after being touched by the astronauts here (<http://www.youtube.com/watch?v=n1UEv2PIzI4>).

6. The Lander weighed 17 tons and sat on top of the sand making no impression but directly next to it footprints can be seen in the sand.

- *The lander weighed less than three tons on the Moon. The astronauts were much lighter than the lander, but the area of their boots was also much smaller than that of the lander's pads. Pressure, or force per unit area, rather than force, determines the depth of compression of the soil. An example would be driving a car (heavy) on sand, then getting a person (light) to walk on the same surface. You will often find the depth of tracks to be about the same.*

7. The air conditioning units that were part of the astronauts' spacesuits could not have worked in an environment of no atmosphere. There is no way to dissipate heat without being able to transmit energy through an atmosphere.

- *(This is simply wrong. While heat convection, as proposed here, would require an atmosphere, thermal radiation would not. The latter process is how heat from the sun can reach the Earth through the vacuum of space. However, in this case, thermal radiation was not relied upon.) In the case of Apollo, the space suits had no air conditioning units; instead, one of the many layers was the LCG (Liquid Cooling Garment), essentially a pair of long-johns embedded with a network of thin plastic tubes. The excess heat was picked up by water circulating through the tubes. The water was pumped into the backpack, where it was cooled by means of a heat exchanger, then pumped back into the circuit (closed-loop system). The water-based heat exchanger comprised an open-circuit system, its warmed feedwater being expelled in the vacuum through a sublimator unit in the backpack. There was a 12-pound feedwater reserve, which provided some eight hours worth of cooling. Thus, excess heat was removed from the spacesuits by transferring that heat to water, and then removing that heated water. Radiative cooling, although allowing for a much simpler system, is a process too slow to be of any practical use in a spacesuit. Radioisotope thermoelectric generators, for example, use radiative cooling because the volume constraints (required for the large heat-radiating fins) are not as tight as those for a spacesuit.*

8. Although Apollo 11 had made an almost embarrassingly imprecise landing well outside the designated target area, Apollo 12 succeeded, on November 19, 1969, in making a pin-point landing, within walking distance (less than 200 meters) of the *Surveyor 3* probe, which had landed on the Moon in April 1967. Hoax proponents consider the incredible short distance to the Surveyor probe to be a concession due to the limitations of a concealed set on Earth.

- *The Apollo 11 landing was not 'embarrassingly imprecise'. Armstrong took manual control of the lander and directed it further down range when it was noted that the intended landing site was strewn with boulders. (This same boulder field was later visited by the astronauts for scientific examination.) Apollo 14 landed even closer to the planned landing site.*
- *The Apollo astronauts were highly skilled pilots, and the LEM was a manoeuvrable craft that could be accurately flown to a specific landing point. During the powered descent phase the astronauts used the PNGS (Primary Navigation Guidance System) and LPD (Landing Point Designator) to predict where the LEM was going to land, and then they would manually pilot the LEM to a selected point with great accuracy.*

Moon rocks

The Apollo Program collected a total of 382 kilograms of Moon rocks during the Apollo 11, 12, 14, 15, 16, and 17 missions. Analyses by scientists worldwide all agree that these rocks came from the Moon—no published accounts in peer-reviewed scientific journals are known that dispute this claim. The Apollo samples are easily distinguishable from both meteorites and terrestrial rocks^[69] in that they show a complete lack of hydrous alteration products, they show evidence for having been subjected to impact events on an airless body, and they have unique geochemical characteristics. Furthermore, most are significantly older than the oldest rocks found on Earth (by up to 700,000,000 years). Most importantly, though, they share the same characteristics as the Soviet lunar samples that were obtained at a later date.^[70]

Hoax proponents argue that Wernher von Braun's trip to Antarctica in 1967 (two years prior to the Apollo missions) was in order to study and/or collect lunar meteorites to be used as fake Moon rocks. Because von Braun was a former SS officer,^[71] hoax proponents have suggested^[29] that he could have been susceptible to pressure to agree to the conspiracy in order to protect himself from recriminations over the past. Whilst NASA does not provide much information about why the MSFC Director and three others were in Antarctica at that time, it has said that the purpose was "to look into environmental and logistic factors that might relate to the planning of future space missions, and hardware".^[72] An article on Sankar Chatterjee at Texas Tech University states that von Braun sent a letter to F. Alton Wade, Chatterjee's predecessor, and that "Von Braun was searching for a secretive locale to help train the United States' earliest astronauts. Wade pointed von Braun to Antarctica." Even today, NASA continues to send teams to work in parts of Antarctica that are very dry and mimic the conditions on other planets such as Mars and the Moon.

It is now accepted by the scientific community that rocks have been ejected from both the Martian and lunar surface during impact events, and that some of these have landed on the Earth in the form of Martian and lunar meteorites.^{[73][74]} However, the first antarctic lunar meteorite was collected in 1979, and its lunar origin was not recognized until 1982.^[75] If scientists did not already possess lunar samples to compare with, it would be difficult to conclusively prove that these meteorites were in fact derived from the Moon . Furthermore, lunar meteorites are so rare that it is very improbable that they could account for the 382 kilograms of Moon rocks that NASA obtained between 1969 and 1972. Currently, there are only about 30 kilograms of lunar meteorites in existence, even though private collectors and governmental agencies worldwide have been searching for these for more than 20 years.^[75]

Even if the Apollo Moon rocks were collected from the lunar surface, some hoax proponents argue that they were collected robotically. However, the large combined mass of the Apollo samples makes this scenario implausible. While the Apollo missions obtained 382 kilograms of Moon rocks, the soviet Luna 16, 20, and 24 robotic sample return missions only obtained 326 grams combined (that is, more than 1000 times less). Indeed, current plans for a Martian sample return would only obtain about 500 grams of soil,^[76] and a recently proposed South Pole-Aitken basin sample return mission would only obtain about 1 kilogram of Moon rock.^[77] If a similar technology to collect the Apollo Moon rocks was used as with the Soviet missions or modern sample return proposals, then between 300 and 2000 robotic sample return missions would be required to obtain the current mass of Moon rocks that is curated by NASA.

Concerning the composition of the Moon rocks, Kaysing asked:

Why was there no mention of gold, silver, diamonds, or other precious metals on the Moon? It was never discussed by the press or astronauts.^[3], p. 8

Geologists realize that gold and silver deposits on Earth are the result of the action of hydrothermal fluids concentrating the precious metals into veins of ore. Since even in 1969 water was known to be absent on the Moon, no geologist would bother discussing the possibility of finding these on the Moon in any significant quantity.

Deaths of key Apollo personnel

In a television program about the hoax allegations, Fox Entertainment Group listed the deaths of ten astronauts and of two civilians related to the manned spaceflight program as having possibly been killed as part of a cover-up.

- Ted Freeman (T-38 crash, 1964)
- Elliott See and Charlie Bassett (T-38 accident, 1966)
- Virgil Ivan "Gus" Grissom (Apollo 1 fire, January 1967). His son, Scott Grissom said the accident was a murder.^[78] Bill Kaysing also makes this claim^[3], p. 41 .
- Ed White (Apollo 1 fire, January 1967)
- Roger Chaffee (Apollo 1 fire, January 1967)
- Ed Givens (car accident, 1967)
- C. C. Williams (T-38 accident, October 1967)
- X-15 pilot Mike Adams (the only X-15 pilot killed during the X-15 flight test program in November 1967 - not a NASA astronaut, but had flown X-15 above 50 miles).
- Robert Lawrence, scheduled to be an Air Force Manned Orbiting Laboratory pilot who died in a jet crash in December 1967, shortly after reporting for duty to that (later canceled) program.
- NASA worker Thomas Baron (automobile collision with train, 1967 shortly after making accusations before Congress about the cause of the Apollo 1 fire, after which he was fired.) Ruled as suicide. Baron was a quality control inspector who wrote a report critical of the Apollo program and was an outspoken critic after the Apollo 1 fire. Baron and his family were killed as their car was struck by a train at a train crossing.^{[78][79]}
- Lee Gelvani said he almost convinced James Irwin, an Apollo 15 astronaut whom Gelvani referred to as an "informant", to confess about a cover-up having occurred. Irwin was supposedly going to contact

Gelvani about it; however he died of a heart attack in 1991, before any such telephone call occurred.

All but one of the astronaut deaths (Irwin's) were directly related to their job with NASA or the Air Force. Two of the astronauts, Mike Adams and Robert Lawrence, had no connection with the civilian manned space program. Astronaut James Irwin had suffered several heart attacks in the years prior to his death. There is no independent confirmation of Gelvani's claim that Irwin was about to come forward. All but one of the deaths occurred at least one or two years *before* Apollo 11 and the subsequent flights.

Contemporary with the deaths of the Apollo-related astronauts, other astronauts and cosmonauts died without having had a connection to Apollo.^[80]

- Grigori Nelyubov — February 18, 1966 (Soviet cosmonaut)
- Joseph Walker — F-104 crash June 8, 1966 (X-15 program)
- Vladimir Komarov — Soyuz 1, April 24, 1967
- Russell L. Rogers — F-105 crash September 13, 1967 (Dyna Soar program)
- Mike Adams — X-15 crash November 15, 1967
- Robert Lawrence — F-104 crash December 8, 1967 (Manned Orbiting Laboratory program)
- Yuri Gagarin — MiG 15 crash March 27, 1968
- Pavel Belyayev — January 10, 1970 (Soviet cosmonaut)
- James M. Taylor — T-38 crash September 4, 1970 (MOL program)
- Georgi Dobrovolski — Soyuz 11 June 29, 1971
- Vladislav Volkov — Soyuz 11
- Viktor Patsayev — Soyuz 11

Gravity on the Moon

The hoax investigation site xenophilia.com claims that versions of the *Encyclopædia Britannica* from the 1960s (pre-Apollo missions) have the neutral point between the Earth and the Moon 20,520 miles from the Moon. "In theory," the site claims, "a Moon with 1/6 Earth's gravity should have a Neutral Point between 22,078 and 25,193 miles from the Moon's surface. Yet after the Apollo missions, *Time* magazine July 25, 1969 said 'At a point of 43,495 miles from the Moon, lunar gravity exerted a force equal to the gravity of the Earth, then some 200,000 miles distant.'" The site claims that the 1973 *Encyclopædia Britannica* gave a new neutral point distance of 39,000 miles.^[81]

- *The surface gravity of an astronomical body such as the Moon is not directly related to the position of the neutral point between it and the planet it orbits. The neutral point between the Earth and Moon depends on the mass of the Earth, the mass of the Moon, and the current distance between them—which varies between the apogee of 405,500 km and perigee of 363,300 km, due to the Moon's orbital eccentricity of 0.055. In contrast, the surface gravity of the Moon depends only on the gravitational constant, the mass of the Moon, and the radius of the Moon (see the equation at surface gravity, and see Moon for the mass and radius of the Moon). The surface gravity does not depend on the distance to Earth or the Earth's mass, so the "neutral point" and "sphere of influence" are irrelevant to the Moon's surface gravity. The Moon's surface gravity is very close to one-sixth that of Earth's.*^[82]
- *Spacecraft from several nations have traveled to or past the Moon,^{[83][84][85]} so unless all their space programs are part of the conspiracy, at least one should have indicated by now if the mass of the Moon was incorrect. Similarly, if lunar gravity was four times as high as generally believed, it would be demonstrable on Earth in unexpectedly large tidal action, the Moon's orbital characteristics, and the Earth's wobble. The Surveyor program Moon landers had an engine thrust of 150 pounds and their landing weight was approximately 660 pounds on Earth. Five of these spacecraft soft-landed on the Moon in 1966-68. If the Moon's surface gravity was much larger than one-sixth that Earth's, the spacecraft would not be able to soft-land on the Moon.*
- *The website appears to be confusing the Moon's sphere of influence and the point at which the Moon's gravitation and Earth's are equal. NASA were concerned with the Moon's sphere of*

influence, which starts around 40,000 miles from the Moon, and marks the point where the Moon's gravity has more influence on the spacecraft's trajectory than the Earth's. The 'Apollo 16 Flight Journal'^[86] comments on this: "we're scheduled to cross that mythical line known as the lunar Sphere of Influence, the point of which we begin calculating the increasing of the lunar gravity on the spacecraft. Our displays here in Mission Control shortly after that point are generally switched over to Moon reference from Earth reference. The velocities that we have been watching decrease steadily up to now, will then begin to increase as the spacecraft is accelerated toward the Moon.." *The point where the lunar gravity and Earth's gravity are equal is around 25,000 miles, so there's no discrepancy to explain: they appear to be measuring different things.*

- *The site fails to note that the flight paths of the Apollo crafts were curved, not straight-line, so the neutral point within their flight paths would be significantly larger than the straight-line neutral point range of 22,000-25,000 miles (for illustration, see the bands of gravitational influence in the diagram accompanying Lagrangian point). The 'Time' article's statement would then be equally as true as the early 1960s 'Britannica'. The statement that the 1973 'Britannica' reported a different figure is currently unverified. The 1966 edition of The World Book Encyclopedia (volume 13, page 650) gives the Moon's surface gravity as one-sixth that of Earth's.*

Involvement of the Soviet Union

A primary reason for the race to the Moon was the Cold War. The Soviets, with their own competing Moon program and a formidable scientific community able to analyze NASA data, could be expected to have cried foul if the USA tried to fake a Moon landing^[12], p. 173, especially as they themselves had been unsuccessful in their own man-on-the-Moon program. They would have scored enormous status in the eyes of the rest of the world by doing so.

For more on conspiracy theories within the Soviet space program, see Soviet space program conspiracy accusations.

Bart Sibrel said, in response, that "the Soviets did not have the capability to track deep spacecraft until late in 1972, immediately after which, the last three Apollo missions were abruptly canceled."^[87]

- *However, the Soviet Union had been sending unmanned spacecraft to the Moon since 1959.^[88] and "during 1962, deep space tracking facilities were introduced at IP-15 in Ussuriisk and IP-16 in Evpatoria (Crimean Peninsula), while Saturn communication stations were added to IP-3, 4 and 14",^[89] the latter having a 100 million km range.^[90]*
- *Apollo 18 and Apollo 19 were cancelled on September 2, 1970, due to budget cuts by the US Congress.^[91] Apollo 20 had been canceled earlier on January 4, 1970.^[92] (See Canceled Apollo missions.)*

Individuals featured in the controversy

Major hoax proponents and proposals

- Bill Kaysing (1922-2005) an ex-employee of Rocketdyne,^[93] (the company which built the F-1 engines used on the Saturn V rocket). Kaysing was not technically qualified, and worked at Rocketdyne as a librarian. Kaysing's self published book, *We Never Went to the Moon: America's Thirty Billion Dollar Swindle*^{[3][12]}, p. 157, made many allegations, effectively beginning the discussion of the moon landings possibly being hoaxed. NASA, and others, have debunked the claims made in the book.
- Bart Sibrel, a filmmaker and self proclaimed investigative journalist, created, *inter alia*, a film in 2001 called *A Funny Thing Happened on the Way to the Moon*, furthering the idea of a hoax. Again, the

arguments put forward therein have been debunked by numerous sources, including the video series *Lunar Legacy*,^[94] which disproves the documentary's primary argument that Earth was filmed through a round porthole window in the command module, while in low orbit.

- William Brian, an engineer self-published a book in 1982 called "*Moongate: Suppressed Findings of the U.S. Space Program*," in which he disputes the Moon's surface gravity. This claim has again been debunked by NASA and other parties.
- David Percy, TV producer and expert in audiovisual technologies and member of the Royal Photographic Society, is co-author, along with Mary Bennett of *Dark Moon: Apollo and the Whistle-Blowers* (ISBN 1-898541-10-8) and co-producer of *What Happened On the Moon?*. He is the main proponent of the "whistle-blower" accusation, arguing that the errors in the NASA photos in particular are so obvious that they are evidence that insiders are trying to 'blow the whistle' on the hoax by deliberately inserting errors that they know will be seen.^[95]
- Ralph Rene - An inventor and 'self taught' engineering buff. Author of *NASA Mooned America* (second edition OCLC 36317224 (<http://worldcat.org/oclc/36317224>)).
- Charles T. Hawkins - Author of *How America Faked the Moon Landings*,
- Philippe Lheureux - French author of *Moon Landings: Did NASA Lie?*, and *Lumières sur la Lune (Lights on the Moon): La NASA a t-elle menti!*.
- James M. Collier (d. 1998) - American journalist and author, producer of the video *Was It Only a Paper Moon?* in 1997.
- Jan Lundberg - A technician for Hasselblad, the company that developed and manufactured the cameras used by the astronauts.
- Jack White - American photo historian known for his attempt to prove forgery in photos related to the assassination of U.S. President John F. Kennedy.
- Marcus Allen (publisher) - British publisher of Nexus magazine said that photographs of the lander would not prove that the US put men on the Moon. "Getting to the Moon really isn't much of a problem - the Russians did that in 1959 - the big problem is getting people there."^[96]
- Aron Ranen - Directed *Did we go?* (co-produced with Benjamin Britton and selected for the 2000 "New Documentary Series" Museum of Modern Art, NYC, the 2000 Dallas Video Festival Awards and the 2001 Digital Video Underground Festival in San Francisco). *He received a Golden Cine Eagle and two fellowships from the National Endowment for Arts.*
- Clyde Lewis - Radio talk show host.^[97]
- Christopher Wunderlee - American novelist who wrote *The Loony*: a novella of epic proportions, a fictionalized account of faking the Apollo Missions in 2005.
- Dr. David Groves - Works for Quantech Image Processing and worked on some of the NASA photos. He said he can pinpoint the exact point at which the artificial light was used. Using the focal length of the camera's lens and an actual boot, he has calculated (using ray-tracing) that the artificial light source is between 24 and 36 cm to the right of the camera.^{[98][99]}
- Joe Rogan - tends to use it in his acts and when asked about it, brings up many facts to disprove the legality of the moon landing. On the radio station KROQ, found as well in one of their podcasts, he talks to fans calling in and to Kevin, Bean and Lisa May about the moon landing and how so much of the evidence is fake or tampered and cannot be trusted.

Large telescopes and the Moon hoax

Another component of the moon hoax theory is based on the argument that professional observatories and the Hubble Space Telescope should be able to take pictures of the lunar landing sites. The argument runs that if telescopes can "see to the edge of the universe" then they ought to be able to take pictures of the lunar landing sites. This implies that the world's major observatories (as well as the Hubble Program) are complicit in the moon landing hoax by refusing to take pictures of the landing sites.

To see the 1.2 meter long flag left on the Moon, an Earth-based telescope would have to be 200 meters wide, whereas the largest telescope on Earth is only about 10 meters across. The Hubble Space Telescope can only see objects on the Moon as small as 60 meters^[100] across.^[101]

People accused of involvement in the hoax

- Deke Slayton, NASA Chief Astronaut in 1968: Some hoax proponents (for example, the 'NASA Scam'^[102] website, and Clyde Lewis^[103]) say that Slayton was one of the primary leaders of the hoax. He visited the film set of *2001: A Space Odyssey*, in the UK, which he referred to as "NASA East".
- Michael J Tuttle: Some hoax proponents say that he took the job of producing fake photographs in 1994.^[104] Prior to the widespread availability of the internet, only a small subset of the photos currently in existence were seen. Some hoax proponents believe many of the photos were created in the mid 1990s as editing technology improved.
- Stanley Kubrick is accused of having produced much of the footage for Apollo 11 and 12.^[97] It has been claimed, without any evidence, that in early 1968 while *2001: A Space Odyssey* (which includes scenes taking place on the Moon) was in post-production, NASA secretly approached Kubrick to direct the first three Moon landings. In this scenario the launch and splashdown would be real but the spacecraft would have remained in Earth orbit while the fake footage was broadcast as "live" from the lunar journey. Kubrick did hire Frederick Ordway and Harry Lange, both of whom had worked for NASA and major aerospace contractors, to work with him on *2001*. Kubrick also used some 50mm f/0.7 lenses that were left over from a batch made by Zeiss for NASA. (However, Kubrick only acquired this lens for *Barry Lyndon* (1975). The lens was originally a still-photo lens and required modifications to be used for motion filming.)
- Douglas Trumbull, a visual effects designer on *2001: A Space Odyssey*, is accused of leading the special effects team for the faking of the Apollo 11 and 12 missions.^[97]

Other evidence and issues

NASA book commission and withdrawal

In 2002, NASA commissioned James Oberg \$15,000 to write a point-by-point rebuttal of the hoax claims, and, in the same year, canceled their commission in the face of protests by hoax skeptics that the book would dignify the accusations. Oberg said that he intends (funding allowing) to finish the project.^{[16][105]} In November 2002 Peter Jennings (ABC's World News Tonight anchor) said "[NASA] is going to spend a few thousand dollars trying to prove to some people that the United States did indeed land men on the Moon." Jennings said "[NASA] had been so rattled, [they] hired [somebody] to write a book refuting the conspiracy theorists."

Academic work

In 2004, Drs Martin Hendry and Ken Skeldon at Glasgow University were awarded a grant by the UK based Particle Physics and Astronomy Research Council to investigate 'Moon Hoax' proposals.^[106] In November of that same year, they gave a lecture at a Glasgow planetarium where the top ten lines of evidence advanced by hoax proponents were individually addressed and refuted.^[107]

Attempts to view the landing site

Leonard David published an article on space.com,^{[108][109]} on 27 April 2001 showing a picture taken by the Clementine mission which shows a diffuse dark spot at the location that NASA says is the Lunar Module Falcon. The evidence was noticed by Misha Kreslavsky, of the Department of Geological Sciences at Brown University, and Yuri Shkuratov of the Kharkov Astronomical Observatory in Ukraine.

The European Space Agency's modern Moon probe, the SMART-1 unmanned probe, sent back imagery to the ESA of the Apollo Moon landing sites, according to Bernard Foing, Chief Scientist of the ESA Science Program.^[110] Given SMART-1's initial high orbit, however, it may prove difficult to see artifacts, said Foing in an interview on the website "space.com". No photos have so far been released, according to the website.

The *Daily Telegraph* published a story in 2002 saying that European astronomers at the Very Large Telescope (VLT, the most powerful telescope in the world) would use the telescope to view the remains of the Apollo lunar landers. According to the article, Dr. Richard West said that his team would take "a high-resolution image of one of the Apollo landing sites". Marcus Allen, a Moon hoax believer, pointed out in the story that no images of hardware on the Moon would convince him that manned landings had taken place^[111] (Allen believes robot missions placed objects there). The article greatly overstates the power of the VLT (it can show details only as small as 130m at the distance of the Moon) and so it is not surprising that no images sharp enough to resolve the lander have been forthcoming.^[109] Such photos, if and when they become available, would be the first non-NASA produced images of the site at that definition.

The Hubble Space Telescope can resolve objects as small as 280 feet (86 meters) at the distance of the Moon; again, not good enough to settle this issue.

Alex R. Blackwell, of the University of Hawaii has pointed out that photos taken by Apollo astronauts^[109] are currently the best available images of the landing sites; they show shadows of the lander, but not the lander itself. NASA's Lunar Reconnaissance Orbiter (planned for 2008) is slated to produce better pictures as part of its mission.^[112]

Apollo hoax in popular culture and parody

In print

- President Clinton in his 2004 autobiography, *My Life*, states (on page 156): "Just a month before, Apollo 11 astronauts Buzz Aldrin and Neil Armstrong had left their colleague, Michael Collins, aboard spaceship Columbia and walked on the Moon, beating by five months President Kennedy's goal of putting a man on the Moon before the decade was out. The old carpenter asked me if I really believed it happened. I said sure, I saw it on television. He disagreed; he said that he didn't believe it for a minute, that 'them television fellers' could make things look real that weren't. Back then, I thought he was a crank. During my eight years in Washington, I saw some things on TV that made me wonder if he wasn't ahead of his time."
- Norman Mailer in 1969 wrote "The event (Apollo 11 Moonwalk) was so removed, however, so unreal, that no objective correlative existed to prove it had not been an event staged in a television studio—the greatest con of the century—and indeed a good mind, product of the iniquities, treacheries, gold, passions, invention, deception, and rich worldly stink of the Renaissance could hardly deny that the event if bogus was as great a creation in mass hoodwinking, deception, and legerdemain as the true ascent was in discipline and technology. Indeed, conceive of the genius of such a conspiracy. It would take criminals and confidence men mightier, more trustworthy and more resourceful than anything in this century or the ones before. Merely to conceive of such men was the surest way to know the event was not staged."
- *The Loony: a novella of epic proportions* (published in April 2005) by Christopher Wunderlee is a work of hysterical realism whose primary plot revolves around an astrophysicist's role in assisting NASA in faking the lunar landings. In the novel, the astrophysicist is hired by agents to assist a film crew in making footage "look" real. He is then embroiled in the coverup and is blackmailed to keep the secret.
- In the book *Great Lies To Tell Small Kids* by Andy Riley one of the lies is, "All the Moon landings were shot on a set on Mars".

On film

- The 1978 film *Capricorn One* portrayed a fictional NASA attempt to fake a landing on Mars.
- In 1971, there was a brief sequence in the James Bond movie *Diamonds Are Forever*, in which the action takes place in a "Moon" setting where astronauts were being trained.^[113] Agent 007 steals what appears to be a Moon buggy from the model set, and drives it off to escape from an enemy compound. This scene may have helped to spread the idea of the Moon landings being a hoax^[3], p. 62.

- In 2002, William Karel released a spoof documentary film, *Dark Side of the Moon*, 'exposing' how Stanley Kubrick was recruited to fake the Moon landings, and featured interviews with, among others, Kubrick's widow and a number of American statesmen including Henry Kissinger and Donald Rumsfeld. It was an elaborate joke: interviews and other footage were presented out of context and in some cases completely staged, with actors playing interviewees who had never existed (and in many cases named after characters from Kubrick's films, just one of many clues included to reveal the joke to the alert viewer).^[114]
- In the 2004 film *Man on the Moon*, Richard Fortunato fictionally explores the links between Apollo 11, the Vietnam War, Richard Nixon, and a Russian spy in an effort to explain the staged moon landing
- In the 1992 movie *Sneakers*, the character "Mother", played by Dan Aykroyd, mentions "It's the same technology that NASA used to fake the Apollo Moon landings, so it shouldn't give us any trouble."
- In the movie *Looney Tunes: Back In Action*, as Bugs Bunny and Daffy Duck are in Area 52 they browse the videotape shelf, one of the videotapes searched read "Moon LANDING DRESS REHEARSAL".
- In the movie *RV*, singer JoJo's character commented that the RV camp they were staying overnight was "where NASA faked the Moon landings."
- In the outtakes/end credits for the film *Daddy Day Care*, the cameraman is struggling to focus the camera. Eddie Murphy then says, "This is why I know we didn't land on the moon."

On television

- A television drama called *The News-Benders*, the key plot device of which stipulated that all major technological advances since 1945 had been faked in some way, aired in January 1968; it postulated a "Moon landing" falsified with models. It was written by British writer Desmond Lowden.
- In an episode of Fox TV's *Family Guy*, a flashback shows the ending of filming the hoax, with Neil Armstrong walking out of the studio and a pedestrian seeing him. When the pedestrian asks why he is not in space, Neil Armstrong makes a feeble excuse about "solar winds" before killing the man. In the episode "If I'm Dyin', I'm Lyin'," Peter said that his "healing powers" were a fake, "like the Moon landings".
- In the *ITV1* sitcom *Believe Nothing* an Illuminati type council kills one of their members after stating "we faked the moon landing" but their caterers can't supply "a decent prune danish"
- In an episode of *Friends*, Joey asks Phoebe for a good lie, and she responds, "Okay, how about the whole 'man-landing-on-the-Moon' thing? I mean, you can see the strings, people!!"
- In an episode of *Newsradio*, Jimmy James pretends to fly a hot air balloon around the world, but this is actually a hoax being filmed in a television studio. When Lisa finds out about this and criticizes him, he says, "It's not like I was faking the Apollo Moon landings, now that was a big deal." Lisa says, "What?" Jimmy gets nervous and says, "Nothing, I gotta go."
- On the May 11, 1998 edition of the *Late Show With David Letterman*, actress Gillian Anderson read a Top Ten List entitled "Top Ten Things The Government Doesn't Want You To Know." Number three on the list was, "Due to a navigational error, Neil Armstrong actually landed in Wilmington, Delaware."
- In "Roswell That Ends Well", an episode of *Futurama*, when the crew is mysteriously flung back in time to 1947, President Truman requests that Zoidberg, an alien, be taken to Area 51 for study. When informed that Area 51 is the location for the faked Moon landing, he replies, "Then we'll have to really land on the Moon. Invent NASA and tell them to get off their fannies!"^[115]
- In an episode of *The PJs*, Thurston said that if people can fake a Moon landing, anything's possible.
- In an episode of *King of the Hill*, conspiracy theorist Dale Gribble suggests that the Super Bowl is pre-selected and is filmed in an unidentifiable location where they filmed the fake Moon landing, months before the game ever began. On another episode, Dale discovers that the government report on the Kennedy assassination made sense and said, "If the government was right about this then maybe we really did go to the moon."
- On the June 7, 2006 edition of *The Colbert Report*, host Stephen Colbert said "Tonight's guest is a pioneer in Mars exploration. Hopefully tonight he'll explain how they faked a space landing there too."
- On the July 27, 2006 episode of *The Colbert Report*, host Stephen Colbert said "And here's the Smithsonian Institute's Air and Space Museum, where you can see the original rocks from the

soundstage where they faked the Moon landing. It's a part of Hollywood history."

- On the August 1, 2007 edition of *The Colbert Report*, Stephen Colbert said, "Unless you've been on the moon this week, you know I broke my wrist. And if you have been on the moon, congratulations, you are the first!"
- In February 2007, Craig Ferguson commented that the Lisa Nowak scandal was the biggest thing to happen to NASA "since they faked that moon landing thing in the sixties."
- In a Washington Mutual commercial, the spokesperson is confronted by rival branch members in a parking garage. Comparing the rates of Washington Mutual to other known banks, one of them mentions that the moon landing was staged.
- In an episode of *The Whitest Kids U'Know*, Trevor Moore tells a group of young schoolchildren that the Moon landings were faked.

In video games

- The plot of Activision's 1998 computer game *Battlezone* is based largely on the idea that while the lunar landings did take place, both the United States and Soviet Union had already spent considerable time on the moon and were actively waging war against each other on the lunar surface using equipment based on alien technology and materials discovered there. In the game's universe, the Apollo landings were a hoax of a different kind, using only technology that had been admitted to the public, rather than the highly advanced and secret alien technology.
- In the 2005 first person shooter *Area 51*, one level is based on the idea that the lunar landing was faked. The room is filled with cameras, cranes, lunar vehicles, and recordings of radio transmissions, positioned in a way to portray a fake lunar terrain and a black wall in the back with a picture of the Earth in the distance.
- In *Grand Theft Auto: Vice City* a moon landing movie set can be found in the movie studio.

In music

- The REM song "Man on the Moon" implies that the Moon landings may have involved sleight of hand ("If you believe they put a Man on the Moon, if you believe there's nothing up my sleeve...").
- The Men From Earth (<http://www.menfromearth.co.uk>) song "I Faked the Moon Landing" tells an imaginary story of someone's deathbed confession to assisting with the hoax. Among the many references in the song to popular hoax accusations is the line "that wasn't Buzz next to the LEM / just a guy who looked like him."
- The group Looper have a song called "Dave the Moon Man" on their album *Up a Tree*. It features a character who does not believe in the Moon landings and repeats several of the major conspiracy arguments.
- The video for the Rammstein song "Amerika" depicts the band on a movie set wearing NASA suits and a theme of the video is the faking of the Moon landing.
- There is a song by metal band Margret Heater called "Apollo Conspiracy".
- Swedish hardcore punk band Refused recorded a song called "The Apollo Programme Was a Hoax" for their final full-length album, *The Shape of Punk to Come*.
- The Beta Band song "Eclipse" ends with a series of lines stating opinions such as "and the roads are not very clean" and "and the food we eat is not very healthy", after which another voice replies "okay, we're agreed on that." The final line is "and the moon is a big ball with nothing on it, but I don't think anyone's ever been there", to which the second voice replies "ok, so we're KIND of agreed to that."
- The Tullycraft song "Sent to the Moon" includes the phrase, "we watched it all with our folks...it was the world's biggest hoax", indicating a possible NASA conspiracy involving the Apollo moon landings.
- The song 'Fall Out' from the album *Six* by British band Mansun features the lyric, "Did Stanley Kubrick fake it with the moon?"
- The Solillaquists Of Sound song 'Mark It Place' includes the phrase *'I saw the American flag waving proudly on its own without a care, but it was on the moon and there's no wind out there'*.
- The Diamond Rio song "It's All in Your Head" includes the line "we never walked on the moon" as well as other conspiratorial references such as "Elvis ain't dead."

Other references

- A 2006 commercial for Red Bull features astronauts who, after drinking Red Bull, "gain a pair of wings" and are unable to actually set foot on the Moon. They are instructed by Houston to return to Earth so the scene can be shot in a studio instead.
- Former Major League Baseball player Carl Everett has said in interviews with Boston Globe columnist Dan Shaughnessy that he doubts the validity of the Moon landings. Shaughnessy would go on to nickname Everett "Jurassic Carl" due to Everett's assertion that dinosaurs never existed.
- Episode 45 of the webcomic Red vs. Blue involves the characters arguing about conspiracy theories, including "We never landed on the sun!"
- Two strips of the webcomic xkcd make reference to the Lunar Landing hoax - in one (<http://xkcd.com/202/>), the strip jokes about YouTube video comments, and, in the other (<http://xkcd.com/258/>), the character files a bug report with God for the belief in conspiracy theories.
- One strip of Wulffmorgenthaler features alien conspiracy theorists asserting that "the Earth landing has never happened".

See also

- Independent evidence for Apollo Moon landings
- Jim Lovell - was unsuccessfully sued by Kaysing for libel.
- Astronauts Gone Wild
- Apollo program missing tapes
- In the Shadow of the Moon

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- A Moon Landing? What Moon Landing? (<http://select.nytimes.com/gst/abstract.html?res=F20F12F739581B7493CAA81789D95F4D8685F9>), John Noble Wilford, *The New York Times*, December 18, 1969, p. 30.

Television specials

- *Conspiracy Theory: Did We Land on the Moon?* (2001) (TV) (<http://www.imdb.com/title/tt0277642/>) at the Internet Movie Database
- *Opération lune* (2002) (TV) (<http://www.imdb.com/title/tt0344160/>) at the Internet Movie Database

Google videos

FOX Special: Conspiracy Theory, Did We Land On The Moon?

- <http://video.google.ca/videoplay?docid=-1138935117048624484>
- NASA - Apollo 11 How did they do it?

- (<http://video.google.com/videoplay?docid=-4280164630927881599&q=apollo>) 8 Min
- What Happened on the Moon - 1 of 2
(<http://video.google.com/videoplay?docid=-7251089776146839385&q=What+Happened+on+the+Moon>) 2hr 11 min
- What Happened on the Moon - 2 of 2
(<http://video.google.com/videoplay?docid=8585273531105072202&q=What+Happened+on+the+Moon>) 1hr
- "FAKE MOON LANDING-Classified Apollo 11 NASA video-astronauts faking footage"
(<http://video.google.com/videoplay?docid=-73731341583788062&q=moonlanding+fake>) 54 min
(Teasingly labeled, as the video was not actually classified, and multiple sources have shown that there was no faking of footage)
- Lunar Legacy Episode 1 Part 1 - Did We Land on the Moon?
(<http://video.google.com/videoplay?docid=-7842415063514589093&q=Lunar+Legacy+moon+hoax>) 7 Min
- Lunar Legacy Episode 1 Part 2 - Did We Land on the Moon?
(<http://video.google.com/videoplay?docid=-4364381384927106980&q=Lunar+Legacy>) 4 Min
- Lunar Legacy Episode 1 Part 3 - Did We Land on the Moon?
(<http://video.google.com/videoplay?docid=5996460376061890432&q=fake+moon+landing>) 10 Min
- Lunar Legacy Episode 1 Part 4 - Did We Land on the Moon?
(<http://video.google.com/videoplay?docid=-7863535168659895949&q=apollo+conspiracy>) 11 Min
- Lunar Legacy Episode 1 Part 5 - Did We Land on the Moon?
(<http://video.google.com/videoplay?docid=-3690887192617958048&q=Lunar+Legacy>) 8 Min
- We Never Went to the Moon
(<http://video.google.com/videoplay?docid=-2886227591617986924&hl=en>) 9 Min

Hoax allegation links

- Conspiracy.co.uk (<http://www.conspiracy.co.uk/moonlandings.html>)
- Dark Side of the Moon Landing (<http://www.orwelltoday.com/moonhoaxdoc.shtml>)
- A group forum website* Can One man prove we went to the Moon in 1969?
(<http://www.moonhoax.com/>) Documentary by Aron Ranen
- Bart Sibrel is the producer of "Astronauts Gone Wild," (<http://moonmovie.com>) a documentary confronting nine Apollo astronauts with his accusations that the Moon landings were not authentic. Includes footage of the verbal assault on Mr. Aldrin and his physical assault on Mr. Sibrel. His other videos also try to prove the Moon landings were faked.
- Bill Kaysing (http://www.nardwuar.com/vs/bill_kaysing/)
- Ralph Rene (<http://rene-r.com>) is author of "NASA Mooned America," a popular book on the Moon hoax allegation.
- Moon Wide Web (<http://www.geocities.com/moonwideweb/>)
- Photo analysis by Jack White (<http://www.aulis.com/skeleton.html>)
- The Apollo Hoax (<http://www.ufos-aliens.co.uk/cosmicapollo.html>)
- The Apollo 11 Hoax Conspiracy (<http://www.geocities.com/apollo11conspiracy>) Evidence, motives and photos to argue that the landings were faked.
- Xenophilia - a relatively thorough examination of many of the hoax claims
(<http://www.xenophilia.com/zb0003.htm>)
- Crank Dot Net list of websites about Apollo (<http://www.crank.net/apollo.html>) mostly hoax supporters but may include some parodies and anti-hoax materials
- The moon was the Earth (<http://www.geschichteinchronologie.ch/atmosphaerenfahrt-index.html>) assorted websites from faked Gagarin to faked Apollo with absolute proofs, photos, showing impossibilities, showing competition reasons among the state systems, no conspiracy, but integral presentation

Hoax rebuttal links

- Lunar Legacy Episode 1, Part 5 (Did we land on the moon?)
(<http://www.youtube.com/watch?v=ExJofca4dFA>)

- The Bad Astronomy Web site (<http://www.badastronomy.com/bad/misc/apollohoax.html>) is run by NASA Gamma-ray Large Area Space Telescope (GLAST) astronomer Phil Plait
- *Who mourns for Apollo?* (<http://www.lunaranomalies.com/fake-moon.htm>) Richard C. Hoagland's Moon Hoax rebuttal page.
- Point by point rebuttal of hoax allegations (<http://www.redzero.demon.co.uk/moonhoax/>)
- Clavius website (<http://www.clavius.org/>) established to debunk the hoax arguments
- Lunar reflection analysis supporting the presence of retroreflectors (http://www.bga.com/~cfb/Using_Lunar_Retroreflectors.html)
- A rebuttal to one typical Moon landing hoax webpage (http://pirlwww.lpl.arizona.edu/~jscotti/NOT_faked)
- Humans Walked on the Moon (<http://hometown.aol.com/revenant1971/moonman.html>)
- Did We Land On the Moon? (<http://www.braeunig.us/space/hoax.htm>)
- Did we land? (different from above) (<http://www.thekeyboard.org.uk/Did%20we%20land%20on%20the%20Moon.htm>)
- Straight Dope (<http://www.straightdope.com/mailbag/mmoonhoax.html>)
- Snopes.com on fake footage (<http://www.snopes.com/inboxer/hoaxes/moontruth.asp>)
- Are Apollo Moon Photos Fake? (<http://www.iangoddard.net/moon01.htm>)
- HardyArt (<http://www.hardyart.demon.co.uk/pages-extra/moonhoax.html>)
- NASA Stooge (<http://www.nasastooge.org/>)
- The great Moon hoax (http://science.nasa.gov/headlines/y2001/ast23feb_2.htm?list129602) NASA about the rocks
- *Debunking The 'Debunkers' - Why the Apollo Moon Hoax is a Cheap, Cheesy Scam* (<http://www.business.uab.edu/cache/debunking.htm>)
- Article about how Apollo 11 astronauts put an array of mirrors pointing toward Earth on the Moon (<http://www.firstscience.com/site/articles/moon.asp>)
- Lunar Legacy (<http://www.geocities.com/wideflare/>) - A video series utilizing solid scientific data and video analysis to refute conspiracy claims.

Source material

- Soviet Moon Space Program: Zond 8 (http://www.mentallandscape.com/C_Zond08_01.jpg)
- The Project Apollo Archive (<http://www.apolloarchive.com>) – Collection of publicly released Apollo photography
- The Apollo Image Atlas (<http://www.lpi.usra.edu/research/apollo/>) at The Lunar and Planetary Institute (<http://www.lpi.usra.edu/>) – Thumbnails of images taken during the Apollo Saturn missions
- Description by ground station engineers at Honeysuckle Creek Tracking Station of receiving images from Apollo 11 from the Moon (http://www.honeysucklecreek.net/msfn_missions/Apollo_11_mission/hl_apollo11.html)
- Apollo Lunar Surface Journal (<http://www.hq.nasa.gov/alsj/frame.html>)
- Parkes radio telescope and Apollo 11 (<http://www.parkes.atnf.csiro.au/apollo11/introduction.html>)
- Video of Nixon talking to the Apollo 11 astronauts (http://www.atnf.csiro.au/people/spider/apollo11/mpegs/ap11_nixon.mpg)
- Aldrin hopping, television (<http://www.hq.nasa.gov/alsj/a11/a11.v1101315.mov>)
- Aldrin hopping, movie camera (<http://www.hq.nasa.gov/alsj/a11/a11f.1101315.mov>)
- Apollo 15 dropping a hammer and a feather (<http://www.hq.nasa.gov/office/pao/History/alsj/a15/a15v.1672206.mov>)
- Gagarin quote about seeing stars (<http://www.bbc.co.uk/science/space/exploration/missiontimeline/vostok1.shtml>)
- Seeing stars in space (<http://www.physlink.com/Education/AskExperts/ae323.cfm>)
- Flat Earth Society (<http://www.lhup.edu/%7Edsimanek/fe-scidi.htm>) (reprinted from 1980 *Science Digest* article)
- Telescopic Tracking of the Apollo Lunar Missions (<http://www.astr.ua.edu/keel/space/apollo.html>)
- Space debris (<http://www.eclipsetours.com/sat/debris.html>) shows photo of water dump from video screen
- Apollo 15 landing site (http://www.space.com/missionlaunches/missions/apollo15_touchdown_photos_010427.html)

- Apollo 11 Tapes (http://www.honeysucklecreek.net/Apollo_11/tapes/Search_for_SSTV_Tapes.pdf)
Search for original Apollo 11 EVA tapes, television details
- Technical drawings of Apollo capsule and Lunar Module (<http://www.hq.nasa.gov/office/pao/History/diagrams/apollo.html>)
- Locations of Apollo hardware (<http://aesp.nasa.okstate.edu/fieldguide/pages/aaindex/home1.html>)
- Chariots for Apollo: A History of Manned Lunar Spacecraft (<http://www.hq.nasa.gov/office/pao/History/SP-4205/contents.html>)
- An image from Soviet Moon Space Program: Luna 21 Horizon (http://www.mentallandscape.com/C_Luna21_Horz02.jpg)

Spoofs

- Parody with *The Clangers* (http://www.stuffucanuse.com/fake_moon_landings/moon_landings.htm)
- The Mad Revisionist (<http://www.revisionism.nl/Moon/The-Mad-Revisionist.htm>) - This web site says the Moon Landings are a hoax because the Moon does not exist.

Retrieved from "http://en.wikipedia.org/wiki/Apollo_Moon_Landing_hoax_accusations"

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