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The 1969 Moon Landing: The Great Leap Upward

Rather than the start of a heroic era of manned exploration of the cosmos, the moonshot turned out to be a brief, shining moment of American courage and competence.

By Edward Kosner
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Trying to recapture the moon landing 50 years ago this weekend is like mind-streaming a beloved old movie of that year, say "Butch Cassidy and the Sundance Kid." There are vivid glimpses—Neil Armstrong stepping down on the moon's powdery gray surface, Buzz Aldrin standing next to that wire-stiffened American flag—but the drama seems to be unreeling in another, elusive dimension.

That's not surprising. Fewer than a third of Americans living today are old enough to have watched the flickering black-and-white images of Armstrong and Mr. Aldrin on their bulky cathode-tube TVs. A 50-year span covers a lot of American history. It was roughly half a century from the end of Thomas Jefferson's presidency to the inauguration of Abraham Lincoln or from the start of the Civil War to the first shots of World War I.

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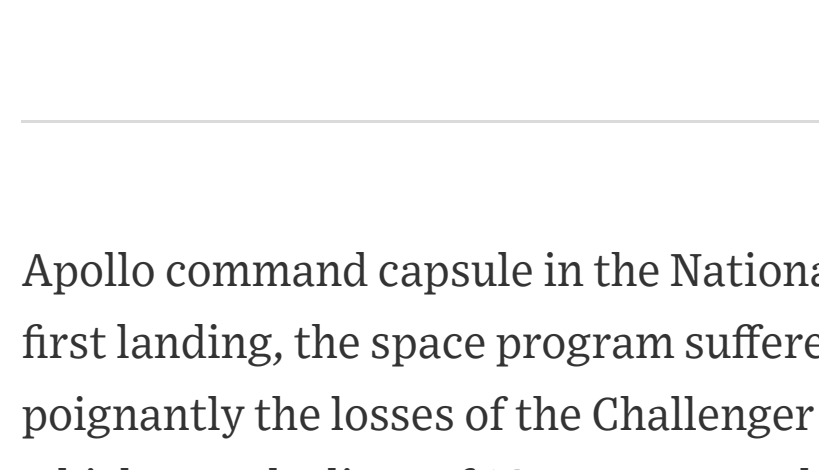


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Book Review: When the Moon Was a Mystery

In the immediate afterglow, the triumph of Apollo 11 mesmerized Americans and millions around the world. The explorers' club of Magellan, Columbus, Amundsen and the rest now welcomed Armstrong, Mr. Aldrin and Michael Collins, who orbited in the command capsule while they were on the surface. The moon landing ranks with the splitting of the atom, heart transplants, the discovery of DNA and the plotting of the genome as transcendent human achievements in science and technology. Yet today few remember much more than Armstrong proclaiming, "The Eagle has landed," and the slightly elided "One step for [a] man, one giant leap for mankind."

Rather than the start of a heroic era of manned exploration of the cosmos, the moonshot turned out to be a brief, shining moment of American courage and competence in the dark days of the Cold War, now itself as much a relic as the

Apollo command capsule in the National Air and Space Museum in Washington. After that first landing, the space program suffered a run of near-disasters and tragedies—most poignantly the losses of the Challenger space shuttle in 1986 and the Columbia in 2003, which cost the lives of 14 crewmen and -women. These days, what's left of the National Aeronautics and Space Administration has to thumb rides on Russian rockets to get its remaining astronauts to the International Space Station and back, and the exploration of our solar system is done by robotic probes.

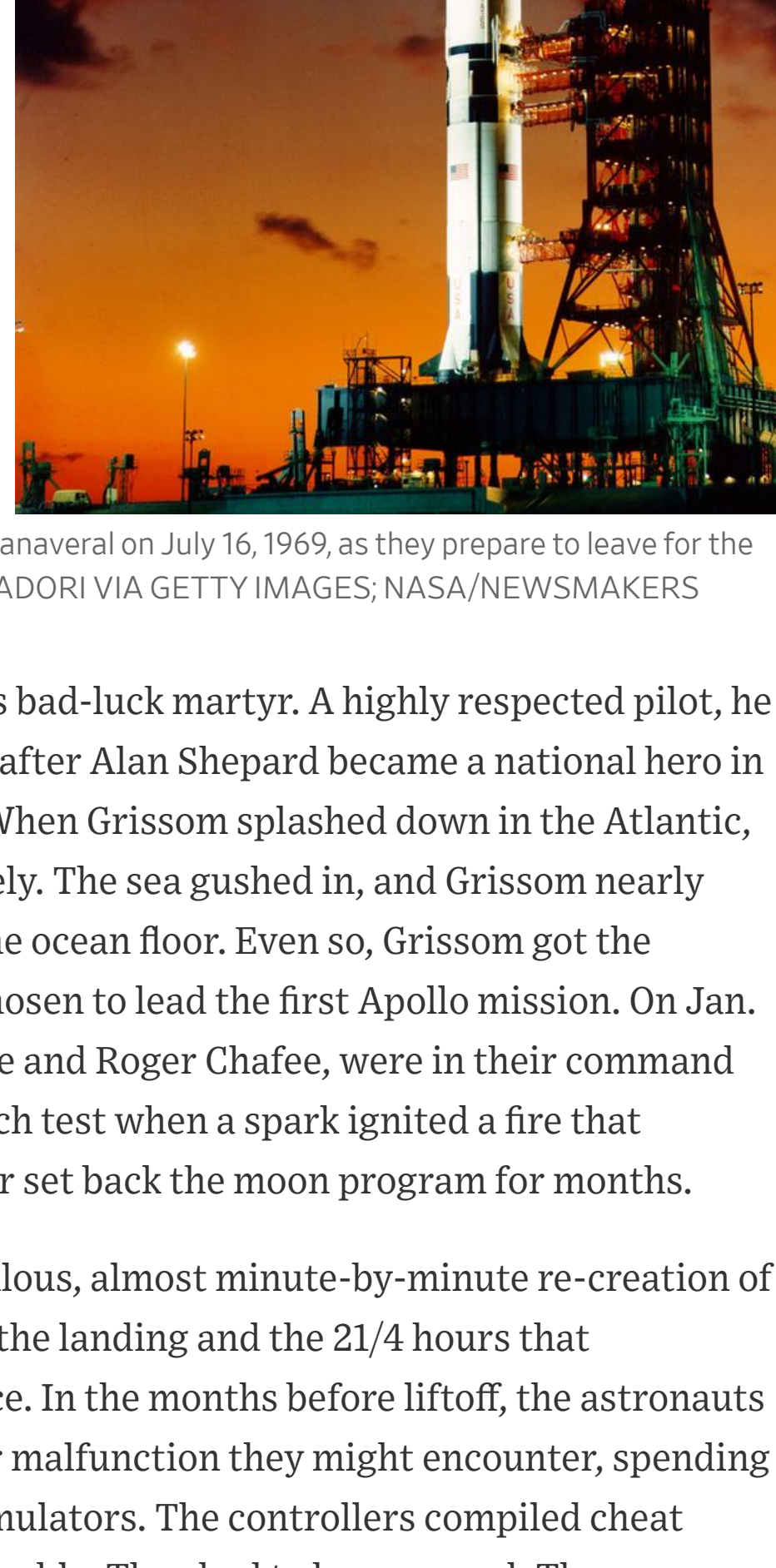
For all that, the voyage to the moon is an epic worth retelling with narrative skill, illuminating detail and analytic exactitude. For the golden anniversary of the great leap upward, writers have filled a small shelf with new books that, each in its own way, reanimate the saga and re-examine the issues—scientific, ideological, political, fiscal—raised by the most expensive and complex scientific experiment mankind has ever undertaken. The Apollo program, like the earlier Mercury and Gemini programs, was essentially an all-male, all-white enterprise—the kind of exploit that some cherish today as an exemplary Make America Great Again moment.

Was it? For one thing, a central player in the drama was a Nazi. On the morning of May 2, 1945, as Allied forces pressed deeper into Germany after Hitler's suicide, a young German tied a white handkerchief to the handlebars of his bicycle and pedaled down a mountain road near the German-Austrian border until he encountered a platoon of American troops. Pvt. Fred Schneikert pointed his M1 at the youth, who told him his brother and some colleagues wanted to surrender to the Americans. His older brother was Wernher von Braun, an SS officer, and Wernher's comrades were the scientists and technicians who had helped him develop the V-2 "Vengeance" rocket program that rained death on England, Belgium and France in the final days of the war. What's more, they had secreted tons of plans, blueprints and V-2 parts in nearby caves. Just before the Red Army flooded the zone, von Braun and his team, together with their stash were taken into American custody, their Nazi pasts magically erased, and soon put to work in Alabama on the Saturn rockets that a quarter-century later blasted Armstrong, Mr. Aldrin and Mr. Collins to the moon.

Early on in "Shoot for the Moon" (Little, Brown, 453 pages, \$30), James Donovan astutely tells the story of von Braun's surrender—the fortuitous and slightly inconvenient first chapter in the American space epic. Mr. Donovan's story is heavily focused on the missions. The Mercury and Gemini flights led to the Apollo series that were the first manned vehicles to orbit the moon. The Apollo missions also produced the iconic "Earthrise" photo of our exquisite blue marble seen from space, the triumphant Apollo 11 landing, and the "Houston-we-have-a-problem" voyage enshrined in the Tom Hanks movie "Apollo 13."

Mr. Donovan's account is chronological. He concentrates on the astronauts themselves and the flight directors and controllers back on Earth who faced nearly as much heart-clenching pressure as the fliers. The first classes of astronauts were hotshot test pilots and Korean War combat pilots. They were all under 35, shorter than 6 feet—the better to fit into the cramped space capsules—white, Christian, married. They all had IQs of at least 130, college degrees, and, in many cases, advanced degrees in aeronautics or engineering. To be accepted into the program, they had to undergo five days of medical and physical tests—including a proctological probe with what they called the "steel eel"—and an additional week of psychological and stress testing.

Without being prurient, Mr. Donovan slips behind the shiny curtain of astronaut perfection to portray the men as they really were. During training and in between missions, many loved a drink, fast cars—especially Corvettes leased for a dollar a year by a patriotic Chevy dealer—and space groupies. Deke Slayton, one of the Mercury Seven original astronauts, counseled his comrades to follow the "old test-pilot's creed" on freebies: "Anything you can eat, drink or screw within twenty-four hours is perfectly acceptable." Most of the astronauts went by the thick book of mission procedure, but there were a few free spirits. During Scott Carpenter's three-orbit Mercury flight in May 1962, he was so entranced by the view that the ground controllers thought he was delirious. "That son-of-a-bitch is never going to fly for me again," shouted the flight director, Christopher Columbus Kraft—and he never did.



Neil Armstrong, Michael Collins and Buzz Aldrin at Cape Canaveral on July 16, 1969, as they prepare to leave for the moon on the Apollo 11. PHOTOS: ANGELO COZZI/MONDADORI VIA GETTY IMAGES; NASA/NEWSMAKERS

Virgil "Gus" Grissom was the space program's bad-luck martyr. A highly respected pilot, he flew the unheralded second Mercury mission after Alan Shepard became a national hero in May 1961 with a 15-minute suborbital flight. When Grissom splashed down in the Atlantic, the hatch on his capsule blew open prematurely. The sea gushed in, and Grissom nearly drowned before rescue; the capsule sank to the ocean floor. Even so, Grissom nearly got the command of a later Gemini flight, then was chosen to lead the first Apollo mission. On Jan. 27, 1967, Grissom and his crewmates, Ed White and Roger Chaffee, were in their command module filled with pure oxygen for a pre-launch test when a spark ignited a fire that incinerated them within seconds. The disaster set back the moon program for months.

Mr. Donovan saves the best for last—a meticulous, almost minute-by-minute re-creation of Apollo 11's round trip to the moon, especially the landing and the 21/4 hours that Armstrong and Mr. Aldrin spent on the surface. In the months before liftoff, the astronauts had trained for every conceivable situation or malfunction they might encounter, spending 14 hours a day, six or seven days a week, in simulators. The controllers compiled cheat sheets to respond instantly to any signal of trouble. They had to be prepared. There were more than 5.5 million parts in the Saturn V rocket and the three-element spacecraft, and the mission plan had taken six years to prepare.

After all that, Apollo 11's flight went off nearly flawlessly. On the way to the moon, Mr. Collins put his spacecraft in "barbecue mode"—rotating slowly on its long axis to equalize the temperature between 280 degrees on the sunny side of the ship and -280 on the dark side. Exquisitely calibrated bursts of engine power—the burns—set the ship in moon orbit, then sent the lunar lander to the surface while Mr. Collins circled above. Armstrong had to search longer than planned for a landing site free of giant boulders and had perhaps 18 seconds of fuel left when the Eagle finally alighted.

On the way down, a "program alarm" repeatedly sounded and lit up on the lunar module's computer display. But the controllers recognized it as harmless and didn't have to issue the dreaded order to abort the landing. The next critical moment came after Armstrong and Mr. Aldrin were returning from their lunar excursion and fired up the Eagle's ascent rocket to dock with Columbia in orbit for the trip home. The ascent rocket had no backup. Had it failed, they would have been marooned on the moon and died in 24 hours when their oxygen ran out. But the rocket worked, and soon the crew was reunited for the three-day ride back. They splashed down in mid-Pacific just 13 miles from their prime recovery ship.

Charles Fishman's "One Giant Leap" (Simon & Schuster, 464 pages, \$29.99) has a broader canvas. Mr. Fishman is a veteran space reporter with a vibrant touch—nearly every sentence has a fact, an insight, a colorful quote or part of a piquant anecdote. What's more, he has pondered the meaning of the moon landing and arrived at a surprising and persuasive answer. He reintroduces all the major players—the at-once cynical and idealistic politicians, adept bureaucrats, nerdy scientists and "Right Stuff" astronauts.

Mr. Fishman agrees with John F. Kennedy's court historian, Arthur Schlesinger Jr., that the moon landing was the significant event of the 20th century. "In the chronicle of humanity," he writes, "the first missions by people from Earth to another planetary body are unlikely ever to be lost to history, to memory, or to storytelling." And what made it so astonishing is how hard it was. When JFK ordered the moon quest in 1961, he writes, "he was committing the nation to do something we couldn't do. We didn't have the tools, the equipment—we didn't have the rockets or the launchpads, the spacesuits or the computers or the zero-gravity food—to go to the Moon. . . . We didn't even know what we would need. . . . We didn't know what course to fly to get there from here. . . . We didn't know what we would find when we got there."

In eight years, all those questions were answered and problems overcome—by more than 400,000 people working directly or as suppliers for the program. At one point, space exploration was consuming 4.5% to 5.5% of the federal budget, with an eventual cost for the Apollo program of \$160 billion in today's money. It seemed like an enormous amount, but the latest annual budget for the Pentagon alone is more than five times as much.

Mr. Fishman is a connoisseur of fascinating detail, as well. The moon is an airless wasteland, but it turns out that moon dust, as Armstrong and Mr. Aldrin discovered in their lunar lander, has a distinct odor—like wet ashes or the residue of an exploded firecracker. The astronauts' spacesuits were made by Playtex, the brassiere manufacturers. They were hand-stitched by seamstresses, and their parachutes were sewn and hand-folded. A team of "little old ladies," as they were affectionately called, at Raytheon in Waltham, Mass., literally wove the wiring of the Apollo's first guidance and navigation computers. And the computers that got Armstrong, Mr. Aldrin and Mr. Collins to the moon and back, the author calculates, had two-millionths of 1% of the computing power of that smartphone you carry around today in your pocket or purse.

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Indeed, Mr. Fishman concludes, the real legacy of Apollo isn't so much in the heavens but here on Earth. "The race to the Moon," he writes, "didn't usher in the Space Age; it ushered in the Digital Age." Flying at 24,000 miles an hour, the astronauts needed real-time computing. That ultimately required integrated circuits—computer chips. At NASA's goading, semiconductor companies learned to mass-produce near-flawless chips for pennies apiece. NASA introduced "technology" into popular culture, and it now so permeates our daily lives that the miracle of personal and industrial computing is taken for granted.

The geopolitics of the space race can't really compete with the drama of the manned flights themselves, but without the politics there would have been no flights. It's fair to say that had JFK not been elected president in 1960 and assassinated in 1963, Americans might still be reaching for the moon. The popular historian Douglas Brinkley's "American Moonshot" (Harper, 548 pages, \$35) is all about Kennedy's realpolitik crusade to beat the Soviets to the moon not so much to pursue cosmic discovery but to assert free-enterprise superiority over communist Russia on Earth. Within a week's time in April 1961, the young new president had been confronted by the fiasco of the Bay of Pigs invasion of Castro's Cuba and Russian cosmonaut Yuri Gagarin's pioneering Earth-orbiting flight, one of many Soviet firsts, and felt he had to respond.

Kennedy wasn't all that captivated by space and never would be. But he turned the race with the Russians to the moon into a stirring metaphor for American "vigah" in the Cold War. His speech to a joint session of Congress in May 1961 set an end-of-the-decade deadline for an American moon landing, and the next year he stepped up the eloquence in his now-celebrated "We choose to go to the moon" stemwinder at Rice University. "His brazen moonshot call," writes Mr. Brinkley with undiluted admiration, "was among the most courageous statements and greatest gambles ever made by an American President."

Still, Lyndon Johnson had to leverage the shock and anguish of Kennedy's murder to revitalize support for the space program, which was hemorrhaging enthusiasm. JFK's gamble was redeemed, but it was his old political adversary, new President Richard Nixon, who got to make the congratulatory phone call patched into Armstrong and Mr. Aldrin's helmets as they stood on the moon. For an instant, the nation was distracted from a siege of assassinations, ghetto riots and anti-Vietnam War eruptions that make today's grim political polarization look like the Era of Good Feelings.

The last word, appropriately, should go to the man who watched over Armstrong and Mr. Aldrin from the Columbia command capsule, Michael Collins. His galvanizing "Carrying the Fire" (Farrar, Straus and Giroux, 478 pages, \$17), first published 45 years ago, has been reissued for the second time in a special 50th-anniversary edition. The newer books have their virtues, but Mr. Collins's literate and lively memoir remains the best written and only reported account of Apollo 11's triumph. It rescues the great moon adventure from the time warp into which it has all but disappeared.

—Mr. Kosner, the former editor of Newsweek, New York, Esquire and the New York Daily News, was a young Newsweek staffer in 1969.

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