First to the Moon

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Nearly 60 years after the US won the race to the Moon against the Soviet Union, the Moon is still the next great strategic frontier. The top contenders this time are the US and China. The first to the Moon will be able to claim lunar resources and the Moon's south pole, where secure and sunlit landing sites are coveted. The winner will also be able to set the norms of behaviour and governance between the Earth and Moon, determining access to lunar resources. Moon Bases, using the Moon as a launchpad for Mars, and mining resources, are some of the points of interest in the new Moon space race. The first to access the Moon will be able to police it, and most significantly, lunar satellites will be able to view and monitor geostationary

and low-earth orbit (LEO) satellite networks. The wealth the Moon offers is the object of the new space race.

Comparing American and Chinese Space Strategy

In a September 3rd hearing, Senator Ted Cruz warned of America's weak lead on China in the new space race to the Moon's surface. The current Artemis program, the development of the Gateway space station, and the maintenance of LEO operations were cited as essential for the US's part in the race. The US space industry, especially under the Trump administration's America First investment policy, is currently marked by budget uncertainty, delays, and faltering commitments. At stake are international alliances, where American partners and suppliers are likely to move to China's burgeoning lunar mission technologies.

NASA's space launch system (SLS) hardware for Artemis operations is already being produced. However, NASA is also crucially reliant on SpaceX's Starship and its Human Landing System to access the Moon's surface. America's space strategy is fragile due to its reliance on SpaceX for mission success. The resources needed to keep Starship operational are heavy for NASA to bear.

Gateway has also suffered a loss. Serving as the pitstop space station for Artemis in lunar orbit, it has often been subject to scrutiny and temporarily cancelled by President Trump's 2026 budget proposal. This orbital station is set to enable longer lunar stays, encourage investment, and cislunar monitoring, leading to more sustainable lunar exploration. Over 60% of Gateway is financed by international partners. If the programme were to be shut down, global investors are likely to seek out other actors. Today's budget cuts have largely affected science programs, defence missions, including OSIRIS-APEX, and Earth climate missions.

In December 2020, the US National Space Policy expected NASA to land the next Americans on the Moon by 2024 and maintain a continuous presence by 2028. Today, both goals have been eluded, with NASA's Artemis programme collecting delays.

The US-China rivalry for the Moon cannot be described simply in terms of American challenges. The rivalry has been catalysed by the US Congress prohibiting NASA from cooperating with its Chinese equivalent under the 2011 Wolf Amendment. China was hence excluded from the ISS programme due to American concerns of Chinese space programs' link to the People's Liberation Army. This led to China developing its own space station, Tiangong, thanks to state-owned space companies like China Manned Space Agency (CMSA).

One of China's advantages over the US is its consistency and uniformity in its lunar mission programme architecture. The Chinese Communist Party's (CCP) clarity of purpose poses an Earth-Moon grand strategy that is already

more robust than the US's. Indeed, the continual changes in the US administration have hindered NASA's progress.

However, the fast and expendable American Apollo programme heavily inspires China's space economic innovation model. The model is based on a single coherent lunar program, strengthened by a unified political structure. The People's Republic of China (PRC) has adopted policies placing economic development at the centre of spaceflight strategy. The rationale is not to be first to attain the Moon's surface, but the push to exploit space resources and jumpstart economic growth.

The lunar south pole not only provides near-constant sunlight, but it also offers the possibility of near-constant solar energy, with permanently shadowed areas offering coveted resources such as ice. Such ice deposits provide fuel and breathable oxygen, potentially offering the next step to a cislunar economy and to reaching Mars.

A mythologised narrative of the Moon is also inscribed within Chinese space strategy. Chang'e, a major goddess in Chinese mythology, shares her namesake with the Chinese Lunar Exploration Program. Access to the Moon and its resources is thus essential to Chinese culture and constitutes a promise written into its space policy. The China National Space Administration (CNSA) is developing the Mengzhou (梦舟, "dream vessel"), a crewed spacecraft designed for human lunar exploration, as well as the Lanyue lunar lander, meaning "embracing the Moon"; all programs echoing cultural and economic lunar expansion.

Ideally, the US national space strategy should unify civil, commercial, and defensive sectors, emulating the Chinese space strategy. A grand space strategy for the Earth-Moon system should encourage shared goals, opportunities, and capabilities. Something that is lacking in the US, but accelerating in China. For US policy-makers, getting to the Moon first does not stop at maintaining US hegemony in space, but stopping a potential future of global realignment toward China.

The Artemis programme – a strategic shift in American space exploration

The Artemis international programme is a key NASA exploration project whose primary goal is to return humans to the Moon permanently and establish long-term scientific and technological infrastructure there. The programme not only continues the legacy of the Apollo missions, but also represents a qualitative change in the approach to human presence beyond low Earth orbit. Artemis is part of the United States' long-term strategy to build a stable presence in space, taking into account scientific, economic and geopolitical objectives.

As part of the current Artemis programme structure, NASA is using several basic technologies: the SLS launch vehicle, the Orion spacecraft, ground systems, and, in the future, the world's most powerful rocket, Star-

ship/Super Heavy, from the private company SpaceX, and modules for the Gateway station, which will be placed in lunar orbit.

So far, one mission has been successfully completed – Artemis I (November 2022), in which the SLS rocket launched an unmanned Orion capsule into space. The spacecraft made two flybys of the Moon, approaching its surface at a distance of up to 130 kilometres, which is comparatively not far in space. Orion returned to Earth in December, and NASA began analysing the mission. As it later turned out, more than 100 locations were identified where the ablative material of the Orion heatshield had worn away during re-entry into the atmosphere in a way that scientists had not expected. The agency, together with private industry, set about repairing the faults ahead of the Artemis II mission.

According to NASA, the second mission of the programme will begin in the first quarter of 2025. This time, Orion will carry a crew of four: Christina Hammock Koch, Victor Glover, Reid Wiseman and Jeremy Hansen from Canada. The mission's goal is to fly around the Moon and test all the spacecraft's systems and the crew's behaviour. Artemis II will pave the way for a manned landing on the Moon as part of the Artemis III mission.

It is not about who gets there first, but who builds a comprehensive infrastructure

China plans to carry out the first moon landing in the country's history using a simpler method than the United States. The plan does not include sending a launch vehicle capable of transporting 100 tons or refuelling in Earth orbit. The conquest of the Moon will be carried out with the help of two Long March 10 launch vehicles, which will carry the Mengzhou spacecraft and the Lanyue lander, respectively. The systems will dock in the orbit of the Silver Globe, where astronauts will transfer from the spacecraft to the landing module. Although China does not share details about the technology it has developed, videos of tests of individual subsystems are available on social media. For example, in the summer of 2025, a lunar lander called Lanyue completed landing and takeoff tests in conditions simulating the Silver Globe. It is also worth noting that the YF-100K engines have already been tested twice (in September of 2025) in static tests. In the past, China has already conducted unmanned lunar missions from the Chang'e series, which have prepared scientists for various scenarios and allowed them to study the environment.

The descriptions clearly show that China and the United States have significantly different plans for landing on the Moon. Both countries are aiming for around 2030 (probably earlier) and the South Pole, where there are large deposits of water ice. It is also clear from the rhetoric of politicians that the issue of priority in landing is paramount, because being the first on the Moon is not only a matter of prestige, but also of real strategic, technological, and economic benefits. Although the American plan is complex, its

success would mean that the US and its allies would master new technologies and skills that could give them a significant advantage in building their own space power. This primarily refers to refuelling in orbit and the ability to deliver hundreds of tons of cargo to the surface of the Moon.

The real value of the second space race is not prestige, but demonstrating the ability to safely transport people, equipment, and resources to the surface. This will give an advantage in the race for control of raw materials (such as water ice, helium-3, and rare earth metals), as well as in establishing legal rules and standards for space exploration.

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