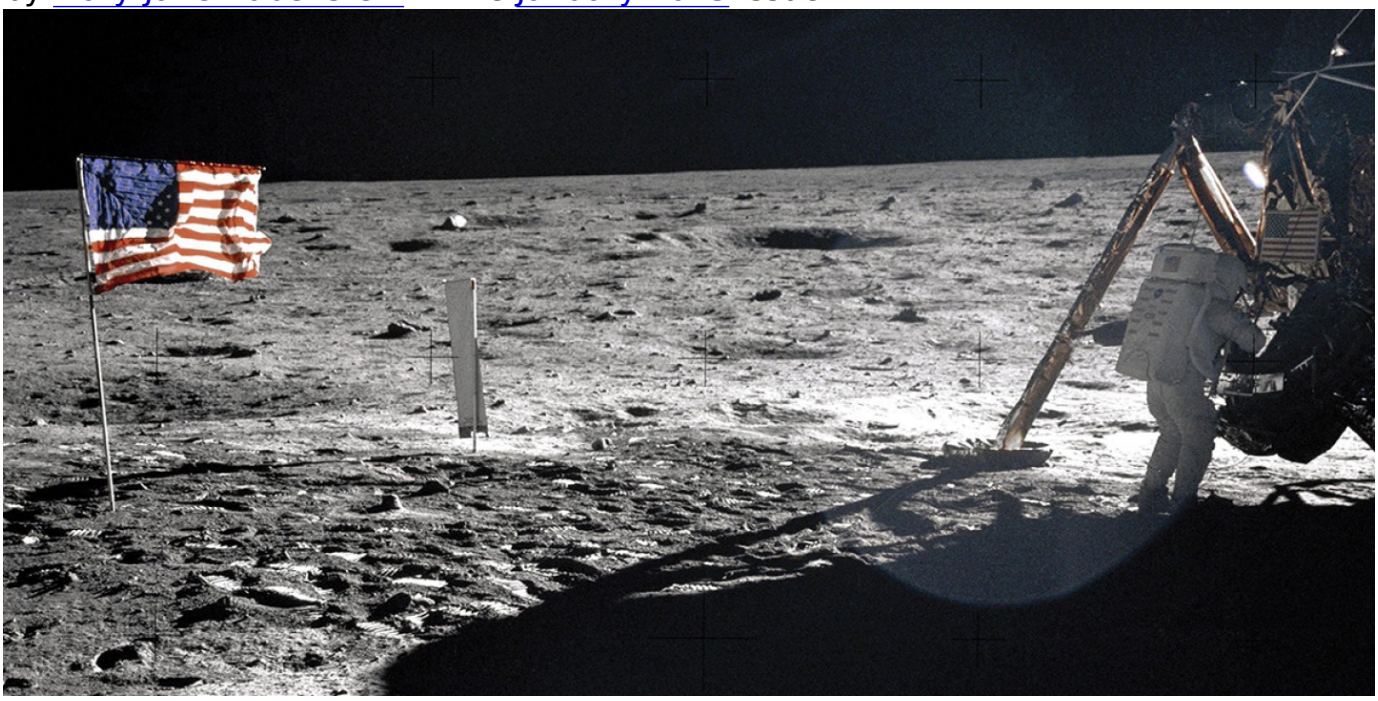
Who owns the heavens?

With the space race outsourced to astropreneurs, the final frontier is for sale to the wealthy few.

by Mary-Jane Rubenstein in the January 2023 issue



Apollo astronauts plant the US flag on the moon, July 20, 1969. (NASA)

Neil Armstrong was sure he'd said "a." One small step for *a* man. Not one small step for *man*, which wouldn't have made sense. He'd thought about it for months before the flight, finally scrawling the sentence on a piece of scrap paper during a game of Risk with his brother. His brother thought it sounded great. Poor Neil, having to be a poet in addition to a pilot and an engineer and an astronaut.

When the time finally came, the moon's first earthling tested the ladder's height to make sure he could get back up, then hopped off the landing module's bottom rung. "Armstrong is on the moon," Walter Cronkite announced. "Neil Armstrong. Thirty-eight-year-old American. Standing on the surface of the moon. On this July twentieth, nineteen hundred and sixty-nine."

Armstrong interrupts the commentary. Still holding onto the ladder, he moves a moon boot across the powdery surface and states haltingly, “That’s one small step for man, one giant leap for mankind.”

Cronkite pauses. His colleague (and former Apollo astronaut) Wally Schirra, confused and lacking Cronkite’s vocal majesty, tries to reconstruct what he’s just heard. “I think that was Neil’s quote,” Schirra mutters. “I didn’t understand it.”

“Uh,” Cronkite says, “‘One small step for man’—but I didn’t get the second phrase.” He asks for help from one of the network’s monitors—maybe someone stationed in Houston—and a few moments later a more confident Uncle Walter comes back to repeat the instant proverb, which still doesn’t make that much sense. If it’s a small step for “man,” which is an old-school masculinist way to say “humanity,” then how can it also be a giant leap for “mankind,” another old-school masculinist way to say “humanity”?

The moonwalker said he’d certainly meant to say “a.” It was a small step for him. But this small step was a giant leap for the rest of us, who had suddenly become the kind of creatures who could walk on another world.

In the months before Apollo 11, NASA appointed the Committee on Symbolic Activities for the First Lunar Landing, a whole group of people working on the ritual details of the mission. Committee chair Willis Shapley was concerned above all to strike a balance between American nationalism and global humanitarianism. “The intended overall impression of the symbolic activities,” he wrote, “[should be of] an historic step forward for all mankind that has been accomplished by the United States of America.”

This was the same committee that directed the Apollo 11 crew to plant the US flag on the moon. Considering the number of international citizens who had contributed materially, scientifically, and operationally to the mission—and considering the benefit Apollo was allegedly rendering to “all mankind”—the committee had considered installing a United Nations flag in the lunar dust, but ultimately it decided to temper its internationalism with a celestial dose of Old Glory. Congress agreed with the Committee on Symbolic Activities, revising the NASA appropriations bill to insist that any mission exclusively funded by the United States would refrain from flying the flag of any other nation, or international body, on the surface of the moon.

What, then, does “for all mankind” mean? It implies that the same creature who began in caves, invented tools, and harnessed wind, steam, and electricity is now making its next evolutionary leap from the rocks to the stars. But the usefulness of this grand story is questionable to anyone with more particular concerns than the alleged history of the species. How would the lunar landing advance the civil rights of Black Americans back on earth? How would it contribute to resolving the mess in Vietnam? How would the moon shot help decolonize India and Africa? What was its stance on the labor movement, the women’s movement, gay rights, food shortages, poverty, dictatorial regimes, refugee resettlement, nuclear proliferation, water rights, and the growing sense that there was something very wrong with the climate?

It’s not just that the Apollo astronauts happened to be on the moon while poorer, darker-skinned Americans were struggling with racism, poverty, and disease. It’s not just that the Apollo missions intentionally distracted Americans from the convulsions of protracted war and anti-Black violence. It’s not even just that the missions squandered the money that poor and historically oppressed people so desperately needed. (This was the critique of Ralph Abernathy, Martin Luther King Jr.’s successor at the Southern Christian Leadership Conference, who led 500 people, two mules, and a wooden wagon to the Kennedy Space Center to protest the moon shot.) It’s that this race to conquer the heavens actually depended on the American many, whose degradation fueled the elevation of the American few—who then claimed they were conquering the universe for all of humanity.

Today, the space race has been outsourced to corporate “astropreneurs,” but the impact on the American people is the same. The $1.5 billion Jeff Bezos spends every year and a half on Blue Origin could deliver lead-free water to the residents of Flint, Michigan. Elon Musk’s antics in space distract us from the working conditions at SpaceX. And US workers in and beyond Flint and Boca Chica are paying the taxes that fund the national space program that’s giving itself over to the private sector. Meanwhile, these new astropreneurs not only dodge the taxes that poorer folks pay; they then receive those taxes themselves in the form of federal grants and contracts. Honestly, it’s as if Americans are paying taxes directly to Bezos and Musk.

Naive as Armstrong and his colleagues may have been about the social importance of the moonwalk, a corporate orgy on a burning planet couldn’t possibly be the historic leap he had in mind. But again, what did he have in mind—along with NASA’s ritual committee, Eisenhower, Johnson, Kennedy, and Nixon? Was the “giant

leap for mankind” strictly symbolic? Or did the United States imagine it would actually bring material benefit or psychic uplift to the people of the world? In what sense was the lunar landing “for” the rest of us?

The key to answering this question, and to understanding how the promise of 1969 became the reality of the 2020s, is to get clear about the recurring preposition. Whom is outer space really for? And what does anybody mean by “for”?

Two years after the world-shaking launch of Sputnik, the UN established the Committee on the Peaceful Uses of Outer Space “to govern the exploration and use of space for the benefit of all humanity.” In this mission statement, the idea of a universal benefit gained international reach and offered some a genuinely global promise. If the space race was really for all humanity, then a representative body would assemble itself to determine and adjudicate the scope of that *for*.

Since 1961, COPUOS has been organized into two branches. The Scientific and Technical Subcommittee assesses the range, promises, and dangers of contemporary uses of space—from meteorology and navigation to communications and education, agriculture and health care, military operations and national defense. Meanwhile, the Legal Subcommittee discusses liability, cooperation, and above all, property. The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, or the Outer Space Treaty, created in 1967, was the first and most powerful of five treaties the UN has ratified in the area of international space law. Article 2 of the OST says quite clearly that “outer space, including the moon and other celestial bodies, is not subject to national appropriation.”

Unfortunately, the treaty’s failure to mention individuals—or corporations, which under US law maintain the status of legal personhood—is just one of its numerous shortcomings.

As the UN faced the question of space property from the late 1950s into the 1960s, it was well aware of the massive inequalities dividing the former colonial powers from the nations they’d exploited to industrialize themselves. The poorer countries, along with some of their chastened wealthy allies, were worried that the “new frontier” of space would exacerbate the inequalities of the earthly one if it weren’t governed by a different set of rules. The earthly frontier was guided by the principle of *terra nullius*: no one’s land. If a territory could be said to be empty or underused,

then it was subject to seizure or purchase by the first European nation to claim it.

When the OST says that outer space “is not subject to national appropriation” by any means, it is trying to set outer space on a new, enlightened course. It is trying to say that we’re playing a different game from the frenetic land grab of terrestrial modernity. Space, the authors wanted to say, is not what political theorists call a *res nullius* (empty thing); it is a *res communis* (common thing). So it’s not out there for the most powerful nations to claim; it’s out there for all of us.

This communal intention is clear from the treaty’s preamble, which professes a “belief” in the use of outer space “for the benefit of all peoples irrespective of the degree of their economic or scientific development.” This communalism is also clear from the first article, which declares that space shall be used and explored “for the benefit and in the interests of all countries” and refers to space as “the province of all mankind.”

Unfortunately, the scope of this province and the power of the commons is dramatically curtailed by the very next sentence, which declares outer space to be “free for exploration and use by all States.” At first glance, this declaration may seem to share the beneficence of the language leading up to it: outer space is for everyone, therefore “all States” can “explore and use” it. But how exactly are “all States” supposed to get there? Very few nations can afford to pursue space exploration. The rich nations rush off to space, reading the Bible and planting flags “for all mankind,” while the poor nations fall farther behind.

A similar fate befalls the “peaceful purposes” clause. In order to avoid the disastrous wars that precipitated the UN’s formation, Article 4 of the OST states that nations may not put nuclear weapons or weapons of mass destruction in space. Such arms may neither be installed on celestial bodies nor placed in orbit nor stationed “in outer space in any other manner.” Rather, outer space must be used “exclusively for peaceful purposes.”

But the treaty does not forbid engaging in such activities on orbiting or transiting spacecraft. And although it prohibits the installation of military bases on the moon or other celestial bodies, a nation can station all manner of soldiers in space so long as they are pursuing “peaceful purposes.”

It is this gargantuan loophole that the Trump administration exploited with its introduction of a new branch of the US military. One might think it absurd, really,

that any nation publicly dedicated to the OST's "peaceful purposes" could even think of establishing a space force. Indeed, many UN member states have been baffled and dismayed by what they see as a clear act of aggression on the part of the United States. And yet the US insists that it is behaving defensively rather than aggressively. Both Russia and China have already consolidated their own space operations into one military branch, they are both developing anti-satellite technologies, and China has expressed its intentions to "colonize the solar system and beyond." So as far as the Pentagon is concerned, the US Space Force is an assertion of national self-defense.

In fact, one report argues, the space force will enable US adherence to the OST. Russian and Chinese anti-satellite programs threaten to interfere with US operations. How can the US enjoy the "free use" the OST promises if foreign powers can jam its satellites and scramble its signals? In short, without a space force, the US would be unable to exercise its right of "unfettered access" toward the (peaceful?) pursuit of financial gain. As the force's doctrinal manual explains, "the success of these endeavors is only possible if we secure the peaceful use of space," and they can only secure such peace through war.

Although the US Space Force and the astropreneurial crusade are both recent phenomena, the trends toward militarization and appropriation became clear the minute Armstrong and Buzz Aldrin planted the US flag on the moon. Realizing that the OST was insufficient to prevent outer space from becoming another theater of exploitation and war, COPUOS spent the 1970s drawing up the Moon Treaty to fill in some of the gaps in the OST.

As the Moon Treaty's Article 11 declares, "the moon and its natural resources are the *common heritage of mankind*" (emphasis added). This phrase was coined by Maltese ambassador Arvid Pardo during the 1967 discussion of what would become the UN Convention on the Law of the Sea. Seeking to avoid the "competitive scramble" that could only make "the strong stronger, the rich richer," Pardo suggested that the deep seabed and ocean floor be understood as "the common heritage of mankind." What he meant was that any resources retrieved from international waters would be shared among all nations. This isn't the way things ultimately unfolded in the deep seas, but in the meantime, the originally communal intention of the Law of the Sea Convention made its way into the Moon Treaty.

Intensifying the OST, the Moon Treaty prevents nations from appropriating celestial bodies, parts thereof, or “natural resources in place.” So not only can’t the moon or parts of it belong to any nation, the ice on the polar caps can’t either. As such, any resources extracted from the moon or other celestial bodies are subject to “an equitable sharing by all States Parties,” especially those states in the developing world. In other words, the rich countries have to share at least some of what they take with the poor countries, even if the rich countries run the mission “themselves.” (After all, who provided the centuries of resources and forced labor that made the rich countries so rich?) Finally, Article 11 says that as soon “as such exploitation is about to become feasible,” the parties will establish an international body to regulate and govern the commercial extraction of lunar materials. This way, that small step for Armstrong might actually become a giant leap for humanity.

Except the United States wouldn’t ratify the Moon Treaty. Neither would Russia or China or most of the UN’s other member states. By 1984, the treaty had gained just enough support to become international law, but that only gave it standing among its signatories, none of which was a spacefaring nation.

Scott Pace, executive secretary of Trump’s National Space Council, boasted in 2017 that he had initiated a grassroots campaign in 1979 to ensure the United States wouldn’t sign or ratify the “moon agreement,” refusing even to call it a treaty. Pace explained that his opposition rested on two main convictions: first, that US actors should not be beholden to any unelected, international regulatory body (like the one proposed in the Moon Treaty), and second, that private investors would not back a mission to recover space resources unless they were guaranteed exclusive ownership of them. The Moon Treaty would be bad for business.

This demolition of the Moon Treaty set the United States on the path that led to Ronald Reagan’s dreams of a cosmic gold rush, George W. Bush’s attempt to privatize space exploration, and finally Barack Obama’s Commercial Space Launch Competitiveness Act, the energetically bipartisan 2015 law that declares space resources to be the property of any US citizen who manages to extract them. Not the “common heritage of mankind”; just the uncommon heritage of whoever’s rich enough to get up there and grab what they can.

This includes corporations, which the US Supreme Court determined in 2010 to be people under the law. The CSLCA gave investors the confidence they needed to pour their money into space. In 2017 alone, prospectors funneled nearly $4 billion into

commercial space ventures, a number that amounted to nearly half of all private investments in all industries over the preceding five years. At the time of writing, the global space industry is worth $350 billion and is projected to be worth more than $1 trillion by 2040. Facing this coming windfall, one space-mining CEO went so far as to call the CSLCA the commercial equivalent of the Homestead Act. Finally, the final frontier was open.

In April 2020, I heard through my space-justicey social media channels that Donald Trump had unilaterally handed over space “resources” to private ownership. In the language of Executive Order 13914, “the United States does not view [outer space] as a commons. Accordingly, it shall be the policy of the United States to encourage . . . the public and private recovery and use of resources in outer space.” Doomscrolling from one news outlet to the next, I was horrified. Isn’t the US a party to the OST, which calls space “the province of all mankind”? Hasn’t every president since Sputnik assured us that “all humanity” would “benefit” from US leadership in space? Didn’t Armstrong say he was moonwalking for all of us?

What I’ve come to realize, however, is that Trump’s executive order doesn’t actually do anything new. It presents the US space program as it’s always been, just without its traditionally humanitarian coating. From Johnson’s quest for “total control” to Kennedy’s insistence that “we must be first” to the ritual banning of international flags to Obama’s corporate space act, the US position has always been, as Moon Treaty killer Scott Pace is happy to declare—without philanthropic flourish—that “outer space is not a ‘global commons,’ not the ‘common heritage of mankind,’ not ‘*res communis*,’ nor is it a public good.”

Of course, there are people who disagree. In addition to a growing number of scholars and activists, there are still voices within the UN insisting that space be understood as a commons. Even at the 2021 meeting of COPUOS, there were delegations pleading that the UN not promote “the commercialization of space,” since space is “the common heritage of all mankind.” Even then, there were calls for the spacefaring nations to stop militarizing the heavens, to stop circumventing the UN to create their own laws and treaties, and to sign the Moon Treaty. But as it turns out, COPUOS has no juridical power. Member states might charge one another with having violated the OST, but there isn’t much anyone can do about it. If Russia, China, and the US have decided space isn’t a commons, then for all practical purposes, it’s not.

And since practical purposes are all that really count, NASA decided to prove space isn't a commons by buying some of it. In September 2021, the space agency paid Lunar Outpost 10 cents as a down payment for some lunar soil. Once the space-mining company gathers the regolith and deposits it elsewhere on the moon, NASA will pay the firm another 90 cents for the "delivered" materials. As NASA explains, "this process will establish a critical precedent that lunar resources can be extracted and purchased from the private sector in compliance with . . . the Outer Space Treaty." In other words, buying lunar resources will demonstrate that it's possible to buy lunar resources. And if anyone objects, they can bring it to COPUOS, which will dutifully record the objection in minutes that nobody reads.

Maximizing profits has become the central aim of the new corporate space race. According to the 2020 National Space Policy of the United States, the first goal of the space program is to "stimulate economic growth." The last is to "advance economic freedom." There are a few others, like improving quality of life and spreading democracy, but these are sandwiched between expanding the market (economic growth) and deregulating it (economic freedom). Similarly, the Pentagon's 2018 space force report lists three major missions, the first of which is to "protect our economy."

In his administration's *Introduction to Outer Space* pamphlet for the American people, President Eisenhower listed four reasons why it was crucial to pursue a space program: exploration, defense, national prestige, and science. In the work of Eisenhower's presidential descendants, a fifth reason has emerged to rule them all: money. Even the Pentagon admits that its first priority is securing the national economy. Meanwhile, "national prestige" rests on economic power, "exploration" means resource hunting, and "science" . . . well, science doesn't tend to get discussed much, except as a kind of handmaiden to the technology enabling the new economy.

That may be a bit of an overstatement. But not by much. Scientific priorities do come to voice in contemporary NASA publications, but such priorities are almost always explained as the means toward military-economic ends—specifically, the ends of heading back to the moon and then advancing to Mars. The Artemis program, we may recall, is NASA's response to the Trump-Pence directive to have "boots on the moon" by 2024. As NASA explains on its website, Artemis is named after the twin sister of Apollo because the mission will "land the first woman and first person of color on the Moon." This first woman and first person of color—who might

well be the same astronaut—will work with “commercial and international partners” to “establish sustainable exploration” and then “use what we learn . . . to take the next giant leap—sending astronauts to Mars.” In the Biden administration, the aim is still to return astronauts to the moon by 2024, establish a permanent outpost by 2028, and head to Mars sometime in the late 2030s.

Why? Why not invest instead in those space technologies—like weather tracking, energy efficiency, disaster relief, and environmental protection—that directly benefit the earth? I haven’t found a clear answer to this question. What I’ve found instead is a logical circle: we are establishing a long-term presence in space to retrieve and use the resources that will establish a long-term presence in space. We need the colony to anchor the economy and need the economy to sustain the colony. But why do any of it at all?

Perhaps surprisingly, the most honest answer comes from Jeff Bezos. It’s not that we can’t live unless we go to space; it’s that we can’t live *like this*. The capitalist economy that fueled the Industrial Revolution that fired out the Digital Age has depended since the late 15th century on the extraction of resources and the exploitation of labor. And although there unfortunately seems to be no end to the forms that slavery and indenture can assume in the modern world, the profiteering that relies on such labor is coming up against real material limits. There is only so much oil in the ground, gold in the hills, gas in the mountains, clean water in the lakes, and titanium in the mines.

In this context, the promise of deep space is the promise of infinite resources. According to one estimate, the asteroid belt alone contains metals that could provide “$100 billion for every person on earth.” Of course, they’re never going to. Thanks in part to the demise of the Moon Treaty, humanity will not reap the benefits of the burgeoning space economy any more than the people of Sierra Leone have reaped the benefits of the diamond trade. Moreover, it would be prohibitively expensive to bring the water, ore, gold, and platinum buried in asteroids back to earth. Even if you could just beam them down, any massive influx of asteroid nickel (for example) would tank the market in terrestrial nickel. So, with the exception of some of the rare earth elements that manufacturers use in very small quantities, the resources recovered from space will mostly be used in situ. The water on the moon can refuel rockets. The heavier elements can help construct tools, bases, vehicles, and habitats without having to schlep the heavy materials all the way from earth.

Welcome back to the circle game. Why are we mining outer space? So we can live and work and explore there. Why are we living and working and exploring outer space? So we can figure out how to mine it. What we're caught in here is the cyclical logic of capitalist growth that tells us we must expand in order to keep expanding. If the market doesn't grow, then profits plummet, and the market simply can't grow infinitely . . . not, at least, on a finite planet.

This seems to be what Ayn Rand understood when she ended *Atlas Shrugged* with the libertarian hero John Galt raising his hand, "and over the desolate earth he traced in space the sign of the dollar." For Galt's contemporary devotees, the race to space is the only way to sustain what climate activist Greta Thunberg has called late capitalism's "fairy tales of eternal economic growth." Fairy tales like the one that assures Bezos his grandchildren should be using more energy than he does. More energy to power more devices to trade more shares of more companies that buy and sell the resources that make more devices. Devices powerful enough to video chat with the earthbound remnant from your rotating pod out in space.

To Jeff Bezos, of course, it's not a fairy tale. The problem is that, like Musk, Bezos imagines his adventures are making this infinite space accessible to humanity. They're not. They're making profits for a very small cadre of wealthy folks by means of a powerful myth. Taking this system and extending it to Mars wouldn't open our dreams to infinity. Rather, it would keep us stuck in the same violences, fears, and inequalities that the extraction-and-settlement model has produced on this planet.

Except on Mars, we'd have to pay for air.