



SPACE LAW

Treaty tested by space miners

Emboldened by national laws, companies push the limits of 50-year-old Outer Space Treaty

By Daniel Clery

Ever wonder why the superpowers refrain from stationing nuclear weapons in space? Why NASA is so careful to prevent microbes hitching a ride on spacecraft and contaminating habitable worlds? Or why, when Neil Armstrong and Buzz Aldrin planted the U.S. flag at Tranquility Base, they didn't claim the moon as U.S. territory? Thank the Outer Space Treaty, a simple yet remarkably successful international agreement that forms the backbone of space law and ensures that space remains a place of exploration and "the province of all mankind."

Fifty years ago this month, the treaty came into force. To date, 105 nations are party to it, including the dozen or so countries with space-launch capabilities. But the agreement could soon be strained by forces that were only science fiction at the time of its drafting. These include a burgeoning commercial space industry that is preparing to send robots to asteroids and the moon to mine for minerals and fuel—a legally ambiguous area that the treaty is mostly silent on and a reason some legal scholars say it should be updated or augmented. But Bob Richards, co-founder and CEO of Moon Express in Cape Canaveral, Florida, which plans to launch an exploratory lunar mission in the coming months, believes the treaty's simplicity is one of its strengths. "You don't

mess with the Outer Space Treaty," he says. "It's a wonderful document and not as antiquated as some believe."

Formally known as the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, the accord was drafted in the peak years of the space race. Although it was the height of the Cold War, nations were eager to avoid an arms race in space and land grabs like those that plagued the early exploration of Antarctica. Hence the pact's bans on nuclear weapons and sovereign territorial claims.

Whether companies were entitled to use space at all was a bone of contention during the negotiations, says Brian Israel, general counsel to Planetary Resources of Redmond, Washington, which is preparing a mission to land on an asteroid and assess its water content. The Soviet Union wanted space to be the province of governments alone, but the United States took issue with that. The compromise was to not address commercial activity in space, but to make states legally responsible for any spacecraft launched from their territory, whether by a government or a company.

The flourishing commercial satellite industry testifies to the treaty's farsightedness in this regard. Private satellites can operate governed by national laws so long as they don't break the treaty's rules. But that's where the nascent space min-

Deep Space Industries sees a future where asteroid materials can be harvested to build large spacecraft.

ing companies are on shakier ground. The treaty states that no country can claim sovereignty over a celestial body "by means of use or occupation, or by any other means." For Gbenga Oduntan, an expert in international law at the University of Kent in Canterbury, U.K., that means miners cannot claim ownership of the moon or an asteroid—or any part of them. "States cannot do it, therefore companies and people cannot do it," he says.

The companies argue they can extract materials without claiming ownership. According to maritime law, for instance, no one can own the sea but anyone can fish and own what they catch. "Nothing in the treaty precludes profit from resources removed from space," says Israel, who was formerly a U.S. Department of State adviser on space law.

To put their business plan on a surer legal footing, Planetary Resources and a rival mining company, Deep Space Industries, lobbied the U.S. Congress, resulting in the 2015 passage of the Spurring Private Aerospace Competitiveness and Entrepreneurship Act, which gives U.S. citizens the right to exploit space resources. The act recognizes the restrictions of the Outer Space Treaty but says U.S. national law covers the activities of mining companies.

Other countries have followed suit. This year, Luxembourg passed its own space mining law, which came into effect on 1 August. Last year, it also established a €200 million loan fund to encourage mining companies to set up in the duchy. Both Planetary Resources and Deep Space Industries, based in Mountain View, California, have set up outposts there. Oduntan suspects that Luxembourg's moves may just be a stalking horse for other countries that want to encourage space businesses. "European Union states are testing the water through Luxembourg," he says. Richards thinks Japan and the United Arab Emirates are likely to pass similar laws soon.

Will such laws be enough to legitimize exploitation of what is, according to the space treaty, a global commons? Time will tell whether any countries feel strongly enough to challenge space miners and the countries that support them, which could force a new treaty to be hashed out at the United Nations, a process that can take years of effort. Richards isn't holding his breath. He predicts the world will one day celebrate the treaty's 100th anniversary. "We'll have the same discussions over whether it needs updating," he says. "The Outer Space Treaty will endure." ■

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