

## SPACE LAW

# International Cooperation on Human Lunar Heritage

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The U.S. Apollo Space Program was a premier technological accomplishment of the 20th century. Preserving the six historic landing sites of the manned Apollo missions, as well as the mementos and equipment still on the Moon from those and other U.S. (e.g., Ranger and Surveyor) and Soviet Union (e.g., Luna) missions is important. Some of the instruments on the lunar surface are still active, monitored, and provide valuable scientific information. But recent government and private-sector plans to explore and potentially use lunar resources for commercial activity raise questions about the use of the Moon and potential accidental or purposeful threats to the historic sites and scientific equipment there. Although some steps to protect these sites have been proposed, we suggest a better way, drawing on international, not U.S. unilateral, recognition for the sites.

Less than 2 years before the first footsteps on the lunar surface on 20 July 1969 (see the image), the United Nations Outer Space Treaty (OST) was drafted, ratified, and came into force (1). Article II of the OST reinforced and formalized the international standard that outer space, the Moon, and other celestial bodies would not be subject to claims of sovereignty from any nation by any means, including appropriation. The OST prohibits ownership of territory or its appropriation by any state party to the treaty, which includes the United States, Russia, and 126 other nations. It does not prohibit the use of the Moon and its resources. In fact, the treaty emphasizes the importance of freedom of access to space for any nation and the importance of international cooperation in space exploration. These principles of the space treaties have enabled gains in science and technology and have contributed to international stability in space.

New attention is being focused on the lunar surface. China has an active Moon exploration program and is considering sending astronauts



Neil Armstrong stepping on the lunar surface during the Apollo 11 mission in 1969. [Image has been digitally processed from scans made by Roger Ressmeyer from the original flight film.]

(taikonauts) to the Moon. Private firms are contemplating robotic missions that could land in the vicinity of the historical sites of Apollo and other missions. Although we might assume the best of intentions for such missions, they could irreparably disturb the traces of the first human visits to another world.

NASA has taken steps to protect the lunar landing sites and equipment and to initiate a process to create recognized norms of behavior. In July 2011, guidelines were issued for private companies competing in the Google Lunar X Prize that established detailed requirements for avoiding damage to U.S. government property on the Moon (2).

H.R. 2617, The Apollo Lunar Landing Legacy Act, was introduced into the U.S. Congress on 8 July 2013 (3). In essence, it proposes to designate the Apollo landing sites and U.S. equipment on the Moon as a U.S. National Park with jurisdiction under the auspices of the U.S. Department of the Interior.

Although the bill acknowledges treaty obligations of the United States, it would create, in effect, a unilateral U.S. action to control parts of the Moon. This would create a direct conflict with international law and could be viewed as a violation of U.S. commitments under the OST. It would be an ineffective way of protecting historical U.S.

Protecting Apollo sites is laudable. Making them U.S. National Parks is not.

sites, and it fails to address interests of other states that have visited and will likely visit the Moon. It is legally flawed, unenforceable, and contradictory to our national space policy and our international relations in space (4).

There is a better way for the United States to protect its historic artifacts and equipment on the Moon. The first step is to clearly distinguish between U.S. artifacts left on the Moon, such as flags and scientific equipment, and the territory they occupy. The second is to gain international, not unilateral, recognition for the sites upon which they rest.

Aside from debris from crash landings (by Japan, India, China, and the European Space Agency), there are only two nations with “soft-landed” equipment on the lunar surface: the United States and Russia. China has plans to soft-land Chang’e 3 on the Moon in December 2013. All three nations (and any others wishing to participate) have much to gain and little or nothing to lose from a multinational agreement based on mutual respect and mutual protection of each other’s historical sites and equipment.

## Legal Issues

Although ownership of planets, the Moon, and celestial bodies is prohibited, ownership of equipment launched into space remains with the nation or entity that launched the equipment, wherever that equipment is in the solar system. Under the OST, that nation is both responsible and liable for any harmful acts that equipment may create in space. There are no prescribed limits on time or the amount of damage a nation may have to pay.

The U.S. government therefore still owns equipment it placed on the Moon. Ownership has the associated right of protecting the equipment, subject to using necessary and proportional means for protection. But, because no nation can claim ownership of the territory on which equipment rests, there is an open issue of how to control the spots on the Moon underneath that equipment, because the site is integral to the historical significance. In H.R. 2617, establishment of Apollo sites as a unit of the U.S. National Park System could be interpreted as a declaration of territorial sovereignty on the Moon, even

though ensuing paragraphs specify the Park's components as the "artifacts on the surface of the Moon" at those sites. This problem needs international legal clarification, achievable via a formal agreement among those nations that have the technological ability to directly access the Moon (5).

Section 6(a) raises another legal issue. The bill proposes that the Secretary of the Interior shall administer the park in accordance with laws generally applicable to U.S. National Parks. It also requires the Secretary to act in accordance with applicable international law and treaties. The U.S. National Park System Act states that the Parks are "managed for the benefit and inspiration of all the people of the United States" (6). The OST clearly emphasizes that the exploration and use of space by nations is to benefit all peoples. The laws and space policies of the United States have always emphasized peaceful uses of space and the benefits of space for humankind. It may not be possible to implement and execute provisions of this Bill without raising important and fundamental questions about these contradictions between the language of the treaty and the mandates of our National Park Service.

A third legal issue is raised in section (6) (c)(2) that allows private donations and cooperative agreements to "provide visitors centers and administrative facilities within reasonable proximity to the Historical Park." This implies future private use of the Moon under rights granted by the U.S. government. Unilateral granting of lunar territorial rights to private individuals and implicit sovereign protection of that territory violates the OST.

Finally, section 8 of the bill requires the Secretary of the Interior to submit the Apollo 11 lunar landing site to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) for designation as a World Heritage Site. This violates Article II of the OST. All current World Heritage Sites are located on sovereign territory of nations. The only exception is a separate treaty that allows UNESCO to designate underwater sites (such as sunken ships) as protected cultural sites (7). These designations are very limited, and although the convention has been ratified by 43 nations, the United States, Russia, and China are not among them. Thus, any new treaty of this type specifically for outer space would have little chance of being ratified by the major space-faring nations.

#### A Proposal to Protect Lunar Sites

Although a new U.N. treaty for space artifacts of significant cultural and historic importance may be reasonable someday, this would start

a very long process with unknown outcomes. Such a treaty could be delayed to a point beyond the time when nations and/or companies may be active on the Moon (8).

Our suggested alternative is to create a bilateral agreement between the United States and Russia, offered as a multilateral agreement to other nations with artifacts on the Moon. This would be more legally expedient, politically sustainable, and would more likely meet and exceed the stated goals of the bill. It would also emphasize the important role of national laws to implement and enforce these international space agreements.

Any nation with assets on the lunar surface will endeavor to protect those assets. This creates a situation where those nations have a timely, current, and common interest incorporating important implications for peaceful uses of outer space; scientific research and the advancement of knowledge; and cultural and heritage value, either presently or in the foreseeable future.

The United States, Russia, and China all engage in multilateral cooperative space programs. They share many economic and trade dependencies adding to the international importance of promoting cooperation in space and commerce. In spite of today's charged political environment, an agreement of the type we propose may still be possible to negotiate because it focuses on the culture of space, the use of space to benefit humankind, and the archaeological record of our civilization. It specifically would not touch sensitive issues of real property rights, export controls, human rights, or the weaponization of outer space.

Cooperation on recognizing and protecting each other's interests in historical sites and on equipment and artifacts also has no significant security, prestige, or technological impediments. It reinforces the basic principles of the existing space treaties, avoids declarations of sovereignty on the Moon, and encourages multilateral cooperation resulting in a more stable and predictable environment for private activities on the Moon.

The best mechanism for implementing a new agreement would be direct negotiations at highest levels of government in the United States, Russia, and China, with priority to include Russian sites in a proposal that protects U.S. sites. It could be included in meetings of heads of state of those nations, either jointly or sequentially among the three nations. Such an agreement could be executed in a relatively short period of time, setting precedents for peaceful and coordinated research, exploration, and exploitation of the Moon (9).

An international agreement on lunar artifacts among the United States, Russia, and China would be a far superior and long-lasting solution than the unilateral U.S. proclamation in H.R. 2617. Enforcement of the agreement would be through each nation's national laws, applying to those entities subject to the jurisdiction or control of the agreement members. Each nation's property would be protected and preserved. Other nations should be free to join the agreement, and particularly encouraged to do so if they have the ability to access the Moon. An important result would be to develop a new level of trust among nations that could then lead to more comprehensive future cooperative agreements on space, science, exploration, commerce, and the use of the Moon and other celestial bodies.

#### References and Notes

1. The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies [General Assembly resolution 2222 (XXI), annex]—adopted on 19 December 1966, opened for signature on 27 January 1967, entered into force on 10 October 1967.
2. NASA's Recommendations to Space-Faring Entities: How to Protect and Preserve the Historic and Scientific Value of U.S. Government Lunar Artifacts, 20 July 2011. In mid-2012, the X Prize Foundation incorporated NASA's recommendations into its master agreement with the teams, and four contractors were awarded a NASA sub-contract to develop a Planetary Protection Plan. In this way, a U.S. government agency's internal regulations are brought into an international context because there are non-U.S. entities competing for that prize.
3. House of Representatives, U.S. Congress, H.R. 2617, Apollo Lunar Landing Legacy Act, 8 July 2013.
4. Executive Office of the President, U.S. National Space Policy of the United States (Executive Office, Washington, DC, 2010).
5. Other solutions to protecting facilities in areas where there is no sovereignty include geosynchronous orbit slots administered by the U.N. International Telecommunications Union, and the Antarctica System of Treaties allowing national research facilities to be placed and maintained there.
6. 16 U.S. Code 1a-1, 39 Stat 535, 25 August 1916, as amended.
7. The UNESCO Convention on the Protection of the Underwater Cultural Heritage was adopted on 2 November 2001 by the plenary session of the 31st General Conference (Doc. 31C/24) with 88 votes in favor, 4 against, and 15 abstentions.
8. The United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS) is the international body that has drafted the space treaties. The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, "Moon Treaty," has to date only been ratified or signed by 19 nations. The United States, Russia, and China are not parties to it.
9. The term "exploitation" is found in the Moon Treaty and specifically suggests possible commercial use of the Moon. Because the Moon Treaty has not been ratified by most major space-faring nations, allowing for commercial activities in this proposed agreement could be an important incentive.

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Editor's Summary

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