



Viewpoint

Beyond the Moon Agreement: Norms of responsible behavior for private sector activities on the Moon and celestial bodies



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ABSTRACT

The 1979 Moon Agreement was conceived as a way to help manage one of the expected outcomes of expanded activities on the Moon: exploitation of its natural resources. However, the fifth of the international space treaties elaborated in the early stages of the Space Age failed to receive widespread acceptance. Persisting polarization about key provisions in the Agreement hampers its success in the near future. This article examines the legacy of the Moon Agreement from a policy perspective by identifying key principles that are poised to resurface in the near future with the advent of new actors in space, especially the private sector. It argues that the development of norms of behavior together with national regulation and legislation represent the most promising way to engage established and emerging space actors in ensuring responsible behavior beyond Earth orbit.

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1. Introduction

Along with flying cars and shimmering cityscapes, popular depictions of the future often include references to mining in space. Precious metals, water, and fuel are harvested in vast quantities to sustain orbiting stations, cities left inhabited on Earth, and dozens of spaceships that amble across the universe.

The *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, commonly known as the Moon Agreement, was negotiated and drafted in the 1970s to help deliver that future, answering key questions about how to organize the prospective extraction of space resources. However, the fifth of the space treaties developed in the United Nations (UN) Committee on the Peaceful Uses of Outer Space (COPUOS) was marked with heated, years-long debates over what became one of the most contentious issues in international space law. Unlike the preceding treaties, only a fraction of States has ratified or signed the Moon Agreement, making it a weak foundation on which to base responsible behavior as it pertains to resource extraction.

As the growing space community approaches a future where the exploitation of space resources is feasible, the issues contained in the Moon Agreement are resurfacing. Proponents for the wider ratification of the Moon Agreement believe that the Obama Administration's 2010 decision to pursue the United States' accession

to the UN Convention on the Law of the Sea (UNCLOS) [1], whose parallel negotiations influenced the development of the Moon Agreement's language, may lead to support for the unpopular treaty. Others hold that certain provisions of the Moon Agreement remain problematic and that new measures, such as unilateral action, hold more promise.

This article examines the legacy of the Moon Agreement from a policy perspective by identifying key principles that are poised to resurface with the advent of new actors in space, especially the private sector. With a continuing aversion to creating new treaties as the primary way to address critical space governance issues, norms of behavior represent the most promising way to engage space actors in the subject, imbuing new life to debates over what constitutes responsible behavior beyond Earth orbit.

2. The Moon Agreement and the end of an era

By the early 1970s, it seemed like the exploitation of natural resources from the Moon and other celestial bodies would soon develop. The time seemed ripe to begin development of a treaty that would expand on the principles agreed to in the 1967 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, or Outer Space Treaty (OST), and to lay the groundwork for how that exploitation would be managed. The Moon Agreement text was elaborated between 1972 and 1979, when it was adopted by the UN General Assembly in resolution 34/68 and opened for signature [2]. It would take five years for it to enter into force, a sign of the

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difficulties it was already facing in securing broad international approval.

For the most part, the Moon Agreement, whose provisions apply to the Moon and other celestial bodies within the Solar System, reaffirmed many of the principles contained in the OST, such as non-appropriation or sovereignty, peaceful use, and information sharing. It was the language specific to the exploitation of natural resources that was contentious. Its controversial Article 11 establishes that the exploration and use of the Moon “shall be carried out for the benefit and in the interests of all countries,” that the Moon and its natural resources are the “common heritage of mankind,” and that an international regime should be established to “govern” the exploitation of such resources and ensure “an equitable sharing by all States Parties in the benefits derived from those resources.”

The multiple interpretations that have been offered for these provisions are quite extensive and beyond the scope of this article [3]. In one camp, some argued that the language imposed no new problematic restrictions. For example, they posited that appropriation claims were prohibited only for resources “in place,” so the ownership of resources extracted was not in question. Others, however, interpreted the language much differently. In the United States, where the private sector was particularly vocal in its opposition, many decried the imposition of a “de-facto moratorium” on commercial space activities.¹ Opponents referenced the UNCLOS being debated at the time, which refers to the ocean bed as the “common heritage of mankind” and provides extensive details for an international regime to manage exploitation of its resources, as the worst-case scenario to avoid at all costs.

While these days many space issues are hotly debated, this was not the norm at the time. As Dr. Eilene Galloway noted in her testimony to the U.S. Senate committee examining the treaty in July 1980, the discussions surrounding it were “unusual” because they were so polarized.² Fraught with opposition, support for the treaty was stunted from the start. Thirty years after coming into force, the Moon Agreement has only a small fraction of the signatories of its parent treaty, and China, Russia, and the United States – who for a long time were the only countries that would have been directly affected by it – have not supported it.³

A main contributor to the stalemate has been the lack of urgency. In the height of the discussions, extraction and exploitation of off-Earth resources was, at best, decades away. Attention naturally turned to more pressing issues. But it was not just a matter of timing; the experience marked a shift in the international community and the trend has continued. While proposals for legally-binding treaties to address space governance issues have not altogether disappeared, there has been “little to no progress” in the development of formal international space law instruments [4].

3. A changed landscape

In the past decade, companies such as Planetary Resources, Deep Space Industries, Moon Express, and Kepler Energy and Space

Engineering have staked their business cases on mining the virtually limitless space resources assumed available on asteroids and the Moon. They claim that everything from the global energy crisis to long-term space exploration goals will be solved by tapping what Planetary Resources describes as “the low-hanging fruit of the solar system” [5]. Meanwhile, a December 2015 deadline is approaching for the 18 private sector teams competing for the \$30 million Google Lunar XPRIZE, which aims to “open up the Moon” [6]. At the same time, the list of countries capable of landing and operating on the Moon and other celestial bodies continues to grow. China, India, and Europe have joined the United States and Russia in the robotic exploration of the Moon, while Japan is building on its accomplishments in asteroid sample return.

No longer merely conjectural, the influx of new actors looking to expand space activities has caused the issues of extraction of space resources to resurface. Along with academics that have written on the subject for years, many emerging actors have called for the definition of their rights and limitations: legal uncertainty is not good for business.

While the exploitation of space resources will remain the main issue of debate, it is part of a larger conversation of responsible behavior in space and corollary issues will continue to gain importance. These include territorial claims, access rights, planetary protection, efforts to reduce contamination, and the preservation of artifacts and locations of cultural or scientific interest. The latter issue has gained prominence lately. In 2011, NASA issued a set of interim recommendations that included designating two-kilometer keep-out zones around areas of interest [7]. Last year, a U.S. representative proposed a measure to designate Apollo landing sites and artifacts as U.S. national parks, a move criticized as “legally flawed, unenforceable, and contradictory” to national and international law [8].

If the Moon Agreement is not the most effective way to address these issues, what is? In its 1980 testimony, the L5 Society suggested drafting a new treaty that would better protect the interests of the private sector. Others have proposed unilateral action to promote commercial exploitation.⁴ However, numerous political constraints exist for both options: a new treaty-negotiating process would likely be dead on arrival while also failing to bring in non-state actors. Unilateral action may undermine the legitimacy of existing international agreements; furthermore, it disregards that international engagement is essential to promote the peaceful use of space. In a treaty-averse political climate, developing norms of behavior that are bolstered by national regulation represents the most promising option.

4. Norms of behavior and national regulation

Norms of behavior or “rules of the road” constitute shared understandings of responsible behavior within the international community. When coupled with national legislation and regulation, the development of norms offers a way to collectively define what constitutes responsible behavior beyond Earth orbit.

Norms of behavior have been a cornerstone of the activities of the international space community since the 1950s. These have included the development of Transparency and Confidence-Building Measures (TCBMs), “a means by which governments can

¹ In an article on the reactions to the Moon Agreement, Carolyn Henson, then-head of the L5 Society said, “for those of us who plan to go into space, it’s a give-me-liberty-or-give-me-death kind of issue.” Earthlings at Odds over Moon Agreement. *Science* 1979;206:915–916.

² Dr. Galloway further stated that she had never worked on an issue that had seen “so much misinformation and misinterpretation.”

³ As of January 2014, 15 States have either ratified or acceded to the treaty and four have signed on to it. This contrasts sharply with the OST, to which 103 States have ratified or acceded, and which an additional 25 have signed. See Status of international agreements relating to activities in outer space as of 1 January 2014. United Nations Office for Outer Space Affairs; 2014. Last accessed 01.08.14 from http://www.oosa.unvienna.org/pdf/limited/c2/AC105_C2_2014_CRP07E.pdf.

⁴ For example, one author argues that the United States should “commence international negotiations to amend the 1967 Treaty of Outer Space or withdraw from it” to enable land auctions in the Moon and Mars as a way to promote space colonization. Dinkin S. US Public Land Policy and Applications for the Moon and Mars. *The Space Review*; 2004. Last accessed 01.08.14 from <http://www.thespacereview.com/article/190/1>.

share information with an aim of creating mutual understanding and trust, reducing misperceptions and miscalculations and thereby helping both to prevent military confrontation and to foster regional and global stability” [9]. TCBMs for outer space have been a key part of UN activities for over 20 years and multiple non-binding, voluntary agreements have been adopted by the international space community [10]. TCBMs have been lauded as pragmatic solutions that help build “transparency, openness, and predictability” [11]. By promoting international collaboration and helping prevent space from becoming an area of conflict, TCBMs build on the goals advanced since the birth of the Space Age.

The development of norms and best practices at the international level provides much-needed political flexibility for building consensus, and the possibility of greater agility than has been possible with formal instruments. According to the United Nations Institute for Disarmament Research, “historically, norms have provided flexible solutions ... where diplomatic and political hurdles have made the development of legal instruments impractical,” as in the current context [4]. In this vein, TCBMs developed by the international space community should build on the agreed-upon principles of the OST, such as encouraging information sharing, establishing mechanisms for peaceful resolution of disputes, and promoting good governance.

Norms of behavior have a greater chance of success because space actors have recently turned to them as a primary way to promote long-term space sustainability.⁵ While current efforts have focused on behavior in Earth orbit, the momentum gained in these efforts presents an opportunity to expand the conversation and begin building consensus on what constitutes responsible behavior on the Moon and beyond, including issues related to the exploitation of space resources.

The lessons learned in these efforts, such as the need for broad consultation, would be instrumental in driving future collaboration in an increasingly diverse global space community. Since the success of such best practices depends on securing broad stakeholder support, their development necessitates multiple consultations and opportunities to develop common understandings. This opens the door for engagement with emerging space actors—new spacefaring countries, intergovernmental institutions, private companies, and universities—to provide input and contribute in the process. These discussions also allow for relationship-building, which can be foundational for discussions on other aspects affecting space.

Once these norms of behavior are defined and coordinated at the international level, the development of national laws and regulations would enable implementation while creating a strong incentive for their broad adoption. The most successful example of this approach is the effort to establish standards to prevent the creation of long-lived debris in orbit. After recognizing the critical issue of space debris as a threat to long-term space sustainability, the community did not develop a new treaty, but instead developed standards and national regulation for debris mitigation that align with the principles in the OST. The Inter-Agency Space Debris Coordination Committee Space Debris Mitigation Guidelines were mirrored in those issued by COPUOS and later endorsed by the UN

General Assembly in 2007, which have since then been incorporated into domestic law.

5. Conclusion

The 45th anniversary of the Moon landing coincides with the 30th anniversary of the entry into force of the Moon Agreement, an international space treaty developed to help manage one of the expected outcomes of expanded activities in the Moon: exploitation of its natural resources. The Agreement failed in receiving widespread acceptance when it was opened for signature in 1979, and persisting polarization about its content hampers its success in the near future.

The influx of new, often private actors with their eyes set on asteroids and the Moon prompt exploring non-traditional measures to address questions of responsible behavior beyond Earth orbit. Norms of behavior, which the international space community has repeatedly turned to, would help promote trust and future collaboration among these actors. When coupled with state practice to enable implementation, the development of norms represents a productive near-term step to expand the responsible, peaceful, economically productive, and sustainable use of space as the long-envisioned exploitation of space resources becomes feasible.

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⁵ These include the United Nations Group of Government Experts on Transparency and Confidence-building Measures in Outer Space Activities, the International Code of Conduct for Outer Space Activities, and the activities of the UN COPUOS Long-term Sustainability Working Group. See the Secure World Foundation's fact sheets on these various initiatives to learn more: <http://swfound.org/resource-library/swf-publications/>.