

Closing the gap in space law: An implementation agreement for the Moon Treaty that supports all private activity while protecting essential public policies

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Abstract

There is currently a gap in space law that is impeding private activity and increasing geopolitical instability. Article II of the Outer Space Treaty prohibits appropriation by claim of sovereignty, use, or any other means. The Moon Treaty includes a process for overriding that prohibition, an implementation agreement (IA) under Article 11. Nevertheless, most countries have not adopted it because of concerns over the term "Common Heritage of Mankind". But the CHM has no independent legal meaning; it is whatever the implementation agreement says it is. Both the ban on appropriation and the concerns about the CHM are addressed by the proposed Model Implementation Agreement. Without an IA, everyone fears the worst. But if the specific language of an IA is agreed to beforehand, then countries could adopt the Moon Treaty while still protecting their national interests. They could support diverse and polycentric governance while still maintaining the commons of outer space.

1. Introduction

The concerns of the private sector over non-appropriation and the Common Heritage of Mankind are explained by an attorney for the United States mining industry:

Here's the issue on the security of tenure [the right to extract/own materials] and the fiscal regime: there's an Outer Space Treaty that was signed by a lot of countries when the moon exploration was going on, and the treaty includes a provision that says you can't appropriate celestial bodies, that would include the moon.

The question is — what happens if I go to the moon? I set up shop, and I extract ice and rocks and start making things, do I own the rocks that I've extracted? I'm not saying that I own the moon, but if I put in the effort, do I own the resources? Same thing with asteroids, if I send a robot to the asteroid, it sets up shop and starts extracting things and using them, do you own the extracted mineral? And that's the legal issue, that's the unsettled question. . . .

Because the Moon Treaty uses this common heritage of mankind [CHM] language like the law of the sea, the Moon Treaty would imply that you have to pay some sort of a royalty that would get redistributed among all the countries of the world for the extraction of resources in outer space. [1]

Similar concerns were expressed by the head of the L-5 Society (now merged with the National Space Society), when the Moon Treaty was before the United States Senate. She stated that the Moon Treaty was opposed to free enterprise and private property

rights, then suggested that there should be legal claims to the Moon:

"There should be a system to register such claims. By the way, I'm not speaking of claims to territory...I don't think it's necessary for us to deal with the issue of whether one can make a claim to the land itself, as long as one has the exclusive right to use it." [2]

But the Moon Treaty is not the problem. It is the Outer Space Treaty, with its Article II prohibition against appropriation, that is the problem. Specifically, an exclusive right or any act of exclusion defeats the commons and is an act of appropriation. It is the Moon Treaty that provides a solution, authorizing an international legal framework that would grant priority usage rights while protecting essential public policies.

The Space Treaty Institute (www.spacetreaty.org), after four years of research and consultation, has proposed a ten-paragraph Model Implementation Agreement. It is based on four organizational principles:

- 1) The Agreement must be **comprehensive** and support **all private activity**;
- 2) **The Grand Bargain**: Trade private property **rights** for public policy **obligations**;
- 3) **Defer** issues currently at impasse (e.g., monetary sharing of benefits) by creating a **governance process** for making future decisions;
- 4) **Build upon and integrate** current institutions and processes.

2. Model Implementation Agreement for Article 11 of the Moon Treaty

1. SCOPE OF AGREEMENT

The provisions of this Implementation Agreement ("Agreement") and the underlying Agreement Governing The Activities Of States On The Moon And Other Celestial Bodies ("Moon Treaty" or "Treaty") shall be interpreted and applied together as a single instrument. In the event of any inconsistency between the Treaty and the Agreement, the provisions of the Agreement shall prevail. After the adoption of the Agreement, any instrument of ratification or formal confirmation of or accession to the Treaty shall also represent consent to be bound by the Agreement. No State or entity may establish its consent to be bound by the Agreement unless it has previously established or establishes at the same time its consent to be bound by the Treaty.

2. ADOPTION OF TREATIES

The States Parties agree to adopt and be bound by this Agreement, the underlying Treaty, the Treaty On Principles Governing The Activities Of States In The Exploration And Use Of Outer Space, Including The Moon And Other Celestial Bodies ("Outer Space Treaty"), the Convention On Registration Of Objects Launched Into Outer Space ("Registration Convention"), the Convention On International Liability For Damage Caused By Space Objects ("Liability Convention"), and the Agreement On The Rescue Of Astronauts, The Return Of Astronauts And The Return Of Objects Launched Into Outer Space ("Rescue/Return Agreement"), and to require their nationals also to comply with them.

3. PRIORITY USE OF RESOURCES

The States Parties agree that any mission authorized and supervised by a State Party shall have priority rights for the exploitation of resources at the location of the mission. Exploitation of resources shall include but is not limited to: (a) the extraction of materials, (b) the use of land for any other commercial activity [e.g., tourism, solar farms], and (c) the use of land for noncommercial private activity [e.g., science, settlements]. Access to scarce resources shall be shared. Priority rights shall terminate if the authorized entity fails to comply with the obligations in the above-listed treaties and this Agreement.

4. PUBLIC POLICY OBLIGATIONS

The States Parties agree that the obligations of the Treaty and this Agreement include the following:

1. Use outer space exclusively for peaceful purposes (Treaty Article 3.1);
2. Provide co-operation and mutual assistance (4.2);
3. Inform the public of:
 - Activities (5.1)
 - Scientific discoveries (5.1)

- Any phenomena which could endanger human life or health (5.3)
- Any indication of organic life (5.3)
- Use of radioactive materials (7.2)
- The discovery of resources (11.6)

4. Protect the environment and preserve areas of "special scientific interest" such as historic landing sites (7.1-7.3);

5. Allow free access to all areas by other parties (9.2).

5. OPEN ACCESS AND DUE REGARD; REGISTRATION OF ACTIVITIES

The States Parties agree to be guided by the principles of open access and due regard as established by the Outer Space Treaty when utilizing the Moon's resources. The States Parties agree to register their activities on and near the Moon in accordance with the Registration Convention* when applicable, and to create and/or designate another process when not applicable.

6. GOVERNANCE; FEES

The States Parties agree to create a process of governance for making ongoing substantive decisions concerning the exploitation of resources, as authorized under Article 11 of the Treaty. The States Parties are financially responsible for the administration of this Agreement and the Treaty. The collection and use of fees for administration or any other purpose is a substantive decision to be made using the governance process.

7. STANDARDS AND RECOMMENDED PRACTICES; REGISTRY

The States Parties agree to develop, in consultation with non-governmental entities, standards and recommended practices for the safe utilization of outer space resources by all interested countries, irrespective of their degree of economic or scientific development. Such standards or practices shall not require technology that is subject to export controls. The States Parties shall create or designate an official registry for such standards and recommended practices.

8. PROTECTION OF NATURAL ENVIRONMENT; CULTURAL HERITAGE SITES

The States Parties, in accordance with Treaty Article 7, agree to develop standards and recommended practices to prevent the disruption of the existing balance of a celestial body's environment and to protect natural and cultural heritage sites, and/or to designate another entity/process for making such determinations that will be binding on the States Parties. Pending a final determination of the site's status as a protected heritage site, the States Parties agree to prohibit the use or disturbance of any location on the Moon or other celestial body that is the site of a mission that occurred more than 20 years prior to the authorization of new activity. This prohibition applies

to the location of any equipment and any evidence of presence [e.g., footprints, tracks].

9. DISPUTE RESOLUTION; ARBITRATION

The States Parties agree that any dispute concerning this Agreement or the Treaty shall be addressed using the consultation process detailed in Treaty Article 15. As an alternative, the States Parties authorize the voluntary use of binding arbitration in accordance with the 2011 Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities. The results of such arbitration shall be enforceable under The Convention on the Recognition and Enforcement of Foreign Arbitral Awards (“New York Convention”).

10. CONTROLLING LAW; RIGHTS OF INDIVIDUALS, SETTLEMENTS

In accordance with Treaty Article 12, the States Parties agree that the controlling law at any location shall be the law of the country that authorized/supervises the activity at that location, subject to this Agreement and the Treaty. Relations between locations of different States Parties will be governed by current international law until such time as new substantive rules are created under the governance process in Agreement Paragraph 6, as authorized by Treaty Article 18. Nothing in this Agreement or in the Treaty shall be interpreted as restricting the rights of individuals under the Universal Declaration of Human Rights or the formation of sovereign states under customary international law.

*The Registration Convention may be updated per recommendations in UNOOSA’s 2019 Guidelines for the Long-term Sustainability of Outer Space Activities.

3. The Need for an International Framework of Laws to Create Property Rights

Why is this proposal necessary? As of 2021, there is no internationally recognized mechanism for granting property/priority rights to anyone for any location or natural object in outer space. The current controlling international law is the Outer Space Treaty of 1967, which prohibits any one country from appropriating anything:

Article II: Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. [3]

Many countries agree that the prohibition against appropriation prevents any one country from granting property rights, including mining rights, on its own authority. Some disagree, enough to create the potential for conflict and uncertainty for businesses

and investors. [4] Since the functions of law include avoiding conflicts and reducing uncertainties, it is imperative to create an international legal framework for private activity in outer space.

The Moon Treaty provides the international authority to grant property/priority rights. Article 11 does not prohibit such rights; it just prohibits any one country from granting them:

11.1. The moon and its natural resources are the common heritage of mankind, *which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article.*

11.2. The moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.

11.3. Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person. The placement of personnel, space vehicles, equipment, facilities, stations and installations on or below the surface of the moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the surface or the subsurface of the moon or any areas thereof. *The foregoing provisions are without prejudice to the international regime referred to in paragraph 5 of this article. . . .*

11.5. States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, *to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible.*” [5] (emphasis added)

Note that Article 11 begins by stating that the “common heritage of mankind” is defined by the Moon Treaty and its implementation agreement. The CHM has no legal meaning or force of law beyond the framework that the States Parties adopt.

The rest of Article 11 authorizes the States Parties to create an international framework of laws that grants property/priority rights, so long as they do it together. Under the Model Implementation Agreement, once the framework is established and the obligations are accepted, then any entity that is authorized/supervised by a State Party would be granted priority usage rights as they are needed, along with personal property rights to any extracted materials.

It is the international framework of laws that will create such rights. Without it, private entities will have difficulty moving forward. The uncertainty over the

legitimacy of their use (including the extraction of materials) and their ability to engage in commerce would make long-range financial planning and investment almost impossible.

4. Use of Priority Rights

The use of “priority rights” as a practical equivalent to property rights has been proposed by the Hague International Space Resources Governance Working Group. [6] The Model Agreement creates such rights: “The States Parties agree that any mission authorized and supervised by a State Party shall have priority rights for the exploitation of resources at the location of the mission.” The potential revocation of such rights allows the enforcement of the Agreement and the Treaties.

Expanding the definition of “exploitation of space resources” to include the use of the land for any private activity allows the creation of a comprehensive framework of laws that supports all private activity on the Moon and beyond. It is the only way to fulfill the mission of space law - to facilitate humanity’s departure from our home planet.

5. Governance for Substantive Decisions

Since the Moon Treaty and the Model Implementation Agreement are functions of international law, the States Parties can by consensus (unanimous consent) make any substantive decision; they are the ultimate legislature. But obtaining the consensus of all parties to a treaty can be cumbersome, so international organizations such as the United Nations and the European Union have created structures of ongoing governance for making such decisions. The Moon Treaty itself envisions such ongoing governance, even requiring a review of any implementation agreement every 10 years (Article 18). [5]

The proposed IA requires the States Parties to create a form of governance to make such substantive decisions, including the decision to charge fees or otherwise monetarily share the benefits of the use of outer space. Just as the Moon Treaty calls for governance of activities as they become technologically feasible, the Model Implementation Agreement envisions adaptive governance that can make decisions as they become politically feasible.

6. Developing Standards and Practices

The Model Implementation Agreement requires the States Parties to develop standards and recommended practices (SARP’s) – sometimes called “best practices” – for the development of outer space resources. It does not create a super-agency that will override efforts that have been developing organically, though it does mandate that “standards or practices shall not require technology that is subject to export controls.” Rather, it requires the States Parties work with NGE’s, providing them a seat at the table and a legal foundation for their work. The

International Organization for Standards (ISO) [7], the Committee on Space Research (COSPAR) [8], the Hague Group [6], the Moon Village Association [9], For All Moonkind [10], and the Space Treaty Institute [11] are examples of such organizations.

The Treaty anticipates that there will be ongoing advances in technology that will require a constant updating of standards and practices. It is essential for the States Parties to integrate the work of NGE’s into this process. Otherwise, a vast pool of talent and innumerable hours of work will be wasted. The Treaty and Implementation Agreement will lack organizational support and will likely fail.

7. Protecting Historical/Scientific Sites

Article 7.3 of the Moon Treaty authorizes the preservation of sites of scientific interest:

States Parties shall report to other States Parties and to the Secretary-General concerning areas of the moon having special scientific interest in order that, without prejudice to the rights of other States Parties, consideration may be given to the designation of such areas as international scientific preserves for which special protective arrangements are to be agreed upon in consultation with the competent bodies of the United Nations. [5]

The Model Implementation Agreement clarifies that “special scientific interest” includes historical/cultural sites. It is unclear whether a new organization/process will need to be established to meet these goals or if the task will be given to an existing organization (“competent body”) such as UNESCO. Until such decisions are made and procedures in place, the Model Implementation Agreement protects sites that are more than 20 years old. (Par. 9)

8. Controlling Law

Both the Outer Space Treaty and the Moon Treaty extend a country’s laws to cover their nationals and objects in outer space:

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body.
- Outer Space Treaty, Article VIII [3]

1. States Parties shall retain jurisdiction and control over their personnel, vehicles, equipment, facilities, stations and installations on the moon. The ownership of space vehicles, equipment, facilities, stations and installations shall not be affected by their presence on the moon. - Moon Treaty, Article 12 [5]

The Model Implementation Agreement confirms that the controlling law for any location will be the law of the country that authorized and supervises activity at that location. There will also be extra-territoriality, i.e., a country's laws will apply to its nationals if nationals travel beyond the geographic limits of the registered area of activity, even if they enter the area of activity of another country (see asylum exception, below). Since all countries are bound by the treaties they have adopted, their national laws would be subject to the five space treaties, including the Moon Treaty and its Implementation Agreement.

9. Resolution of Disputes

Article 15 of the Moon Treaty describes levels of dispute resolution, beginning with consultations between the States Parties. Any other State Party can join in the consultations, and any State Party can request the assistance of the Secretary-General of the United Nations. If consultations fail to resolve the dispute, the States Parties are instructed to "take all measures to settle the dispute by other peaceful means of their choice appropriate to the circumstances and the nature of the dispute." (Art. 15.3)

The Model Implementation Agreement specifically authorizes parties to voluntarily choose binding arbitration in accordance with the 2011 Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities and authorizes a process for enforcing any decision/award. [12] International enforcement is essential for the success of any treaty or dispute resolution process.

10. Settlements

Including settlements in the definition of "exploitation of resources" is essential for creating an international framework of laws that is sufficiently comprehensive to support all private activity in space. It is the only way to override the prohibitions against appropriation in both the Outer Space Treaty and the Moon Treaty (see above). This is done by interpreting "the exploitation of the natural resources of the moon" in Article 11.5 to include the use of the land on the Moon for any purpose.

When the Moon Treaty was first proposed, some individuals and NGE's, led by the L5 Society (now merged with the National Space Society), opposed it because there were no provisions for establishing private settlements with their own governance. [13] They pointed again to Article 11.2, which states that "the moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means" and Article 11.3's prohibition against ownership. [5] As explained above, the international framework of laws authorized by Article 11.5 overrides those prohibitions.

The Model Implementation Agreement establishes the priority use rights that settlements need to get started. This maintains the commons while promoting

governance that is at least as polycentric as the countries that authorized them. The Model Agreement also confirms that a settlement can seek recognition as a sovereign state under customary international law. This would increase polycentric governance, but the emerging state and its land would be excluded from the commons.

11. Individual Rights

What if an inhabitant of a settlement seeks asylum in another country's facility? The Moon Treaty and the Outer Space Treaty contain certain provisions that suggest that their country of origin retains jurisdiction, and can have them returned (see Controlling Law, above).

This would conflict with the Universal Declaration of Human Rights ("UDHR"), which states in Article 14.1 that "Everyone has the right to seek and enjoy in other countries asylum from persecution." [14] The Model Implementation Agreement incorporates the protections of the UDHR. As explained above, this would override national law and allow individuals to remove themselves from the legal authority of one country and enter the authority of another.

The hopes and dreams of individuals and groups to create new societies in outer space are just as important as the entrepreneurship of those seeking to engage in space commerce. Both must be recognized, honored, and nurtured if humanity is to leave our home planet in a sustainable manner. The Model Implementation Agreement states that "nothing in this Agreement or in the Treaty shall be interpreted as denying or limiting the rights guaranteed to individuals by the Universal Declaration of Human Rights, or the right of settlements to seek autonomy and/or recognition as sovereign nations." (Paragraph 10) Any international framework of laws must acknowledge and incorporate these protections, or it will fail.

12. Adaptive Governance

The Model Implementation Agreement is not meant to resolve every current issue in space governance. Rather, it provides the minimum framework of international law that is necessary at this moment in history for public and private activity on the Moon and beyond. It builds upon current institutions and processes while creating a new governance process for issues that are not yet ripe for resolution. It links private property/priority rights with public policy obligations, recognizing the importance of both in the grandest of public-private partnerships.

The Moon Treaty itself acknowledges that such adaptive governance is necessary:

Article 11.5. States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources

of the moon *as such exploitation is about to become feasible*. [5] (emphasis added)

Article 18 requires a review of any implementation agreement ten years after it goes into effect. [5]

It is not necessary, or even desirable, to create comprehensive rules for governing the entire solar system at this time. But it is necessary to create a basic framework so that technology, economics, and governance itself can evolve to the next level. The recent COPUOS Guidelines for the Long-term Sustainability of Outer Space Activities likewise envision such an ongoing evolution (“Review of implementation and updating of guidelines”, Section I, Paragraphs 21-24). [15]

At this moment in time, it is space law itself that needs capacity building. The current framework is inadequate, resulting in endless arguments over the meaning of outdated agreements. The time has come to craft a new agreement that will facilitate the sustainable exploration and development of outer space. In the Spring of 2021, it is the Moon Treaty, with the Model Implementation Agreement, that can provide the international framework of laws that humanity needs to become a space-faring species.

13. Historical Perspective

Space law is at the intersection of science and history. Every advance in technology has required an advance in law. It should be no surprise that, as science provides the ability to leave the home planet, another framework of laws becomes necessary. The Moon Treaty recognizes this in its call for adaptive governance, creating new regulations only when advances in technology require them.

The early 21st century is an extraordinary time. Humanity has been presented with an historic opportunity as it prepares to leave its home planet. Like those who went forward during the Age of Exploration some 500 years ago, the decisions made today will affect humanity for centuries, perhaps millennia. If ever there has been a time to determine how to implement humanity’s collective vision for the future, it is now.

In October 1957, people all over the world stood outside their homes as the sun set, looking to the sky as a blinking light passed overhead, the tumbling upper stage booster of the world’s first satellite, Sputnik. Because of the Cold War there was some fear, but for most the overwhelming emotions were excitement, inspiration, and hope. Despite all its imperfections, all its follies, and all its deadly conflicts, humanity had managed to throw off the shackles of gravity and reach the stars. All the stuff of science fiction suddenly seemed possible. And not just the stuff about technological advances; the writers, the poets, those who dared to dream of a better future saw a day when humanity could resolve its differences by peaceful means and move forward together. [16]

This dream was enhanced a decade later, in December 1968, when our view of the world literally changed. As Apollo 8 rounded the Moon, the astronauts on board were suddenly overwhelmed as humans saw the Earth rising above the lunar horizon for the first time. The picture taken at that moment showed our home planet, beautiful and fragile, hanging in the vastness of space. Humanity as a species began to realize that we are all one, living together on a small planet hurtling through the cosmos. [17]



But even though no borders were visible, war and suffering continue to wrack the home world. In the half-century since, people have begun to lose faith in their governments, their private institutions, even in humanity itself. Every day people wake up to news of the increasingly disastrous effects of climate change, racial/gender injustice, worsening economic inequality, and assaults on democracy. To that has now been added the threat of war in outer space. The people of Earth are beginning to despair, wondering if there is anything they can really believe in. They are losing hope, and the resulting cynicism is poisoning our politics, our relationships, even our thinking.

The mission of space law must be nothing less than to restore that hope, to inspire humanity by giving the people of our planet a future they can believe in. To counter the despair of war and violence and neglect. To build that shining city on a hill that will light the way for all.

19. Conclusion: The Time to Act

It has been 500 years since the world has had such an opportunity to start anew. At that time, European countries used their advanced technology to perpetuate military conquest and economic exploitation - the Age of Imperialism/Colonialism - causing widespread misery and countless wars. In 2021, many people fear that we are about to repeat that history.

We can change that. We can avoid making the same mistakes. But doing so requires immediate action. There will be only one time when humanity leaves our home world, only one chance to create a new pattern. That time is now. Please consider the Moon Treaty, with the Model Implementation

Agreement, as the best way to promote polycentric governance, protect the commons, and help each person, and all nations, to reach their best destiny.

(Dennis O'Brien is a former member of the NASA-Hastings Research Project and the founder/president of The Space Treaty Institute. He is a member of the Moon Village Association and principal author of their [White Paper on Registration and Information Sharing](#). For more information, please visit <http://www.spacetreaty.org/>.)

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