

Legal Support for the Private Sector: An Implementation Agreement for the Moon Treaty
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Abstract

The United Nations' Committee on the Peaceful Uses of Outer Space (COPUOS), through its consensus process, has accomplished much over the decades, most notably helping to produce the five space treaties and related guiding principles. But it has been unable to produce the international framework of laws that the Moon Treaty calls for to facilitate humanity's departure from the home planet. This has created a gap in space law that has had a detrimental effect on private activity in outer space. The Moon Treaty, with the proper implementation agreement, now offers the best hope for closing that gap. Such an agreement would need to address many issues, most involving private enterprise and settlements. Although some argue that the Moon Treaty would hinder private space activities, with the proper IA it would in fact support them.

The Space Treaty Project has proposed a ten-paragraph Implementation Agreement that 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.

Why is this proposal necessary? As of January 2020, there is no internationally recognized mechanism for granting property 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 in outer space:

“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.”

Many countries agree that the prohibition against appropriation prevents any one country from granting property rights on its own authority. Some disagree, enough to create a potential for conflict and uncertainty for businesses and investors. 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 rights. Article 11 does not prohibit ownership; it just prohibits any one country from granting it on its own authority.

It is important to 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 proposed Implementation Agreement provides the minimum framework of international law that is necessary at this time for public and private activity on the Moon and beyond.

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.

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 year 2020, it is the Moon Treaty, with a proper implementation agreement, that can provide the international framework of laws that humanity needs to become a space-faring species.

Keywords: *space, law, moon, treaty, implementation, agreement*

1. Introduction

The United Nations' Committee on the Peaceful Uses of Outer Space (COPUOS), through its consensus process, has accomplished much over the decades, most notably helping to produce the five space treaties and related guiding principles. But it has been unable to produce the international framework of laws that the Moon Treaty calls for to facilitate humanity's departure from the home planet. This has created a gap in space law that has had a detrimental effect on private activity in outer space. As recently explained by an attorney for the mining industry:

Here's the issue on the security of tenure [the right to extract 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. [1]

At the April 2019 meeting of the COPUOS Legal Subcommittee, Greece and Belgium proposed using COPUOS to draft a legal framework to address such issues but failed to achieve consensus. [2] Austria, one of the 18 current States Parties of the Moon Treaty, called on other nations to adopt the Moon Treaty as the mechanism for moving forward. [3] But even though the Moon Treaty includes a process for creating such a framework (an implementation agreement under Article 11), most countries have not adopted it. Why is that? Again, the industry attorney:

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]

This concern can be addressed by an implementation agreement. As explained below, the CHM has no independent legal meaning or force; it is whatever the agreement says it is. At this time, 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 and still be assured that they are not surrendering their national interests.

To that end, the Space Treaty Project (see end comments) has proposed a ten-paragraph 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. Proposed Implementation Agreement for Article 11 of the Moon Treaty

Preface: The provisions of this Agreement and the Treaty shall be interpreted and applied together as a single instrument. In the event of any inconsistency between this Agreement and the Treaty, the provisions of this Agreement shall prevail. After the adoption of this Agreement, any instrument of ratification or formal confirmation of or accession to the Treaty shall also represent consent to be bound by this Agreement. No State or entity may establish its consent to be bound by this Agreement unless it has previously established or establishes at the same time its consent to be bound by the Treaty.

1. Creation of Administrative Agency

The States Parties agree to create as soon as is practicable an agency ("Agency") to administer the provisions of the Agreement Governing The Activities Of States On The Moon And Other Celestial Bodies ("Treaty") and this Implementation Agreement ("Agreement").

2. Licenses for Private Activity; Exploitation of Resources

The Agency shall be authorized to issue licenses to non-governmental entities ("NGE") for the priority exploitation of resources. Exploitation of resources shall include but is not limited to: (a) the extraction of

materials, (b) the use of a location for any other commercial activity (e.g., tourism), and (c) the use of a location for noncommercial private activity (e.g., science, settlements). Licenses shall describe the extent, duration, and nature of the activity and shall maximize access for all in accordance with Treaty Article 8. Activity by governments is authorized under Treaty Articles 8 and 9.

3. Requirements for License; Adoption of Obligations

The Agency shall issue a license for any NGE activity that is authorized and supervised by a State Party to this agreement. The States Parties agree to require that their nationals (a) accept the public policy obligations of the Treaty as mandated by Treaty Article 14, and (b) share technology as described in Paragraph 5 of this Agreement. The license shall be revoked if, at any time, a licensed NGE fails to comply with its obligations.

4. Public Policy Obligations

The public policy obligations of the Treaty and this Agreement include the following:

1. Use outer space exclusively for peaceful purposes (Article 3.1);
2. Provide co-operation and mutual assistance (4.2);
3. Honor the Registration Convention and 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)
 - The discovery of resources (11.6)
 - Any change of status, harmful impacts of activities, use of nuclear power, and links to websites for specific objects/activities [COPUOS recommendations]
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);
6. Honor the Rescue Treaty (10.1)
7. Share technology as part of sharing the benefits of outer space with less technologically advanced countries (4.1-4.2)

5. Sharing Technology

In accordance with Treaty Article 4, the States Parties agree to develop a process for sharing technology on a mutually acceptable basis. Until or in the absence of such a process, the States Parties agree to require their nationals to license technology at no more than fair market value. Technology that is subject to export controls shall be excluded from these requirements.

6. Standards and Recommended Practices; Registry

The States Parties, in consultation with private enterprise and international organizations, agree to develop technology standards and recommended practices for the safe use and development of space resources. Such standards or practices shall not require technology that is subject to export controls. The Agency and/or other designated entities shall maintain the registry of such information that is not included in the registry for the Registration Convention that is maintained by the United Nations.

7. Protected Sites

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 historical mission that occurred prior to the year 2000 pending a final determination of the site's status as a Cultural Heritage Site. This prohibition applies to the location of any equipment and any evidence of presence (e.g., footprints, tracks). The States Parties agree to develop standards and recommended practices for determining what historical, cultural, or scientific sites should be protected or to designate another entity/process for making such determinations that will be binding on the States Parties.

8. Governance; Collection of Fees

The States Parties agree to create a process of governance for making substantive decisions as authorized under Article 18 of the Treaty. The States Parties are financially responsible for the Agency, which shall be operated in a cost-effective manner. By adoption of this agreement, the States Parties authorize the Agency to collect fees to pay for its administrative costs. The collection and use of fees for any other purpose must be authorized by the States Parties.

9. Dispute Resolution

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 hereby 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 within the judicial system of the States Parties who are parties, or whose nationals are parties, to the arbitration. The Agency shall facilitate and inform the arbitration.

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 licensees using that location, subject to this Agreement and Treaty. Relations between locations of different nationalities will be governed by current international law, including the Liability Convention, until such time as new substantive rules are created under the governance process in Agreement Paragraph 8, as authorized by Treaty Article 18. 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.

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

Why is this proposal necessary? As of January 2020, there is no internationally recognized mechanism for granting property 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. [4]

Many countries agree that the prohibition against appropriation prevents any one country from granting property rights on its own authority. Some disagree, enough to create a potential for conflict and uncertainty for businesses and investors. [5] 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 rights. Article 11 does not prohibit ownership; it just prohibits any one country from granting it:

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.” [6] (emphasis added)

It is important to 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 rights, so long as they do it together. Once the framework is established and the obligations are accepted, then any entity authorized/supervised by a State Party would be granted such property rights as they are needed.

The Hague International Space Resources Governance Working Group (“Hague Group”), a consortium of NGE’s, supports the creation of an international framework for space resource activity, with states authorizing private activity, in its proposed Building Blocks:

3. Scope

3.1 The international framework should address States and international organizations, and could provide for the regulation of the conduct of States, international organizations, and non-governmental entities.

3.2 The international framework should address space resource activities within the solar system.

5. International responsibility for space resource activities

The international framework should provide that:

a) States shall bear international responsibility for national space resource activities, whether such activities are carried out by governmental agencies or non-governmental entities, and for ensuring that such activities are carried out in conformity with the international framework;

b) Non-governmental space resource activities shall require prior authorization and continuing supervision by the appropriate State [7]

It is the international framework of laws that will create private property rights. Without it, private entities will have difficulty moving forward. The uncertainty over the legitimacy of their “ownership” and their ability to engage in commerce would make long-range financial planning and investment almost impossible.

4. The Use of Priority Rights

The Hague Group has proposed the use of “priority rights” to establish property rights:

7. Priority rights

The international framework should enable the attribution of priority rights to an operator to search for and/or recover space resources for a maximum period of time and a maximum area upon registration in an international registry, and provide for the international recognition of such priority rights. The attribution, duration, and the area of the priority right should be determined on the basis of the specific circumstances of a proposed space resource activity. [7]

The current prohibition on the ownership of materials applies only to materials “in place”, sometimes called *in situ*. [8] The license issued by the Agency that granted priority rights would allow a licensee to remove materials from in place. At that point the materials would become the personal property of the licensee and marketable in accordance with any other applicable laws.

What about commerce that is not engaged in mining, such as space tourism? If an NGE wanted to establish a facility and/or engage in activities on the Moon, it would obtain a license for priority use of a location for that purpose. In this example, the licensee would need to honor the prohibition against disturbing cultural/historical sites as a condition for its license; the penalty for not doing so would be revocation of the license.

The use of a location on the Moon for a settlement is also defined in the proposed Implementation Agreement as an exploitation of resources. Settlers would likewise obtain a license for priority use of their chosen location that would provide the same or similar property rights that homeowners have on Earth. As with commercial activities, their license would be revoked if they did not comply with the Treaty’s public policy obligations.

Expanding the definition of “exploitation of space resources” to include the use of any location 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 the Moon Treaty - to facilitate humanity’s departure from our home planet.

5. The Creation of an Agency

Once the States Parties, through the Implementation Agreement, establish the requirements for a license, they will need to create an agency to administer the process. The Agency in the proposed IA will be ministerial, not discretionary. It will not pass judgement on the merits of any use, nor try to impose some universal “common law”. “The Agency *shall* issue a license to an NGE that is authorized and supervised by a State Party to this agreement.” (IA paragraph 3; emphasis added) The Agency will thus function like a Department of Motor Vehicles, focusing on licensing and registration, revoking a license if a licensee fails to follow the “rules of the road”, but not making substantive decisions.

The Hague Group has called for “The designation or establishment of an international body or bodies” responsible for the identification of best practices, governance of an international registry, and other functions:

18. Institutional arrangements

The international framework should provide for:

- a) The establishment and maintenance of a publicly available international registry for registering priority rights of an operator to search and/or recover space resources;
- b) The establishment and maintenance of an international database, in addition to the international registry, for making publicly available:
 - i. Advance notifications of space resource activities, including any area-based safety measures;
 - ii. Information and best practices;
 - iii. The list of designated and internationally endorsed outer space natural and cultural heritage sites; and
 - iv. The list of designated and internationally endorsed sites of scientific interest;
 - v. Information and best practices on the prior authorization and continuing supervision of space resource activities for which States and international organizations are responsible;
 - vi. Notifications of the termination of space resource activities for which States and international organizations are responsible.
- c) The designation or establishment of an international body or bodies responsible for:
 - i. The consideration and promotion of best practices;
 - ii. The listing of designated and internationally endorsed outer space natural and cultural heritage sites, and sites of scientific interest;
 - iii. The monitoring and review of the implementation of the international framework; and
 - iv. The governance of the international registry, the international database and any other mechanism that may be established for the implementation of the international framework. [7]

The proposed Agency would be such a body, with the licensing of NGE's added to the above portfolio. It is the potential revocation of such licenses that allows the enforcement of all other provisions of an international framework of laws for private activity in outer space.

6. Assessing a Fee

Perhaps the most contentious issue in space law is the proposal to use the profits of space commerce for income distribution to non-spacefaring countries. Article 11 of the Moon Treaty requires some sort of sharing of the benefits of resource development:

11.7. The main purposes of the international regime to be established shall include:

- (a) The orderly and safe development of the natural resources of the moon;
- (b) The rational management of those resources;
- (c) The expansion of opportunities in the use of those resources;
- (d) An equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration.[6]

This is a restatement of Article I of the Outer Space Treaty:

The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. [4]

The Hague Group Building Blocks state that “The international framework should not require compulsory monetary benefit-sharing” (13.2), though it also proposes that “Operators should be encouraged to provide for benefit-sharing.” (13.3) [6] The same section lists other ways in which the benefits of space exploration and development can be shared:

13. Sharing of benefits arising out of the utilization of space resources

13.1 Bearing in mind that the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and humankind, the international framework should provide that States and international organizations responsible for space resource activities shall provide for benefit-sharing through the promotion of the participation in space resource activities by all countries, in particular developing countries. Benefits may include, but not be limited to, enabling, facilitating, promoting, and fostering:

- a) The development of space science and technology and of its applications;
- b) The development of relevant and appropriate capabilities in interested States;
- c) Cooperation and contribution in education and training;
- d) Access to and exchange of information;
- e) Incentivization of joint ventures;
- f) The exchange of expertise and technology among States on a mutually acceptable basis;
- g) The establishment of an international fund. [7]

Some fear that the statement “The moon and its natural resources are the common heritage of mankind” in the Moon Treaty (Art. 11.2) [6] requires the literal sharing of all mined materials or the proceeds of their sale. It does not. The very same sentence in the Treaty continues “which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article.” Paragraph 5 then explicitly empowers the development of resources:

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. (Art. 11.5) [6]

Article 11.7, as quoted above, defines the “equitable sharing” of benefits. Compulsory monetary sharing is not explicitly required, nor is it prohibited. It is an option to be considered by the States Parties.

The proposed Implementation Agreement defers a decision on this most controversial issue. It requires the States Parties to create a governance process that can make such a decision in the future, along with any other substantive decision. The Agency’s authority will be limited to ministerial actions. By the terms of the IA, the Agency will only have the authority to collect fees to cover its own administrative costs. That provision is consistent with the Hague Group’s recommendation, as the fees will be used only for administration, not benefit-sharing.

How would such fees be structured? The implementation agreement for the Convention for the Law of the Seas (CLOS) allows NGE’s to pay the fee either as a standard amount up front or as a percentage of profit later. [9] There could be a reduced fee or no fee at all for settlements or scientific activity. The Agency should allow the greatest flexibility concerning fees in the name of encouraging activity, not restricting it. The Agency would follow any directive concerning fees given to it by the States Parties through their ongoing governance process, including a directive to collect no fees if the States Parties were willing to bear the entire cost of administration.

It is not necessary to resolve the issue of monetary benefit sharing at this time in order to provide legal support for private activity in outer space. Other types of benefit sharing will be implemented while a framework for collecting administrative fees is established. Doing so will help build capacity while building confidence among all interested parties for substantive decisions to be made later.

7. Governance for Substantive Decisions

If the Agency is ministerial, how will substantive decisions be made? Since the Moon Treaty and its Implementation Agreement are functions of international law, the States Parties can, by consensus (unanimous consent) make any such 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). [6]

The governance structure most relevant to space law is the one created by the Convention on the Law of the Seas (“CLOS”). The CLOS established a governing entity separate from the United Nations, composed of an Assembly made up of all Member States and an executive Council made up of 36 states who are chosen by the Assembly. Membership on the Council consists of five sub-groups to assure that all interests and interested parties are served. For example, four members are from countries who each consume more than 2% of the world’s consumables of potentially developable sea resources; 18 members are chosen to assure geographic diversity. (Agreement on Part XI, Annex 3) [9]

Since the Moon Treaty (Art.4) and even the Outer Space Treaty (Art. 1) require that “the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development” [6][4], sub-groups for governance would help insure that the “interests of all countries” are represented.

Although consensus is preferred, it is possible under the CLOS to make decisions in both the Assembly and the Council by a simple majority for procedural matters and by two-thirds majority for substantive matters. But all decisions on financial matters, including the charging of any fees, the administrative budget, and the use of any income “shall be based on the recommendations of the Finance Committee” that is chosen by the Executive Council. Decisions of the Finance Committee on substantive matters must be by consensus. (Agreement on Part XI, Annexes 3, 9) [9] This is still a high bar, but not as difficult as consensus by all States Parties for all substantive decisions.

The proposed Implementation Agreement requires the States Parties to create a form of governance to make such substantive decisions. **By deferring the decision on direct monetary transfers, the proposed IA can focus on other ways by which the benefits of space exploration and development can be shared with all of humanity. Just as the Moon Treaty calls for governance of activities as they become technologically possible, the Implementation Agreement envisions adaptive governance that can make decisions as they become politically possible.**

8. Sharing Information

One of the ways to share the benefits of outer space with all countries is to share information. The proposed Implementation Agreement confirms that NGE’s will have the same obligations as the States Parties concerning registration and sharing of information. These obligations come from the Outer Space Treaty, the Registration Convention, and the Moon Treaty itself. Additional reporting obligations have been recommended by COPUOS and the Hague Group. The following chart shows what each entity requires/recommends:

Table 1: Comparison of registration and information sharing requirements [10]

| | Outer Space Treaty | Registration Convention [11] | Moon Agreement | Building Blocks | COPUOS & Thematic Priorities [12] |
|-----------------------------------|--------------------|------------------------------|----------------|-----------------|-----------------------------------|
| <i>Nature*</i> | X | X | X | X | X |
| <i>Location</i> | X | X | X | X | X |
| <i>Results</i> | X | | X | X | |
| <i>Inspection</i> | X | | X | X | X |
| <i>Launching state</i> | X | X | (X) | | X |
| <i>Designation/identification</i> | | X | (X) | | X |
| <i>Date/time</i> | | X | X | X | X |
| <i>Orbital parameters</i> | | X | X | X | X |
| <i>Termination</i> | | X | (X) | X | X |
| <i>Duration</i> | | | X | X | |
| <i>Endangering phenomena</i> | | | X | X | X |
| <i>Scientific discovery/life</i> | | | X | X | |
| <i>Resources</i> | | | X | ? | |
| <i>Priority rights</i> | | | (X) | X | |
| <i>Harmful impacts</i> | | | | X | |
| <i>Best practices</i> | | | (X) | X | |
| <i>Scientific/ Heritage sites</i> | | | (X) | X | |
| <i>Nuclear power</i> | | | (X) | | X |
| <i>Change of status</i> | | | (X) | | X |
| <i>Web links</i> | | | (X) | | X |

* Includes function, purposes, and conduct (X) = with proposed implementation agreement (see Part 2 above)
 ? = The Hague Group’s Building Blocks include sharing the results of a mission; it is not clear if this includes sharing the discovery of resources.

The consensus COPUOS report notes that, in addition to sharing the benefits of space, registration also supports safety and long-term sustainability:

Guideline A.5 - Enhance the practice of registering space objects

1. States and international intergovernmental organizations, acting in accordance with their obligations under article VIII of the Outer Space Treaty and the Convention on Registration of Objects Launched into Outer Space and taking into consideration the recommendations contained in General Assembly resolutions 1721 B (XVI) and 62/101, should ensure the development and/or implementation of effective and comprehensive registration practices, as proper registration of space objects is a key factor in the safety and the long-term sustainability of space activities. Inadequate registration practices may have negative implications for ensuring the safety of space operations. [12]

If the procedures detailed in the Registration Treaty are used, the NGE's would report to a national registry maintained by a State Party, then the State Party would report to an international registry maintained by the United Nations.

The proposed Implementation Agreement would expand the information contained in the current international registry but would still be easily manageable. If the types of information are beyond the scope of the United Nations registry, they would be included in registries maintained by the Agency or other nongovernmental organization(s) selected by the States Parties.

9. Sharing Technology

Although the proposed Implementation Agreement defers the issue of direct monetary transfers, it specifically addresses the issue of sharing technology.

The Moon Treaty's reference to the Common Heritage of Mankind ("CHM") has raised concerns about the status of intellectual property rights. One commentator has suggested that:

"They [developed countries] would also be required to surrender technology developed by private industries under their jurisdiction for extracting extraterrestrial resources so that developing nations could participate in the activity of acquiring those resources as well." [13]

But the CHM has never been interpreted to require the "surrender" of technology. Consider how the IA for the Convention for the Law of the Seas, which also uses the CHM concept, describes the sharing of technology:

Section 5: Transfer of Technology

(a) The Enterprise, and developing States wishing to obtain deep seabed mining technology, *shall seek to obtain such technology on fair and reasonable commercial terms and conditions on the open market, or through joint-venture arrangements;*

(b) . . . States Parties undertake to cooperate fully and effectively with the Authority for this purpose and to ensure that contractors sponsored by them also cooperate fully with the Authority;

(c) As a general rule, States Parties shall promote international technical and scientific cooperation with regard to activities in the Area either between the parties concerned or by developing training, technical assistance and scientific cooperation programmes . . . [9] (emphasis added)

Article 13(f) of the Hague Group's Building Blocks also calls for an "exchange of expertise and technology among States on a mutually acceptable basis" as part of sharing the benefits of space development with all countries. [7]

The proposed Implementation Agreement for the Moon Treaty calls upon the States Parties to engage in such a cooperative process. As a backup, it requires the licensing of technology for fair market value, as in the CLOS. Although such a provision would require private companies to share technology, it would also mandate that they are paid a fair and reasonable amount for its use. (Note: The Hague Group has also proposed an "international fund" to help developing countries pay for such needed technology (13.1(g)) [7]) An exception is made for technologies that have been barred from export for national security reasons. The proposed IA would thus protect private economic interests and national security interests while helping less-developed countries obtain the technical capacity to share in the development of space resources.

10. Developing Standards and Practices

The Implementation Agreement requires the States Parties to develop standards and recommended practices (SARP's) for the development of outer space resources. This does not diminish the efforts of private enterprise and international organizations who are already doing so. It is not meant to create a super-agency that will override efforts that have been developing organically. 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) [14], the Committee on Space Research (COSPAR) [15], the Hague Group [7], the Moon Village Association [16], and For All Moonkind [17] are examples of such organizations.

These organizations include many scientists and engineers who provide a foundation of knowledge, skill, and experience. They use extensive outreach and inclusive working groups to harness the knowledge and expertise of interested parties, particularly industry, academia, and civil society. The Moon Village Association, for example, currently has active workgroups in the areas of Coordination & Cooperation, Cultural Considerations, and Architectural Concepts. [16]

Article 11.5 of the Moon Treaty calls for an agreement concerning the exploitation of resources “as such exploitation is about to become feasible.” Article 18 establishes a process for ongoing review. [6] **The Treaty anticipates that there will be ongoing advances in technology that will require a constant updating of the best 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 may well fail.**

11. 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. [6]

The organization For All Moonkind has declared as its primary mission the preservation of all historic landing sites on the Moon, including the boot prints and tracks left by explorers and rovers, not just as cultural/historical sites but also for scientific research, e.g., to study the effects of solar radiation and micrometeor strikes on surfaces newly exposed by such activity:

Declaration of Objectives and Agreements Regarding Cultural Heritage in Outer Space

This Declaration has as its primary objective the collaboration and participation of all Parties to ensure that Cultural Heritage Sites in Space are recognized for their outstanding value to humanity and consequently preserved and protected for posterity as part of our common human heritage. . . .

The Parties do hereby agree to:

1. Work together and with For All Moonkind to address the uncertainties with respect to current space law in relation to human heritage in space by *developing, adopting and amending from time to time as may be necessary, progressive standards and recommended practices and procedures (“SARPs) dealing with the protection and preservation of Cultural Heritage Sites in Space* on a general and a site-by-site basis, as the case may be. SARPs are intended to promote and facilitate the exploration and use of space, while balancing development and preservation. SARPs may take into consideration any national recommendations and guidelines implemented by national governments in respect of their own space objects.
2. Work with For All Moonkind to assure that each of their space activities, including any activities implemented before the development of relevant SARPs, whether on the Moon or elsewhere, will avoid disturbance and damage to any protected Cultural Heritage Sites in Space.
3. Work together and with For All Moonkind to assure that any entity seeking access to space through or with their services also agrees to assure that each of their space activities, whether on the Moon or elsewhere, will observe the SARPs, and in any event, avoid disturbance or damage to any protected Cultural Heritage Sites in Space.
4. Comply with any SARPs promulgated and agreed pursuant to Section 2(1) above. [17] (emphasis added)

It is unclear whether a new organization will be established to meet these goals or if the task will be given to an existing organization such as UNESCO. [17] Until such decisions are made and procedures in place, the proposed Implementation Agreement prohibits “the use or disturbance of any location on the Moon or other celestial body that is the site of a historical mission that occurred prior to the year 2000.” (Par. 9)

12. Cooperation, Assistance, and Rescue

Article 4 of the Moon Treaty requires cooperation among all States Parties:

4.2 States Parties shall be guided by the principle of co-operation and mutual assistance in all their activities concerning the exploration and use of the moon. International co-operation in pursuance of this Agreement should be as wide as possible and may take place on a multilateral basis, on a bilateral basis or through international intergovernmental organizations. [6]

Article 10 requires assistance and rescue:

1. States Parties shall adopt all practicable measures to safeguard the life and health of persons on the moon. For this purpose they shall regard any person on the moon as an astronaut within the meaning of Article V of 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] and as part of the personnel of a spacecraft within the meaning of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space [Rescue Treaty].
2. States Parties shall offer shelter in their stations, installations, vehicles and other facilities to persons in distress on the moon. [6]

The proposed Implementation Agreement would confirm that NGE’s also have the same obligations. It integrates the Rescue Treaty [19] into the international framework of laws concerning private activity in space, just as it integrates the Registration Treaty into the sharing of information.

What about sharing essential but scarce resources, such as water? Article 4.2 of the Moon Treaty, above, includes a mandate to cooperate. This is consistent with Article I of the Outer Space Treaty:

Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. [4]

The proposed Implementation Agreement confirms that NGE’s also have the obligation to cooperate, to provide free and open access to all areas, so long as there is no threat to safety or “harmful interference” with established operations. (See also Hague Building Blocks 10(g). [7]) As with other activities, if a dispute arises, then the dispute resolution process described in Paragraph 5 of the Agreement (consultation, arbitration) will be used. As with technology, if a resource is developed by a licensed NGE, the default process requires the resource to be shared via the marketplace at a price that assures a return of investment but is not monopolistic.

Currently, private organizations such as the Hague Group, the Moon Village Association, and For All Moonkind are supplementing the work of COPUOS and national governments in sorting out what it means to cooperate and assist. The Moon Treaty and the proposed IA call for incorporating the work of such organizations in developing the international framework of governance.

13. Controlling Law

The Outer Space Treaty requires all space activities to be approved and supervised by a national government.

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

- Outer Space Treaty, Article VI [4]

Both the Outer Space Treaty and the Moon Treaty extend a country's laws to cover their nationals and objects.

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 [4]

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 [6]

Thus, 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.

14. Resolution of Disputes

Article 15 of the Moon Treaty details a process for resolving disputes. It begins with a process for avoiding them – open visitation:

Each State Party may assure itself that the activities of other States Parties in the exploration and use of the moon are compatible with the provisions of this Agreement. To this end, all space vehicles, equipment, facilities, stations and installations on the moon shall be open to other States Parties.

- Moon Treaty, Art. 15.1 [6]

The proposed Implementation Agreement confirms that this obligation also applies to NGE's, part of their public policy obligation to share information as a way of sharing the benefits of space exploration and development with all of humanity. The Hague Group's Building Blocks also support such openness (Article 17, "visits"). [7]

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 Hague Group has recommended the use of arbitration as a "peaceful means" for resolving disputes, especially between NGE's:

19. Settlement of disputes

The international framework should encourage recourse by States, international organizations and operators to the resolution of disputes through adjudicatory, non-adjudicatory or hybrid mechanisms, for example by developing procedures for consultation or promoting the use of the 2011 Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities. [6] [20]

The proposed Implementation Agreement allows parties to voluntarily choose binding arbitration. It guarantees that any decision/award will be enforceable. [21] The Rules referenced above allow the parties to choose the arbitrators. The proposed IA includes the Agency itself in the process as informer/facilitator to aid with institutional continuity and precedents.

Establishing the protocols for dispute resolution may be the most difficult task in creating the Implementation Agreement, but they are essential.

15. 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 also the only way to negate the prohibitions against ownership 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 any location on the Moon for any purpose.

This interpretation is consistent with the other provisions of Article 11, such as 11.4, which asserts a universal “right to exploration and use of the moon” and 11.7, which states that “the main purposes of the international regime to be established shall include: (a) The orderly and safe development of the natural resources of the moon, (b) The rational management of those resources.” [6] “Use” and “development” are terms common to the management of real estate. Including all private activity within the scope of the Moon Treaty provides the authority, support, and protection that those activities require. If the purpose of 11.5 is to permit use and development of the Moon, then it must have the same scope as the prohibition against ownership in 11.3.

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. [22] They pointed again to Articles 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 11.3’s prohibition against ownership (above) [6] As explained above, the international framework of laws authorized by Article 11.5 overrides those prohibitions. **The proposed Implementation Agreement specifically authorizes the establishment of private settlements.**

For those who wish to establish independent nations on the Moon or elsewhere in space, the Treaty’s prohibitions are actually helpful. First, the ban on sovereignty stops the States Parties from establishing permanent colonies. Second, the proposed Implementation Agreement will provide settlements the protection of legal recognition and support. Third, **the Implementation Agreement confirms that a settlement can seek autonomy and/or independence through established international protocols.** [23]

16. Individual Rights

Applying international law to outer space activities can be challenging. 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 seem to say that their country of origin retains jurisdiction, and can have them returned (see Controlling Law, above).

Do the treaties require the person to be returned? 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.” [24] The proposed 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 proposed 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. Indeed, it will never be adopted.

17. Adaptive Governance

The proposed 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 new governance for issues that are not yet ripe for resolution. It links private property 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. [6] (emphasis added)

In addition, 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 both technology and governance itself can evolve to the next level.

The Hague Group's Building Blocks endorse this approach:

Introduction

Guided by the principle of adaptive governance, the Working Group considered it neither necessary nor feasible to attempt to comprehensively address space resource activities in the building blocks: space resource activities should be incrementally addressed at the appropriate time on the basis of contemporary technology and practices.

4. Principles

4.2 The international framework should be designed to a) adhere to the principle of adaptive governance by incrementally regulating space resource activities at the appropriate time. [7]

Adaptive/evolving governance is also part of the United Nations' Thematic Priorities for outer space:

2. Legal regime of outer space and global space governance: current and future perspectives. (c) Studying legal mechanisms to foster an international regime of responsibility and liability to cope with present and future challenges to the safety, security and sustainability of outer space activities . . .

7. Capacity-building for the twenty-first century: Define new innovative and effective approaches to overall capacity-building and development needs as a fundamental pillar of global space governance. [25]

The recent COPUOS Guidelines for the Long-term Sustainability of Outer Space Activities also envision an ongoing evolution ("Review of implementation and updating of guidelines", Section I, Paragraphs 21-24). [11]

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 new COPUOS guidelines, though helpful, are not sufficiently specific and are voluntary; the resulting patchwork of national laws will be far from uniform and perhaps even conflicting. The time has come to craft a new agreement that will facilitate the sustainable exploration and development of outer space. In the spring of 2020, it is the Moon Treaty, with a proper implementation agreement, that can provide the international framework of laws that humanity needs to become a space-faring species.

18. Science and the Law

Writing for science is like writing for the law. Each must be precise, and each must be subject to the most vigorous review. Like the scientific method, space law has its own tests: Is a proposed law firmly grounded in science? Is it practical and feasible? Does it keep regulation to a minimum to encourage entrepreneurship and individual initiative/creativity? The proposed agreement is being presented to the scientific community to be put to the test. If it passes the test, then it may even merit the community's support.

Space law is at the intersection of science and history. When the first engineers built irrigation systems to feed the first civilizations, a system of laws was created to govern the use of land and water. Every advance in technology since has required an advance in law. Even science itself has been protected through the development of intellectual property law. It can 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, just six decades ago, 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. [26]

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. [27] 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.



But even though no borders were visible, war and suffering continued 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 the news of yet another mass killing, more terrorist attacks, the disastrous effects of climate change, and an increased threat of nuclear war. 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, causing widespread misery and countless wars. And when the Industrial Revolution came along, governments placed profits ahead of people, resulting in economic and environmental catastrophe. Much of humanity stopped believing in its ability to control its own destiny.

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 will lead each person, and all nations, to their best destiny. That time is now.

In the classic science fiction movie, *The Day The Earth Stood Still*, interstellar traveler Klaatu came to Earth to help its inhabitants move beyond endless war and suffering into an era of cooperation. He had intended to speak with political leaders, but they were intractable. It was an international gathering of the leaders of science that ultimately received the message. [27] In the year 2020, the scientific community once again has an opportunity to consider and influence the way forward. Will humanity benefit more from endless nationalistic conflicts or from international cooperation?

As Klaatu reminded us, the choice is ours.

(Dennis O'Brien is an attorney and former member of the NASA-Hastings Research Project (1984-85), one of the first formal studies of space law. He has worked in the public interest most of his career, helping low-income families and nonprofit organizations. He is currently president of The Space Treaty Project, a California nonprofit that is dedicated to giving people hope and inspiration by helping the nations of the world to build a common future. The Project is an organizational member of the Moon Village Association; Mr. O'Brien sits on their Coordination & Cooperation Workgroup. For more information, including a petition in support of the Moon Treaty, please go to www.spacetreaty.org.)



References (All internet citations last accessed on January 29, 2020)

[1] Stutt, Amanda, How Earth-bound Mining Lawyers Think About Space Mining, Mining.Com, Jan. 3, 2020 (interview with Scot Anderson, attorney and Global Head of Energy & Natural Resources with the law firm Hogan Lovells in Denver, Colorado). https://www.mining.com/how-earth-bound-mining-lawyers-think-about-space-mining/?fbclid=IwAR0pbCwO20c9W_uEd1Rve0ME_6Aw5Z4XMqqr_MdTSrYr-L-VkB_TkKD5JrI. See also Filling Space, What Is the Moon Treaty And Is It Still Useful?, an interview with Michelle Hanson, president of For All Moonkind. Like Mr. Anderson, Ms. Hanson focuses on the uncertainty caused by the phrase “common heritage of mankind” but does not consider the possibility of an implementation agreement that defines the term. <https://filling-space.com/2020/01/17/what-is-the-moon-treaty-and-is-it-still-useful/?fbclid=IwAR2HHd5x6hPQQf7AsuLuVoy5JpY98LxsWEbYofRCjiRwTlqKn8gkMP5tDGc>

[2] Proposal for Working Methods and Work Plan of the Working Group on Legal Aspects of the Exploration, the Utilization and the Exploitation of Space Resources, offered by Greece and Belgium on April 11, 2019. http://www.unoosa.org/res/oosadoc/data/documents/2019/aac_105c_22019crp/aac_105c_22019crp_26_0_html/AC105_C2_2019_CRP26E.pdf

[3] Cheney, Thomas, Austria encourages States to adopt Moon Treaty, Report from UN-COPUOS Legal Subcommittee meeting, April 8, 2019. <http://twitter.com/thomascheney/status/1115173237170876416> Mr. Cheney is Executive Director of the [Centre for a Spacelaw Civilization](http://www.centreforaspacelaw.org).

[4] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (also known as the Outer Space Treaty), October 10, 1967. 108 countries are parties to the treaty; another 23 have signed the Treaty but have not completed ratification. <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>

[5] The United States has enacted legislation that unilaterally grants property rights to a space resource to any U.S. entity that gets to it first. United States Commercial Space Launch Competitiveness Act, Section 51313 (2015) <https://www.govinfo.gov/content/pkg/PLAW-114publ90/html/PLAW-114publ90.htm>; “Space is a warfighting domain. . . . It is not enough to merely have an American presence in space. We must have American dominance in space.” Vice-President Mike Pence, Washington Post, videos, October 23, 2018, August 9, 2018. <https://www.youtube.com/watch?v=0LtLNp4nde0>, <https://www.youtube.com/watch?v=9xEkyT7XrxQ>; “The fear is that such rhetoric will lead to a new arms race and possible war in outer space. It may also lead to the economic colonization of space around claims for resource exploitation, including the establishment of economic exclusion zones.” Freeland, Steven, The US Plan for a Space Force Risks Escalating a “Space Arms Race”, The Conversation, Aug. 10, 2018. <https://theconversation.com/the-us-plan-for-a-space-force-risks-escalating-a-space-arms-race-101368>. Mr. Freeland is a Professor of International Law at Western Sydney University, Australia; “Are we getting into kind of a Wild West situation of claim jumpers or will there be some methodology?” Meredith, Sam, Davos 2020: [U.S. Commerce Secretary] Wilbur Ross Fears ‘Wild West Situation’ As International Space Race Gathers Steam, CNBC Online, January 22, 2020. https://www.cnbc.com/2020/01/22/davos-2020-wilbur-ross-fears-wild-west-situation-amid-space-race.html?fbclid=IwAR1o_kC3TOnYbSo2BJhFuYzhPk9SWL9ofobGhAU7ElvxGQt1NzUMN3o1CI

[6] Agreement Governing The Activities Of States On The Moon And Other Celestial Bodies (also known as the Moon Treaty), July 11, 1984. 18 countries are parties to the Treaty; another 4 have signed the Treaty but have not completed ratification. <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html>

[7] The Hague International Space Resources Governance Working Group, Building Blocks for the Development of an International Framework on Space Resource Activities (November 2019) <https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimterecht/space-resources/bb-thissrwwg--cover.pdf>.

[8] Force, Melissa K., Moon Agreement and Property Rights (video), <https://www.youtube.com/watch?v=dgQOKjTikUw> and its referenced PowerPoint presentation, Space Law Principles That Encourage Extraterrestrial Resource Extraction and Investment, <http://images.spaceref.com/docs/2013/CSCA2013/Mellisa-K-Force-presentation.pdf> Nov. 5, 2013. Ms. Force is currently general counsel for the New Mexico Spaceport Authority.

[9] Agreement Relating to the Implementation of Part XI of the Convention of the Law of the Sea, December 10, 1982. 167 countries are parties to the Convention. https://www.un.org/depts/los/convention_agreements/texts/unclos/closindxAgree.htm

[10] For a more detailed analysis of registration and information sharing for lunar activities, see Moon Village Association, Registration of Landing Sites and Other Surface Activity on the Moon, November 13, 2019. <https://moonvillageassociation.org/white-papers-of-coordination-cooperation-working-group-public-consultation/>.

[11] Convention on Registration of Objects Launched into Outer Space, September 15, 1976. 69 countries are parties to the Convention. The actual registrations of space objects, by year or by country, are available at the linked site. <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introregistration-convention.html>

[12] Report of the Committee on the Peaceful Uses of Outer Space, Sixty-second session, 12–21 June 2019. http://www.unoosa.org/res/oosadoc/data/documents/2019/a/a7420_0.html/V1906077.pdf; and Draft guidance document under UNISPACE+50 thematic priority 2. “Legal regime of outer space and global governance: current and future perspectives”, Working paper submitted by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, April 2019. http://www.unoosa.org/oosa/oosadoc/data/documents/2019/aac.105c.21/aac.105c.21.310_0.html.

[13] Listner, Michael, The Moon Treaty: Failed International Law or Waiting in the Shadows?, The Space Review, Oct. 24, 2011. <http://www.thespacereview.com/article/1954/1> Mr. Listner is the founder of [Space Law and Policy Solutions](#).

[14] International Organization for Standards (ISO) (search “space” for specifics). <https://www.iso.org/home.html> The ISO is an official non-voting Observer of UN-COPUOS.

[15] The Committee on Space Research (COSPAR). <https://cosparhq.cnes.fr> COSPAR is an official non-voting Observer of UN-COPUOS.

[16] Moon Village Association Working Groups. <https://moonvillageassociation.org/about/working-groups/> The Moon Village Association is an official non-voting Observer of UN-COPUOS.

[17] For All Moonkind, Declaration of Objectives and Agreements Regarding Cultural Heritage in Outer Space. <https://www.forallmoonkind.org/about/the-declaration/> For All Moonkind is an official non-voting Observer of UN-COPUOS.

[18] The Times Editorial Board, A World Heritage site on the moon? That’s not as spacey as it sounds, Los Angeles Times, February 22, 2019. <https://www.latimes.com/opinion/editorials/la-ed-moon-nasa-russia-united-nations-world-heritage-20190222-story.html> See also Hanlon, Michelle D., The Case for Protecting the Apollo Landing Areas as Heritage Sites, Discover, February 19, 2019. <http://blogs.discovermagazine.com/crux/2019/02/19/protecting-human-heritage-on-the-moon-dont-let-one-small-step-become-one-giant-mistake/#.XS-HW097m00>

[19] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (also known as the Rescue Treaty), December 3, 1968. 93 countries are parties to the treaty; another 24 have signed the Treaty but have not completed ratification. <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/rescueagreement.html>

[20] Permanent Court Of Arbitration, Optional Rules For Arbitration Of Disputes Relating To Outer Space Activities. <https://pca-cpa.org/wp-content/uploads/sites/6/2015/12/Permanent-Court-of-Arbitration-Optional-Rules-for-Arbitration-of-Disputes-Relating-to-Outter-Space-Activities-1.pdf>

[21] “While the PCA [Permanent Court of Arbitration] rules for disputes in outer space provide a viable forum for future disputes between private space actors, the question of whether the binding nature of a ruling can be enforced is salient. In other words, it is one thing to receive an arbitral award; it’s another to enforce it. The question is whether a party will abide by the decision and whether it can be enforced if a party chooses not to.” Listner, Michael J., The Space Review, July 22, 2019. <http://www.thespacereview.com/article/3760/1>

[22] Henson, H. Keith and Lucas, Arel, Star Laws, *Reason* Magazine, Aug. 1982. <https://groups.google.com/forum/#!msg/sci.space.policy/u8i2OEytsmA/8PTk7o3QVDYJ> Mr. Henson was a founder and the first president of the L-5 Society; Ms. Lucas was the editor of L-5 News. The L-5 Society has since merged with the National Space Society (NSS). See also Michael A. G. Michaud, Reaching for the High Frontier, National Space Society (1986). <https://space.nss.org/reaching-for-the-high-frontier-chapter-5/> The NSS is an official non-voting Observer of UN-COPUOS.

[23] See, e.g., Centre for a Spacefaring Civilization, Space Settlement Governance: An Overview of Legal and Policy Issues (2019). <https://d22xde9k87c4ut.cloudfront.net/assets/reports/Sss4AoM9dbDYgYZHG.pdf>

[24] Universal Declaration of Human Rights. <https://www.un.org/en/universal-declaration-human-rights/index.html>

[25] United Nations Office of Outer Space Affairs, Unispace+50 Thematic Priorities (2016). http://www.unoosa.org/documents/pdf/unispace/plus50/thematic_priorities_booklet.pdf.

[26] See, e.g., Ellison, Harlan, The City on the Edge of Forever (Edith Keeler speech), Star Trek, April 6, 1967. <https://www.youtube.com/watch?v=h9Dq8XJTkL0>

[27] NASA, Earthrise: The 45th Anniversary. <https://www.youtube.com/watch?v=dE-vOscpiNc&t=3s>

[28] Wikipedia, The Day the Earth Stood Still (1951). https://en.wikipedia.org/wiki/The_Day_the_Earth_Stood_Still