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The Way Forward: An Implementation Agreement for the Moon Treaty

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Abstract

The United Nations' Committee on the Peaceful Uses of Outer Space has accomplished much over the decades, most notably the five space treaties and related guiding principles. But it has failed to produce the international framework of laws needed to support humanity's departure from our home planet. The Moon Treaty, with the proper Implementation Agreement, now offers the best hope for doing so. 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) **Trade** private property rights for public policy obligations (The Grand Bargain);
- 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 July 2019, 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:

“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.”

Most countries agree that the prohibition against appropriation prevents any country from granting property rights on its own authority. A small minority disagree, enough so that the potential for conflict has grown. Since one of the goals of law to avoid conflicts, it is imperative to create the international framework before they occur.

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. 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.

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 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 mission of space law must be nothing less than to restore 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.

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 people, to their best destiny. That time is now.

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 failed to produce an international framework of laws to facilitate humanity's departure from our home planet. At the April 2019 meeting of its Legal Subcommittee, a proposal by Greece and Belgium to use COPUOS to draft such a framework failed to achieve consensus. [1] At the same meeting, Austria, one of the 18 current States Parties of the Moon Treaty, called on other nations to adopt it. [2] The Moon Treaty, with the proper Implementation Agreement (IA), now offers the best hope for creating the international framework of laws. 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.

At its full committee meeting in June, COPUOS adopted 21 "Guidelines for the Long-term Sustainability of Outer Space Activities". The Guidelines encourage national governments to adopt policies and regulations that will ensure the peaceful and sustainable use and exploration of outer space on behalf of all people, including future generations. But they do not provide enough specifics or a legal foundation for private activity in outer space, only the hope that countries will work together and somehow adopt identical regulations. [3]

The Space Treaty Project (see end comments) 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) **Trade** private property rights for public policy obligations (The Grand Bargain);
- 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

Preamble: 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.

2.1. Creation of 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").

2.2. Licenses for Private Activity

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 (such as tourism), and (c) the use of a location for noncommercial private activity (such as settlements). Licenses shall describe the extent, duration, and nature of the activity and shall maximize access for all in accordance with Treaty Article 8. Use by governments is authorized under Treaty Articles 8 and 9.

2.3. Requirements for License

The Agency shall issue a license upon the proper application by any NGE 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.

2.4. Public Policy Obligations

The public policy obligations of the Treaty include the following:

1. Using outer space exclusively for peaceful purposes (Article 3.1);

2. Providing co-operation and mutual assistance (4.2);
3. Informing the public of activities (including compliance with the Registration Convention) and any scientific discoveries (5.1);
4. Informing the public of any phenomena which could endanger human life or health, or any indication of organic life (5.3);
5. Protecting the environment (7.1);
6. Preserving areas of “special scientific interest” such as historic landing sites (7.3);
7. Allowing free access to all areas by other parties (9.2);
8. Honoring the Rescue Treaty (10.1)
9. Informing the public of the discovery of resources (11.6).

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.

2.6. 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 maintained by the United Nations

2.7. Heritage 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 making such determinations or to designate another entity/process for making such determinations that will be binding on the States Parties.

2.8. Collection of Fees; Governance

The States Parties are ultimately 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. The States Parties agree to create a process of governance for making this and other substantive decisions as authorized under Article 18 of the Treaty.

2.9. 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.

2.10. 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 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 July 2019, 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:

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]

Most countries agree that the prohibition against appropriation prevents any country from granting property rights on its own authority. A small minority disagree, enough so that the potential for conflict has grown. Since one of the goals of law to avoid conflicts, it is imperative to create the international framework before they occur.

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:

11.2. 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)

The States Parties are thus authorized 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 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:

5. International responsibility for space resource activities and jurisdiction over space products

5.1 The international framework should provide that States and intergovernmental organizations shall be responsible for space resource activities authorized by them in accordance with their international obligations. [6]

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, including attracting investors, almost impossible.

4. The Use of Priority Rights

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

6. Access to space resources

6.1 The international framework should enable the unrestricted search for space resources.

6.2 The international framework should enable the attribution of priority rights to an operator to search and/or recover space resources *in situ* 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. [6]

The current prohibition on the ownership of materials applies only to materials “in place”, sometimes called *in situ*. [7] The license issued by the Agency 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 apply for 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 upon the proper application by an NGE that is authorized and supervised by a State Party to this agreement." (IA paragraph 3) 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:

17. 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 recover space resources *in situ*;
- b) The establishment and maintenance of an international repository, in addition to the international registry, for making publicly available:
 - i. Information and best practices;
 - ii. The list of designated and internationally endorsed outer space natural and cultural heritage sites; and
 - iii. The list of designated and internationally endorsed sites of scientific interest;
- c) *The designation or establishment of an international body or bodies* responsible for:
 - i. The identification 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 as well as its modification or amendment; and
 - iv. The governance of the international registry, the international repository and any other mechanism that may be established for the implementation of the international framework. [6] (emphasis added)

The proposed Agency would be such a body, with the licensing of NGE's added to the above portfolio. It is the granting and revocation of such licenses that allows the enforcement of all other provisions of any 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.[5]

The Hague Group Building Blocks state that “The international framework should not require compulsory monetary benefit-sharing” (12.2), though it also proposes that “Operators should be encouraged to provide for benefit-sharing.” (12.3) [4] The same section lists other ways in which the benefits of space exploration and development can be shared:

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

12.1 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 intergovernmental organizations authorizing 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) Development of space science and technology and of its applications;
- b) 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) Exchange of expertise and technology among States on a mutually acceptable basis;
- g) Establishment of an international fund. [6]

Some fear that the statement “The moon and its natural resources are the common heritage of mankind” in the Moon Treaty (Art. 11.2) [4] 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) [5]

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 instructs 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 at a later date. [8] The fee for a settlement, if any, would likely be less than for an income-producing use. The Agency should allow the greatest flexibility for payment of 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 (see below).

Ultimately, the States Parties are responsible for the cost of administration. If a State Party does not want it’s NGE’s to pay the fee and instead wants its national government to bear the cost of administration, it can grant a tax credit for the amount of the fee to any NGE required to pay it. This process would guarantee funding for administration while giving individual State Parties control over who pays it.

In short, it is not necessary to resolve the issue of monetary benefit sharing at this time in order to empower space commerce and settlements. Other types of benefit sharing will be implemented while a framework for collecting fees is established. Doing so will help build capacity while building confidence among all interested parties for substantive decisions that must 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). [5]

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) [8]

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” [4][3], the sub-groups for governance will 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. 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) [8] 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 till then, the proposed IA can focus on the 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 to make decisions as they become politically possible.

8. Sharing Information

One of the ways to share the benefits is to share information. The proposed Implementation Agreement confirms that NGE’s will have the same obligations as the States Parties concerning the sharing of information. This begins with their obligation to share information under the Registration Treaty:

Article IV

1. Each State of registry shall furnish to the Secretary-General of the United Nations, as soon as practicable, the following information concerning each space object carried on its registry:

- (a) name of launching State or States;
- (b) an appropriate designator of the space object or its registration number;
- (c) date and territory or location of launch;
- (d) basic orbital parameters, including:
 - (i) nodal period;
 - (ii) inclination;
 - (iii) apogee;
 - (iv) perigee;
- (e) general function of the space object. [9]

Article 5.1 of the Moon Treaty requires more detailed information:

States Parties shall inform the Secretary-General of the United Nations as well as the public and the

international scientific community, to the greatest extent feasible and practicable, of their activities concerned with the exploration and use of the moon. Information on the time, purposes, locations, orbital parameters and duration shall be given in respect of each mission to the moon as soon as possible after launching, while information on the results of each mission, including scientific results, shall be furnished upon completion of the mission. In the case of a mission lasting more than sixty days, information on conduct of the mission, including any scientific results, shall be given periodically, at thirty-day intervals. For missions lasting more than six months, only significant additions to such information need be reported thereafter. [5]

Article 5.3 of the Moon Treaty would also require NGE's to promptly report "any phenomena they discover in outer space, including the moon, which could endanger human life or health, as well as of any indication of organic life." [5]

Finally, Article 11.6 of the Treaty would require NGE's to disclose the discovery of any natural resources. [5] Such discoveries would *not* be considered proprietary information. This interpretation is consistent with the Hague Group's Building Blocks, depending on their definition of sharing "the results of space resource activity." Section 13(e) lists the type of information that should be shared:

13. Registration and sharing of information

(e) Provide . . . information and best practices on . . . space resource activities . . . including:

- i. The purposes, locations, orbital parameters and duration of space resource activities;
- ii. The nature, conduct, and locations of space resource activities and associated logistic activities, for example deployment of stations, installations, equipment and vehicles;
- iii. The results of space resource activities;
- iv. Any phenomena discovered in outer space which could endanger human life or health, as well as of any indication of life;
- v. Any harmful impacts resulting from space resource activities authorized by them and the measures planned or implemented to redress such impacts. [6]

The COPUOS Legal Sub-Committee has recently released a draft guidance document that summarizes the intent of the five space treaties, indicating a similar scope of what information should be shared:

48. The registration regime contained in the outer space treaties aims at the exchange of information on the nature, conduct, locations and results of space activities, in particular by submitting registration data to the Secretary-General of the United Nations and establishing national registries. States shall set up a national registry and additionally submit information to the United Nations Register maintained by the Office for Outer Space Affairs. [10]

Although the Moon Treaty itself describes the above as obligations of the States Parties, the Implementation Agreement would clarify that all such obligations also apply to NGE's (see 1.4 above). 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 (e.g., results of a space activity) are beyond the scope of the United Nations registry, they would be included in registries maintained by the Agency or another 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." [11]

The conflict over the meaning of the CHM is central to the debate over Moon Treaty. More than anything else, it is keeping Treaty from being adopted, as some claim that the concept grants sweeping powers to international organizations while others fear precisely that. [12]

The middle way is to define what the CHM means for particular circumstances. The Moon Treaty itself tells us that the CHM is what we choose to make it:

Article 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. . . .

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)

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 . . . [8]

Article 12 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 (see Assessing a Fee, above.) [6]

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 proposed an "international fund" to help developing countries pay for needed technology.) 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 ensuring that less-developed nations have 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) [13], the Committee on Space Research (COSPAR) [14], the Hague Space Resources Group [6], the Moon Village Association [15], and For All Moonkind [16] are examples of such organizations.

These organizations use extensive outreach and inclusive working groups to harness the knowledge and expertise of interested parties, particularly commerce, academia, and civil society. The Moon Village Association, for example, currently has active workgroups in the areas of Coordination & Cooperation and Cultural Considerations. [15]

Article 11.5 of the Moon Treaty instructs us to establish the international framework of laws concerning the exploitation of resources "as such exploitation is about to become feasible." Article 18 establishes a process for ongoing review. [5] The Treaty thus 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 the 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. [5]

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. [16]

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. [16] 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.” (Paragraph 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. [5]

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. [5]

The proposed Implementation Agreement would confirm that NGE's also have the same obligations. It integrates the Rescue Treaty [18] 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 COPUOS guidelines agree. "Outer space should remain . . . open for exploration, use, and international cooperation." (Section 1.4)

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 10.3. [6]) 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 [5]

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. 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 – mutual inspection:

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 [5]

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.

Article 15 goes on to describe 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 Space Resources Governance Working Group has recommended the use of arbitration as a “peaceful means” for resolving disputes, especially between NGE's:

The international framework should encourage recourse by States, intergovernmental organizations and operators to the amicable resolution of disputes, 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. [5] [19]

The proposed Implementation Agreement allows parties to voluntarily choose binding arbitration. It guarantees that any decision/award will be enforceable. [20] 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.” [5] “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. [21] 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) [5] 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. [22]

16. Individual Rights

Applying international law to outer space activities can be challenging. What if an inhabitant of a settlement sought 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." [23] 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 issue in space governance. Rather, it provides the minimum framework of international law that is necessary at this time 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*. (emphasis added) [5]

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 so as to a) incrementally regulate space resource activities at the appropriate time (principle of adaptive governance). [6]

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. [24]

The recent COPUOS guidelines also envision an ongoing evolution (“Review of implementation and updating of guidelines”, Section I, Paragraphs 21-24). [3]

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 Summer of 2019, 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. The Challenge of Nationalism

But such international efforts are now being threatened. The United States has already passed a law that would unilaterally grant property rights to a space resource to any U.S. entity that gets to it first. [25] The Trump administration intends to use the U.S. military to protect such economic interests. In August 2018, U.S. Vice-President Mike Pence announced a new Space Policy Directive, calling for the creation of a "Space Force". "Space is a warfighting domain", said Pence, quoting President Trump. The United States must "prepare for the next battlefield", to "defeat a new generation of threats."

"It is not enough to merely have an American presence in space," said Pence. "We must have American dominance in space." [26] Such militant nationalism has been common throughout history. But as humanity prepares to leave its home planet, it raises new concerns. As one commentator stated:

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. [27]

This concern was also raised at last year's UNCOPUOS Legal Subcommittee conference:

29. The view was expressed that space resources were accessible to only a very limited number of States and to a handful of enterprises within those States. In that connection, the delegation expressing that view was also of the view that it would be important to assess the impact of a "first-come, first-served" doctrine on the global economy, which could create a de facto monopoly in complete contradiction to the letter and the spirit of the United Nations treaties and resolutions. [28]

These are the two futures facing humanity, a choice between international cooperation and nationalistic competition. In order to make that choice, every policymaker and interested party must now pause and ask themselves, on the deepest level, "What is our mission?"

19. The Overview Through Time

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.

This paper has so far been written in legal and economic terms. It has tried to demonstrate that a comprehensive international framework of laws for the development of space resources will actually help private enterprise flourish, and that the certainty and support of the rule of law will allow countries, businesses, non-profits and even individuals to dare to make their dreams come true. It is now time to speak of those dreams.

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.

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.



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.

Imagine looking up at the Moon in the future, knowing that humans are there, living and working under a common framework of international law. Every person on Earth will have that same experience, just as we did in 1957. Just imagine the inspiration and hope that looking at that Moon will give to a whole new generation of humanity, one that is not bound by the mistakes of the past.

20. Conclusion: The Time to Act

It is time to voice support for adopting the Moon Treaty with an Implementation Agreement and to make every effort to persuade national governments to do so. The current States Parties should immediately begin the process of creating an Implementation Agreement. All other nations with an interest in outer space should adopt the Treaty and help create the international framework of laws that will facilitate humanity's departure from the home planet.

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 people, to their best destiny. That time is now. Please join in this effort to inspire humanity, restore hope, and create a better world – a better universe – for everyone.

Curriculum Vitae

Dennis O'Brien is an attorney and former member of the NASA-Hastings Research Project. He has worked in the public interest most of his career, helping low-income families and local nonprofits. He is currently president of The Space Treaty Project, a California nonprofit that is dedicated to bringing inspiration and hope to humanity 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.



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