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REALITY AND CLARITY IN UNDERSTANDING THE PROHIBITION ON NATIONAL APPROPRIATION IN ARTICLE II OF THE OUTER SPACE TREATY

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Article II of the 1967 Outer Space Treaty states that "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." The geopolitical reality is that the Outer Space Treaty will not be replaced or repealed by the international community, which is currently averse to new treatymaking. Additionally, discussions of the 1979 Moon Agreement are merely academic, given the low number of ratifying states. Consequently, any pragmatic discussion on the laws applicable to asteroid mining must begin with an understanding of the Outer Space Treaty as it is. Asteroid mining and related uses of celestial resources hinges upon a clear understanding of the legal rights and obligations created by this foundational legal instrument. However, a mere reading of the words without a nuanced understanding of their context, and the object and purpose of the treaty as a whole, can only result in a misunderstanding of this prohibition. International lawyers have often failed to communicate to others in the space industry how this important clause should be read, interpreted, and applied. This paper will give a simple and clear discussion of Article II, detailing what it explicitly prohibits, what it omits to address, and what it implicitly permits. The accepted methods of treaty interpretation in international law will be discussed, and then applied to Article II.

I. INTRODUCTION

This paper will argue that the prohibition on national appropriation contained in the body of international law, specifically the 1967 Outer Space Treaty, is not so absolute in its prohibitions so as to forbid a whole host of planned and useful activities in outer space, including the use and exploitation of existing materials on a number of celestial bodies. The reality is that the solar system is filled with resources many hundreds of times more vast than the resources of Earth. A prohibition on using them for humankind's benefit, just as our spaceflight capabilities and our access, exploration, and use of outer space increases, is both illogical and impracticable. Furthermore, it is at odds with the true aim and purpose of international space law. A prohibition on the use of resources defeats the object and purpose of the space treaties - the reason they were drafted, and the future they anticipated. True, there are certainly pristine, scientifically precious areas of the solar system which should not be exploited and wholly consumed with little regard to their scientific importance. For example, perhaps the moons of Enceladus, Europa, and other important and unique bodies across the solar system should be preserved, as should unique areas of the Moon and other of the largest bodies in our solar system. However, the almost innumerable balls of ice and rock which populate vast swaths of space, including the main asteroid belt and the Kuiper belt are so fungible and indistinguishable from one another, that they can be used in a manner which suits the interests of humankind. To prohibit their use defeats the intentions of space law.

II. EXTRATERRESTRIAL RESOURCES

Many authors have discussed the great opportunities of using the physical resources in our solar system, as a scientific resource, as a physical resource to derive fuel, air, or water to aid exploration missions, and even to mine for economic purposes. Asteroids contain valuable materials including iron, nickel, water, and rare platinum metals such as ruthenium, rhodium, palladium, osmium, iridium, and platinum. Some asteroids are mostly water, with others are heavy with metals. Commercial companies (both traditional mining firms and space start-ups) are considering the business potential of these celestial resources[1].

In addition to their scientific and commercial worth, a lesser mentioned benefit to accessing asteroids is how we can use them for training - the type of training necessary for developing key technologies and capabilities. Detecting an asteroid, computing its orbit and trajectory, performing asteroid ranging and proximity operations, "docking" with the asteroid, and performing operations there will all evolve our technical prowess. Space agencies have agreed that these technologies and capabilities are key for future exploration plans[2].

Figure-I below shows the main asteroid belt, between the orbits of Mars and Jupiter. It also shows the location of bodies of asteroids leading and trailing Jupiter in its orbit around the Sun. The use of these large populations of fungible resources is the proposed phenomena discussed in the legal analysis below.

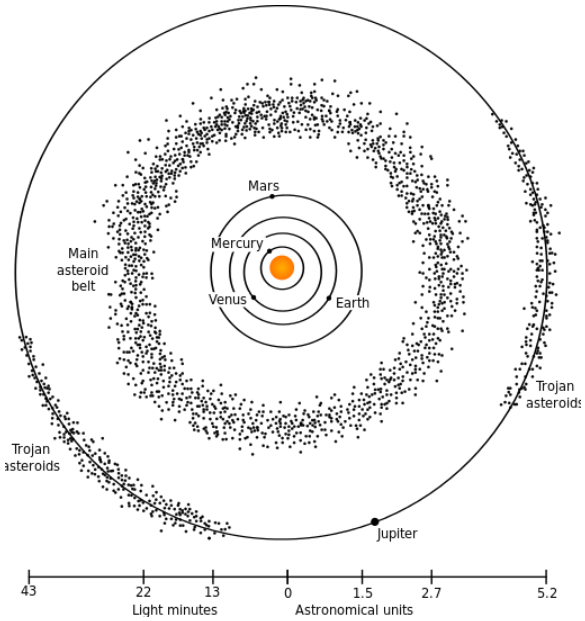

Fig. I: Main Asteroid Belt. Source: Wikimedia commons.

III. PROHIBITION ON NATIONAL APPROPRIATION UNDER INTERNATIONAL SPACE LAW

III. I The 1967 Outer Space Treaty

On the international level, the 1967 Outer Space Treaty is the most fundamental source of space law[3]. It is equally fundamental on the national level, creating rights and obligations for states in the conduct of their national space activities, as well as making them responsible and potentially liable for the actions of non-governmental actors in space (such as private corporations).

Article II of the Outer Space Treaty sets the regime for the interaction with resources on all celestial bodies in our solar system outside of the Earth, stating:

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.

This single sentence, a mere thirty words long, lays the foundation for all of humankind's interaction with celestial bodies. To some, it seems to conclusively prohibit the use of celestial resources. Property rights are correctly understood as a relationship between sovereign government and some entity subservient to the sovereign (such as a natural person or corporate entity).

As property rights come from the government, and property rights in space are forbidden to governments *via* Article II, the matter of celestial property rights seems an easily concluded "open and shut" case. A natural person, or a corporation, cannot have a property right in space any more than a sovereign government can have a property right in space.

However, this simplified argument is far from conclusive. One spurious assertion that is occasionally heard is built on the argument that Article II prohibits national claims of sovereignty, but it says nothing about "personal" claims of sovereignty. This argument is refuted by anyone with a clear understanding of property law and the relationship between the individual and the state.[4]

IV. INTERPRETING TREATIES

Because international legal instruments such as treaties are drafted and negotiated by diplomats and international lawyers with extreme precision, each word often has a specific legal meaning and context. Additionally, each treaty exists within the larger body of international law – which is comprised of not just treaties, but with the international custom and practice of states, and of general principles of law. Being able to read the words of a treaty in their original language is just the first step in understanding what the exact legal rights and obligations the treaty creates. Treaty interpretation is a careful and cautious field, and because treaties have so much political importance, states have even created a binding treaty on how they will undertake treaty interpretation and application.

IV. I The Vienna Convention on the Law of Treaties

This treaty about treaties, the 1979 Vienna Convention on the Law of Treaties, explains how states shall interpret treaties, and gives guidance on how we should understand and apply the provisions of the Outer Space Treaty.[5]

Section 3 of the 1969 Vienna Convention on the Law of Treaties creates the accepted method of treaty interpretation. In considering and interpreting the Outer Space Treaty, Articles 31 and 32 deserve to be read in full. Article 31 gives the general rule of treaty interpretation, while Article 32 gives the supplementary method of treaty interpretation:

Article 31
General Rule of Interpretation

1. A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to

the terms of the treaty in their context and in the light of its object and purpose.

2. The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:

(a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;

(b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.

3. There shall be taken into account, together with the context:

(a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;

(c) any relevant rules of international law applicable in the relations between the parties.

4. A special meaning shall be given to a term if it is established that the parties so intended.

Article 32
Supplementary Means of Interpretation

Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:

(a) leaves the meaning ambiguous or obscure; or

(b) leads to a result which is manifestly absurd or unreasonable.

Of first relevance is Article 31, which gives the general rule of treaty interpretation, which is comprised of a few elements. Firstly, the text itself, which shall be read in "good faith". The text of the treaty (including all articles, and the preamble and annexes) must be read in light of their context. The Context is comprised of 1) any contemporaneous agreement by all the same parties made in connection with the conclusion of the treaty, and 2) any instrument by one or more parties and accepted by the others. Along with context, interpretation requires understanding any subsequent agreements regarding interpretation, any subsequent practice regarding treaty interpretation & application, and any relevant rules of international law. From all this, we learn that understanding what a treaty means requires a decent amount of thought, research, analysis, and appraisal, including of data from outside the treaty itself.

Paragraph 1 of the Vienna Convention mentions a good faith interpretation, which flows from the obligations of states to perform their treaty obligations in good faith (*pacta sunt servanda*). As treaty interpretation is part of their obligation to apply the treaty, therefore their interpretations must be done in good faith.

For Article II of the Outer Space Treaty, it means that Article II must be read within the context of the entire treaty, and not as a stand-alone provision. Article II must conform to the other articles of the treaty, and must be read so as not to contradict, subvert, or confuse any of the other treaty provisions. Additionally, Article II must be read in a manner that matches the focus and intentions discussed in the preamble of the treaty, and applied in a manner which serves these purposes and intentions.

IV. II The Preamble to the Outer Space Treaty

While the preambles of treaties do not create legal rights or obligations in a way that the regular articles of the following treaty text do, a preamble clarifies the subject matter that the treaty concerns itself with. They also reflect the wishes of the treaty drafters, who were hoping to create a change from the existing *status quo* before the treaty was drafted, and change the future by drafting the treaty. In this fashion, the preamble creates the purpose for which the treaty was drafted.

Looking to the preamble of the Outer Space Treaty shows an optimistic and evolutionary era of human expansion into space. The preamble to the Outer Space Treaty merits a full recitation, with special attention to the first four clauses:

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

Believing that the exploration and use of outer space should be carried on for the benefit of all

peoples irrespective of the degree of their economic or scientific development,

Desiring to contribute to broad international cooperation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,

Believing that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples,

Recalling resolution 1962 (XVIII), entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", which was adopted unanimously by the United Nations General Assembly on 13 December 1963,

Recalling resolution 1884 (XVIII), calling upon States to refrain from placing in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction or from installing such weapons on celestial bodies, which was adopted unanimously by the United Nations General Assembly on 17 October 1963,

Taking account of United Nations General Assembly resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace or act of aggression, and considering that the aforementioned resolution is applicable to outer space,

Convinced that a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, will further the purposes and principles of the Charter of the United Nations,

Have agreed on the following:"

Contemplating these provisions reminds us of the intentions of the drafters, and of what they sought to establish. Consequently, any interpretation and application of the provisions of the Outer Space Treaty must be done in a way which conforms to the broad, optimistic, liberal, and forward-looking preamble. The first four recitations of the preamble reflect the view by the drafting states that space exploration and the use of space will create a bold and novel future of space endeavors, with great scientific discovery and innovation, discovery, and innovation that will flow to the entire world by virtue of international cooperation and the peaceful use of space. The preamble makes it clear that the commonly-held interest of all humankind is to explore and use space.

Basic sciences done by space telescopes and other scientific instruments will give us new insights in to the fundamental nature, history, and future of our universe, dramatically re-writing our understanding of our place in the universe. Space based communications and Earth observation will alter global society, and the innovations required to conduct cutting-edge missions previously thought impossible will trickle through all areas of society and our interaction and use of technology. These are some of the visions of the drafters which came true.

While the security-minded dimensions of the Outer Space Treaty are often repeated and widely discussed (perhaps almost too much) the optimistic and indeed visionary rationale and purpose of the treaty can easily be lost in the debate, or overlooked as hyperbolic, rosy-eyed romanticism. But these aspirations should not be forgotten, and indeed must be remembered when we consider how exactly we will develop the next steps into space.

Because a good faith interpretation of any treaty article requires that it is consistent with other parts of the treaty, including the preamble, Article II's prohibition on national appropriation must be understood and applied in a way which does not subvert the preamble's intentions and vision.

Article II of the Treaty must be read in a way which furthers the optimist vision created in the preamble, a vision of scientific discovery and exploration, done in a peaceful manner, and in a way that benefits both the least advanced and the most advanced nations. Indeed, the most advanced nations in space activity would not conduct space activities were it not in their interest to do so.

The International Institute of Space Law (IISL) expressed the view that the object and purpose of Article II was "to exclude all territorial claims to outer space, including the Moon and other celestial bodies.[6]" Consequently, a reading of this provision refers to national governments extending their territory to celestial bodies. There is a significant distance between a national government extending its territory onto large celestial planets (akin to a colonial land grab) and technologically advanced missions which extract resources from asteroids for scientific and commercial purposes, especially if those missions are peaceful in nature, international, and otherwise in the spirit of space activities which the Outer Space Treaty contemplates.

V. THE FREEDOMS OF OUTER SPACE

If God wanted man to become a spacefaring species, he would have given man a moon.
- Krafft Ehricke

Article I of the Outer Space Treaty is three sentences long, listing the quite broad and expansive freedoms and rights reserved for each state. While the rest of the treaty places certain obligations on states, those later obligations are balanced with the wide rights and freedoms contained in Article I.

While it is the first article of the treaty, its place as the first article does not mean that it is superior to later articles - as all the articles of the treaty must be read for conformity with one another. The broad freedoms of access, use, and exploration enshrined in Article I must also be read and reflected upon:

Article I

*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**.*

***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.*

***The shall be freedom of scientific investigation in outer space**, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.*[7]

These expansive freedoms, or "exploration and use", or "free access" to all areas of celestial bodies, and freedom of scientific investigation, are very broad in scope and conception. The "use" of outer space is not only reflected in the first line of Article I, but in the very title of the treaty. So long as that use is not explicitly prohibited, either by the treaty, or by other sources of applicable law (such as the UN Charter, which forbids the threat or use of force), the exploration, investigation, and use of space is expressly permitted. According to the Vienna Convention on the law of treaties, Article I freedoms must be understood to conform with Article II prohibitions.

VI. AMBIGUOUS, OBSCURE, OR MANIFESTLY ABSURD OR UNREASONABLE

Another way of viewing the rights and prohibitions in space law is to reflect on the impact and repercussions that certain interpretations might mandate. If a particular interpretation subverts or contradicts the intentions of the drafters (as contained in the preamble), then it would not be a correct interpretation.

Article 32 of the Vienna Convention on the Law of Treaties explains that recourse may be had to supplementary means of treaty interpretation to either confirm a meaning, or to supply a new meaning when the ordinary meaning is "ambiguous or obscure", or which "leads to a result which is manifestly absurd or unreasonable." Consider the following scenario and reflect on whether it fulfills the intentions of the drafters of the Outer Space Treaty.

VI. I One Possible Scenario

Consider a future scenario where a crewed mission to an asteroid, having been planned for many years, costing tens of billions of dollars, spends months in space and arrives in the asteroid belt between Mars and Jupiter. The crew comes into proximity of an asteroid many meters across, and slowly approaches it. As the asteroid has a negligible gravity, the crew's space ship cannot land, but approaches and tethers onto the asteroid.

After travelling millions of miles through desolate and black space, and after months in isolation, the crew arrives at and docks with the asteroid. The Environmental Control and Life Support System (ECLSS) has been recycling air and water for months aboard the craft, and though the crew is aware that they are recycling the air and water, and has reconciled themselves with this uncomfortable fact, they are trained professionals and do not let it bother them.

Launching mass into space is costly, and every pound of water and air they launched at the beginning of this mission cost thousands of dollars. To keep the launch costs somewhat economical, a closed ECLSS system requires that every ounce of water and air is precious and should not be wasted.

Having just arrived and docked with an asteroid many times larger than their spacecraft, they confirm their earlier predictions that the asteroid is composed of mostly frozen H_20, mixed with metals and rocks.

On the asteroid they have just landed on, there is more frozen water than they have brought on their mission - many times more. Having travelled millions of miles, over many months, the expedition would greatly benefit from this fresh source of materials. They could use the resources in the asteroid to create drinkable water, and produce

breathable air. They could also use the resources to derive fuel for their rockets, either extending their mission to further destinations, or to return to Earth.

Unfortunately, the international legal regime mandates that celestial bodies are not subject to national appropriation. And this prohibition is exhaustive, stating that neither use of celestial bodies, nor the occupation of celestial bodies, can give rise to legitimate claims of national appropriation. Indeed, any means or method of using or occupying would not provide an avenue for legitimate national appropriation.

The prohibition is clear and exhaustive, and its existence in the 1967 Outer Space Treaty is binding. The treaty is ratified by over 100 Member States in the international political system[8]. Additionally, while the provisions in the treaty exist as treaty obligations, because they have been so well observed by states for so long, they exist also as general customary international law, and therefore bind even states which are not party to the treaty[9].

Consequently, the mission is prevented from using the resources on the asteroid to derive fuel to extend their mission. They are prohibited from creating drinkable water from the asteroid they have just arrived at – which is mostly frozen water, and many times larger than their spacecraft. They are even prohibited by international law from deriving breathable air from the asteroid.

The requirements of international law, and its prohibition in Article II are clear and comprehensive. Any breathable air, and any drinkable water, and all the fuel and propellant that the space mission needs, must have originated from planet Earth, many hundreds of millions of miles away.

The crew does not want to violate the Outer Space Treaty, so they perform their mission studying the asteroid for clues and insight into the early formation of the solar system, and after their work is done – leaving the Asteroid in pristine condition – they untether from it and begin their long trip back to Earth, having to conserve every ounce of water, ever breath of air, and every unit of propellant to make it home.

Because this mission was required to take all of its consumables with it, the mission was many times more costly than a theoretical mission which could have used *in-situ* resources. Because the mission had to take along so much more fuel and other consumables than it might have needed if it could use *in-situ* resources, that payload capacity which could have been used for instruments and crew, was instead devoted to consumables. Lastly, because the mission was so much more expensive, it took longer to plan and was more difficult to fund. Other countries, who might otherwise have executed similar missions, were not able to afford their own trips to asteroids and deep space.

On the plus side, while the advancement of space was hampered by the requirement that all deep space missions bring any consumables from Earth, rather than utilizing space assets, the sanctity of the international legal system, with its distinct and clear apportioning of rights and prohibitions, was clearly understood and universally obeyed. No nation could claim that another nation was appropriating space for its own individual benefits.

VI. II A Different Approach

For he that is use to go forward, and findeth a stop, falleth out of his own favor and is not the thing he was.
- Francis Bacon, *On Empire* (1612)

Obviously, the above scenario of a mission to an asteroid where the mission cannot materially benefit from the resources of the asteroid – either to derive water or air, or to develop fuel or propellant – from the resources they find on the asteroid is an absurd scenario. Exploring the solar system and arriving on celestial bodies, whether asteroids or planets, but being unable to use their resources is absurd.

Exploring the solar system, but being required to bring all your air, water, and fuel consumables from Earth is absurd. And it is unreasonable. So absurd and unreasonable, that many space missions would simply not happen if they were required to bring all their consumables from Earth.

Clearly, the above scenario is based on an interpretation of Article II of the Outer Space Treaty, as well as the entire text of the Outer Space Treaty, which does not conform to the object and purpose of the treaty. Consequently, it is an incorrect interpretation of Article II. Another interpretation must be arrived at.

The correct interpretation of the prohibition on national appropriation requires an understanding of the quite broad, expansive, and forward-looking freedoms contained in Article 1, where the "exploration and use of outer space… shall be the province of all mankind", where "outer space, including the Moon and other celestial bodies" are "free for exploration and use by all States", with "free access to all areas".

Additionally, an understanding of Article II must be one which bolsters the purpose of the treaty (as reflected in the preamble), namely that the treaty and all of its provisions are inspired by "the great prospects opening up before mankind as a result of man's entry into space", and where "the exploration and use of outer space" is in the "common interest of all mankind". Surely a correct interpretation of

Article II is one which serves these purposes, as exploration and use is a right freely given to all states.

Consequently, what bright line distinctions can we draw? Rather than a binary either/or, the balancing of rights and of obligations and prohibitions exists along a spectrum. At one end of the spectrum, which is clearly prohibited, is any means (use, occupation) done intended to result in national appropriation of celestial bodies. At the other end of the spectrum, is complete freedom.

VII. NATIONAL PLANS FOR CELESTIAL RESOURCE USE

Rather pre-emptively and prescriptively determining what actions are permissible under the law, it is best to look at proposed actions and consider where they exist within the law. This is certainly the approach which legal counsel would take, as the lawyer's task is to hear and give advice on their client's needs and wants, and then advise on the legal context and likely repercussions of their clients proposed actions. Additionally, lawyers do not give political, business, or moral advice, they give legal advice based on their understanding of the content and context of the law.

Looking to actions being taken in this area, some of the most exciting developments are from the United States of America. There are both private, corporate plans to mine asteroids and the Moon, and there is law-making action being taken by the legislative branch of the US Government.

VII. I The US Asteroids licensing regime

In 2014, a bill was first considered by the US Congress, both in the House of Representatives and in the Senate (each a branch of the USA's bicameral legislative organ). In short, the bill(s) would "establish certain policies and guidelines regarding the development of space resources by nonfederal entities". "The bill would create a domestic framework for assigning property rights for resources from asteroids and for settling any related legal disputes"[10]. The bill, now entitled the Space Resource Exploration and Utilization Act of 2015, defines both "space resources" and "asteroid resources":

§ 51301. Definitions

In this chapter:

(1) SPACE RESOURCE. — The term "space resource" means a natural resource of any kind found in situ in outer space.

(2) ASTEROID RESOURCE. — The term "asteroid resource" means a space resource found on or within a single asteroid.

It also defines a "United States Commercial Space Resource Utilization Entity" as the company providing resource exploration and/or utilization services, which is neither controlled by the US or foreign governments, but a private corporation (a legal entity of state law), and therefore subject to both subject matter and personal jurisdiction of the US courts. The company may also be a foreign company that submits to the jurisdiction of the USA.

Two things are of immediate importance. Note that the entity cannot be a government. This would seem to mitigate against any later assertion of appropriation being "national" in nature. Additionally, the corporation may be a domestic corporation, or a foreign corporation. This would also mitigate against any possible assertion that any appropriation was "national" in nature.

Having defined (roughly) what types of entities might access celestial resources, and what those resources might be (either asteroid resources, or the more general "space" resources, defined above), the draft bill then directs the executive branch to facilitate the exploration and utilization of space resources to "meet national needs", along with discouraging governmental barriers to utilizing space resources. Next, the bill creates the following legal framework:

§ 51303. Legal framework

(a) Property Rights. — Any asteroid resources obtained in outer space are the property of the entity that obtained such resources, which shall be entitled to all property rights thereto, consistent with applicable provisions of Federal law and existing international obligations.

(b) Safety Of Operations. — A United States commercial space resource utilization entity shall avoid causing harmful interference in outer space.

(c) Civil Action For Relief From Harmful Interference. — A United States commercial space resource utilization entity may bring a civil action for appropriate legal or equitable relief, or both, under this chapter for any action by another entity subject to United States jurisdiction causing harmful interference to its operations with respect to an asteroid resource utilization activity in outer space.

(d) Rule Of Decision. — In a civil action brought pursuant to subsection (c) with respect to an asteroid resource utilization activity in outer space, a court shall enter judgment in favor of the plaintiff if the court finds—

(1) the plaintiff—

(A) acted in accordance with all existing international obligations of the United States; and

(B) was first in time to conduct the activity; and

(2) the activity is reasonable for the exploration and utilization of asteroid resources.

Relevant to the discussion elsewhere in this paper, the bill is rationalized as giving "effect to Outer Space Treaty rights and obligations through the establishment of a domestic legal framework to govern property rights of resources obtained from asteroids and to avoid causing harmful interference in outer space.[11]" As the bill is still being considered by both houses of Congress, its future is uncertain. However, a number of the committee's rationalizations about the bill's conformity with international law are of interest. The HR bill report contains official "Committee Views", including the view that "there is nothing in [this bill] which calls for the United States to violate its existing international obligations under these treaties [referencing the Outer Space Treaty, et al.] to which it is a party.[12]"

Additionally, the House committee does not think that the bill does not "claim sovereignty over outer space or any celestial body" and states that "Removing, taking possession, and using in-situ celestial resources, in-situ asteroid resources, is not to be construed as an act of national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

Rather, the US asteroids bill is seen as giving effect to Outer Space Treaty rights and obligations through their incorporation into domestic law. The Committee states that "the exploration and use of outer space includes the right to remove, take possession, and use in-situ natural resources from celestial bodies"[13]. The report also takes the view that state practice by the USA, Russia, and Japan confirms the right to remove, take possession, and use in-situ natural resources, and reiterates that these rights have never been protested by other states, or judged illegal by a court of law.

VIII. CONCLUSION: CHANGE IS INEVITABLE; PROGRESS IS NOT.

Leave thy home, O youth, and seek out alien lands:
A larger range of life is ordained for thee.
Yield not to misfortune; the far-off Danube shall know thee,
The cold North-wind, and the untroubled kingdoms of Canopus, And the men who gaze on the new birth of Phoebus or upon his setting: He that disembarks on distant sands, becomes thereby the greater man.

\- Petronius, *Poems*

Any legitimate, permissible use of space resources under international space law would have to be in conformity with:

1. general international law outside of space law (such as the UN Charter, and its prohibition on the use of force, and the threat of force), and
2. the Outer Space Treaty's prohibition on national appropriation (Article II),
3. The Outer Space Treaty's broad freedoms in using and exploring space (Article I)
4. The purpose of the Outer Space Treaty, as reflected in its preamble
5. Other provisions of the outer space treaty, especially the due care provisions (Article 9); and
6. national municipal law (as an implementation of the responsible/authorizing state's duties imposed by Article VI of the Outer Space Treaty).

Because the special regime of space law is relatively plain and without nuance (Article II is only 30 words long), the exact boundaries of the freedoms of outer space and where they run afoul of Article II's prohibitions is untested, contested, and uncertain.

Because state practice is included so clearly in the list of sources of treaty interpretation (as part of the context element), there is a strong impetus to look to how states have interpreted and applied their rights and freedoms in outer space.

Looking to the practice of states, the recent legislative action by the USA goes toward showing that an interpretation of these treaty rights and obligations balances the Article II prohibition with the Article I freedoms, and the purposes of the treaty in the preamble, in such a way as to allow the taking possession of asteroid resources. Further investigation into state practice by the USA, Russia,

and Japan shows them taking possession of asteroid resources. Additional state practice is that no state has objected to these actions. However, it might be noted that these are actions taken by national space programs, rather than non-governmental entities.

In conclusion, an understanding of the prohibition on national appropriation in Article II includes a deep contemplation of:

- the other provisions of the treaty (including Article 1 freedoms and Article 9 "due care" considerations);
- the object and purpose of the treaty (from the preamble); and
- state practice by state parties to the treaty in their interpretation and application of the rights and obligations in the treaty.[*]

Armed with these interpretative tools, a better understanding of the right to access, use, explore, exploit, commercialize, or otherwise interact with celestial resources may be arrived at by states and companies interested in planning next-generation space missions. How they interpret their rights and obligations will form the practice of states, and eventually of customary law, for celestial rights on asteroids and planetary bodies.

[*] Additional state practice can be found in the international response to the 1979 Moon Agreement. As of 2015, there are 16 state signatories of the Moon Treaty. There are 193 states in the international political order. Consequently, 177 states (91.7%) across the world reject the Moon Agreement as a regime to govern space resources, and have done so consistently for over three decades.

BIBLIOGRAPHY

[1] Andrew Dempster, *Space Mining Is Closer Than You Think, And The Prospects Are Great*, Aug. 6, 2015, DIGG, http://digg.com/2015/space-mining-is-getting-closer.

[2] International Space Exploration Coordination Group (ISECG), *Global Exploration Strategy (2007),* and *Global Exploration Roadmap (2011, 2013)*; *AVAILABLE AT:* http://www.globalspaceexploration.org/wordpress/.

[3] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, entered into force Oct. 10, 1967, 18 U.S.T. 2410, 601 U.N.T.S. 205.

[4] Thomas Gangale, *The Development of Outer Space: Sovereignty and Property Rights in International Space Law*, for a full refutation of these types of spurious arguments.

[5] Vienna Convention on the Law of Treaties, entered into force Jan. 27, 1980, 1155 U.N.T.S. 331. *See also* Anthony Aust, *the Modern Law of Treaties (2nd Ed.).*

[6] International Institute of Space Law, *Statement by the Board of Directors Of the International Institute of Space Law (IISL) On Claims to Property Rights Regarding The Moon and Other Celestial Bodies*, (2004), *AVAILABLE AT:* http://www.iislweb.org/docs/IISL_Outer_Space_Treaty_Statement.pdf.

[7] Emphasis in bold mine.

[8] Committee on the Peaceful Uses of Outer Space, *Status of International Agreements relating to activities in outer space as at 1 January 2015,* Apr. 8, 2015 (A/AC.105/C.2/2015/CRP.8*), *AVAILABLE AT:* http://www.unoosa.org/pdf/limited/c2/AC105_C2_2015_CRP08E.pdf.

[9] Francis Lyall and Paul B. Larsen, *Space Law - A Treatise*, pg. 54, 180. *SEE ALSO* statement by Ambassador Fedorenko on Dec. 19, 1967 (A/PV.1640) at pg. 12 para. 143, stating: "The overwhelming majority of states throughout the world have now acceded to that Treaty and the principles it lays down for the activities of States in the exploration and use of outer space have become recognized standards in international law"; *AVAILABLE AT*: http://www.oosa.unvienna.org/pdf/garecords/A_PV1640E.pdf.

[10] U.S. House of Representatives, *HR. 1508 – Space Exploration and Utilization Act of 2015 - Report together with Minority Views*, 15 June 2015; *AVAILABLE AT*: https://www.congress.gov/bill/114th-congress/house-bill/1508 [hereinafter "House Report"]. *SEE ALSO* the corollary bill in the U.S. Senate, *S-796 – Space Exploration and Utilization Act of 2015*, *AVAILABLE AT*: https://www.congress.gov/bill/114th-congress/senate-bill/976/.

[11] House Report, pg. 3, BACKGROUND AND NEED FOR LEGISLATION.

[12] House Report, pg. 6, COMMITTEE VIEWS – *U.S. International Obligations*.

[13] House Report, pg. 7, COMMITTEE VIEWS – *Non-governmental entity exploration and use of celestial resources*.