
Extraterrestrial Extraction: The International Implications of the Space Resource Exploration and Utilization Act of 2015

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SUMMARY

Legal scholars and commentators have long debated the legality of claiming property rights over resources extracted from asteroids or other celestial bodies. Some scholars argue that the Outer Space Treaty, which governs the use and exploration of outer space, permits property rights over extracted space resources. Others argue that the treaty forbids appropriating outer space and its resources. The United States recently passed into law the U.S. Commercial Space Launch Competitiveness Act, which contains the Space Resource Exploration and Utilization Act of 2015. This act explicitly permits United States citizens to claim property rights over space resources that they commercially extract in-situ. Despite the United States' position that space resources are subject to property rights, it is unclear whether this new law is compatible with the international treaties that govern outer space.

By looking at traditional approaches to territorial appropriation, controlling international treaties, and the language of both the enacted law and its prior versions, this article argues that the new law does not conflict with international treaties regarding space resources. Traditionally,

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uninhabited and unclaimed lands were subject to appropriation through aboriginal title – a model that would be useful if applied in outer space. However, current international treaties prohibit appropriating outer space. While the Outer Space Treaty prohibits appropriating outer space, its language is ambiguous and unclear as to whether or not this prohibition extends to resources extracted in-situ from celestial bodies. The drafters of the new law relied on these ambiguities to create property rights to promote the commercial extraction of space resources.

This article argues that the Outer Space Treaty does not prohibit property rights over space resources extracted from celestial bodies. Further, this article argues that, because the Outer Space Treaty does not prohibit property rights over space resources, the Space Resource Extraction and Utilization Act of 2015 does not conflict with international law. However, in the event that international law is found to prohibit space resource extraction, this article argues that the new law requires the President of the United States to promote new international laws that permit this beneficial use of outer space.

INTRODUCTION

With the emergence of private companies and a greater desire to commercialize the final frontier, endeavors in outer space are quickly becoming more feasible and more profitable. Where new markets emerge, new regulations and laws soon follow. One of these new markets is commercial space resource extraction. Private companies are forming with the purpose of mining resources on asteroids. However, the international legality of such ventures is still an unresolved question. The main problem lies in whether or not these companies have property rights over the resources they extract from celestial bodies.

International treaties such as the Outer Space Treaty and the Moon Agreement² both contain language prohibiting claims of sovereignty and the appropriation of space as it relates to property rights on celestial bodies. While the Outer Space Treaty prohibits national appropriation of outer space, it is unclear whether this prohibition extends to the resources extracted from celestial bodies as the Treaty does not expressly prohibit property rights over outer space resources. The Moon Agreement sought to clarify this issue, but it has limited support and has been almost entirely rejected as a binding treaty by the majority of spacefaring nations. Therefore, the ambiguous language of the Outer Space Treaty controls the possible legality of space resource extraction rights.

While commentators remain split on whether or not the Treaty permits private entities to assert property claims over space resources, the United States recently passed the Space Resource Exploration and Utilization Act of 2015 (“SREU Act”),³ thus establishing definitive property rights over space resources extracted by American citizens. Because the Outer Space Treaty only prohibits national appropriation and sovereignty, the SREU Act arguably does not conflict with the Outer Space Treaty.

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BACKGROUND

The Earth holds a number of natural resources, which find multiple uses in the daily lives of all of its inhabitants. These resources include rocks, such as limestone for concrete and building materials; metals, such as iron and copper for manufacturing purposes; precious metals, such as gold and platinum for electrical wiring; and water for drinking and sustaining life. Some of these materials are easy to obtain, but others must be mined from the depths of the planet, requiring great effort to extract them.

Among the range of materials stored within the Earth’s crust, many are non-renewable, and humans are quickly using up these valuable resources. Luckily, the Earth is not the only place where these materials exist. Various planets, moons, asteroids, and comets within our solar system also contain these materials in astounding quantities. Getting to and extracting these celestial materials, however, is a costly, dangerous, and thus far unviable venture.

Recent advances in technology, paired with the emergence of private corporations focused on extracting celestial resources,⁴ have greatly reduced the cost of getting into space. These developments increase the feasibility of harvesting space materials. Yet, while economic barriers may wane, international laws and treaties governing activities in outer space – including mining and resource extraction – present possible problems for such futuristic ventures. The two most notable agreements on the subject are the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the “Outer Space Treaty”)⁵ and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the “Moon Agreement”)⁶.

The Outer Space Treaty and the Moon Agreement both contain language regarding sovereignty and appropriation of space as it relates to property rights on the Moon and other celestial bodies. The United States signed on to the Outer Space Treaty, but not the Moon Agreement. Despite being rejected by the U.S. and most of the international community, the Moon Agreement is still an important document to examine for a broader understanding of international policies on general property rights in space, and specifically on property rights over resources extracted in-situ from outer space.

The Outer Space Treaty generally prohibits national sovereignty over celestial bodies,⁷ proclaiming that outer space is the “province of all mankind” and is to be used for the “benefit of all countries.”⁸ The U.S. recently enacted the Commercial Space Flight Competitiveness Act,⁹ which includes the SREU Act promoting exploitation of natural resources found in space.¹⁰ The SREU Act passed on November 25, 2015, and was based on an earlier proposed House Resolution, H.R. 1508,¹¹ and could potentially put United States laws at odds with the international treaties – specifically the Outer Space Treaty – governing property rights over extracted space resources.

In its current form, the SREU Act probably does not violate the Outer Space Treaty. In order for a violation of the Outer Space Treaty to occur, an entity would need to exercise, or attempt to exercise, its sovereignty over outer space resources. Because the property rights authorized by the SREU Act could be seen as allowing appropriations of outer space, the SREU Act could possibly be in contention with the Outer Space Treaty. However, a signatory could not actually claim a violation until an entity successfully extracted space resources and returned them to Earth. Although there is some uncertainty regarding the validity of such a possible claim, this article examines the reasons why it is unlikely that the Outer Space Treaty directly prohibits the ownership of resources extracted from outer space.

ABORIGINAL TITLE

Under traditional property ownership laws, a person has a possessory interest in land when they have a physical relation to the land giving them some semblance of control, including the intent to control the land so as to exclude others from its use.¹² International regulations limit applying this principle in space, but more specific property rights of ownership could be applied to unclaimed lands, including those in outer space. The specific concept of aboriginal title lends insight into how previously unclaimed

lands came to be recognized as owned by certain peoples.

Aboriginal title is the legal recognition of property rights for claimants that were not preceded by a prior owner.¹³ Simply put, it creates property rights for the first people to claim an interest in a certain tract of real property. Aboriginal title emerged during the age of exploration, when Magellan was circumnavigating the globe.¹⁴ It was applied to ancient voyagers who abandoned their native homes in search of distant lands.¹⁵ These voyagers reached islands in the South Pacific, on which they were the first people to set foot and, eventually, inhabit.¹⁶ Since no prior owners preceded them, and because they were the only people with a claim to the lands, the lands became theirs.¹⁷ By the time European explorers discovered these islands, the inhabitants had lived there long enough to be considered aboriginals. The voyagers were deemed to have laid the first claim, and their subsequent habitation of the discovered islands led courts from several countries to hold that these inhabitants were indigenous and held aboriginal title to the lands by right of “first claim and continuous use.”¹⁸ This recognition of aboriginal rights in the 1960s¹⁹ replaced the prevailing view of extraterritorial sovereignty, which gave national governments “the power to claim the soil on which their explorers stood.”²⁰

The first space resource extraction companies will operate in a similar manner to these aboriginal explorers. Their miners will be the first people to set foot on distant planets, moons, and asteroids.²¹ These companies are likely to set up mining outposts that operate for extended periods of time, possibly constituting continuous use. Further, these mining corporations could eventually feel like they should be able to claim title over the lands that they claimed first and have set continuous use operations upon. While it appears they would have a strong claim under aboriginal title, existing international treaties currently do not allow for claims of sovereignty or national appropriation in outer space.

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INTERNATIONAL AGREEMENTS

On July 20, 1969, Neil Armstrong became the first human to set foot on a celestial body outside of the Earth.²² While on the moon, the

Apollo 11 crew took time to carefully set up a three by five foot American flag near their landing site.²³ This simple act could have been viewed by other countries as the United States claiming the Moon, or at the very least claiming an area around the landing site, as its property.²⁴ However, in 1967, two years before Armstrong took that giant leap for mankind, the United States along with a handful of other nations signed the Outer Space Treaty.²⁵ Then in 1979, the United Nations adopted the Moon Agreement,²⁶ although only a “handful of relatively minor nations [ever] ratified the agreement.”²⁷ These two agreements contain all of the international regulations concerning property rights in outer space.

THE OUTER SPACE TREATY

The Outer Space Treaty provides an overview of the rules regarding the “exploration and use of outer space.”²⁸ It furnishes the “general legal basis for the peaceful uses of outer space” and provides the “framework for the developing law of outer space.”²⁹ As such, practitioners regard it as the “foundation for all international regulation of outer space.”³⁰ Since

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 celestial bodies,³² treatment of astronauts,³³ national responsibility and liability,³⁴ as well as other activities conducted in space.³⁵ For the purposes of space resource extraction, Article I and Article II of the Outer Space Treaty contain the most pertinent information. Article I of the Outer Space Treaty states that “[o]uter space, including the Moon and other celestial bodies shall be free for exploration and use by all States....”³⁶ Some scholars view this as enough evidence that resource extraction constitutes use of outer space permitted by the Outer Space Treaty.³⁷ However, there are other considerations in the treaty that must be explored in greater detail. There are three major concepts within the language of Article I and II of the Outer Space Treaty worth examining in depth: (1) the use of the term

The Outer Space Treaty contains provisions regarding the peaceful uses of outer space,³¹ appropriation of

“benefit” in Article I,³⁸ (2) the use of the term “national appropriation” in Article II,³⁹ and (3) the use of the term “sovereignty” in Article II.⁴⁰

“Benefit”

Article I of the Outer Space Treaty explicitly authorizes “the exploration and use of outer space,” stating that these activities “shall be carried out for the benefit and in the interests of all countries...and shall be the province of all mankind.”⁴¹ The legal significance of this provision is subject to differing views and interpretations.⁴² While the Outer Space Treaty does not explicitly define what these uses are, it is clear that this “includes the right to remove, take possession, and use *in situ* natural resources from celestial bodies.”⁴³ The Outer Space Treaty, while a sufficient general overview of the rules and principles that govern outer space, does not provide guidance on what constitutes a benefit or what is considered to be in the interests of all countries.

Although the “Outer Space Treaty was based on the premise that mankind should be able to derive benefits from the use of space and space resources,” there are many different things that could be seen as benefits to all countries.⁴⁴ For example, all countries getting an equal share of the profits generated from resources extracted in space would be an obvious benefit to all countries. However, because Article I only claims that the use of outer space shall be for the benefit of all countries, the Outer Space Treaty does not consider uses that could simultaneously benefit one aspect of all countries while hurting another.⁴⁵ The introduction of celestial resources to the global marketplace would conceivably drive down the prices of those natural resources, thus providing a benefit to all consumers, while simultaneously hurting the GDP of countries that have industries that mine these terrestrial resources. The Outer Space Treaty’s use of the word “benefit,” although ambiguous, arguably makes ensuring benefits more important than avoiding possible harms.

The Outer Space Treaty possibly challenges this assumption by its proclamation that the use of outer space shall also be in the “interests of all countries.”⁴⁶ This appears to suggest that there would need to be some sort of mechanism by which countries would assert what their interests are. While increasing global supply of non-renewable resources seems to be in the interest of all countries, countries with economies that rely heavily on the resource extraction industry would claim that sourcing these materials from space is not in their best interest. In any event, the ambiguous language covering the use of space for the benefit and interests of all countries, while

not expressly prohibiting uses that may be both beneficial and detrimental, arguably allows certain uses as long as they provide some benefit.

“National Appropriation”

Article II of the Outer Space Treaty directly affects celestial property rights with regard to national appropriation, and reads as follows:

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.⁴⁷

The predominant interpretation of Article II is that the solar system’s non-renewable resources have been established as part of a commons where nations cannot claim ownership rights.⁴⁸ There is some significance in the use of “national appropriation” as a limitation that applies only to governments.⁴⁹ Although it could mean that mining claims would not be recognized once companies reach asteroids and begin mining, the ambiguity of the term “national appropriation” leaves the door open for two possibilities.

The first possibility is that a multilateral organization, such as the United Nations, could subject outer space resources to appropriation. However, because of the upfront costs involved and the general activities of multilateral organizations (which do not include terrestrial appropriation), the UN and organizations like it are arguably unlikely to engage in actions constituting appropriation in outer space. The second possibility is that persons, acting either as individuals or corporations, could subject the resources found in outer space to appropriation. However, non-government actors in space are not independent from their governments. Along this line, Article VI of the Outer Space Treaty attempts to curtail non-governmental entities by requiring “authorization and continuing supervision” of that State’s entities.⁵⁰ Regardless, just because a government is authorizing and supervising an entity engaged in extraction does not mean that the entity’s extraction of space resources would necessarily amount to national appropriation. Article VI merely requires that States monitor the activities of its entities, not that the monitoring State has property rights over the resources such entities extract.

“Sovereignty”

As stated in Article II, outer space “is not subject to national appropriation by claims of sovereignty.”⁵¹ This provision establishes that outer space and its contents should be seen as part of a commons.⁵² Because state sover-

eignty is thus precluded in outer space, some scholars have argued that no one is able to acquire private property rights over celestial bodies.⁵³ This is based on the assumption that property rights are “practically useless without the protection of a sovereign power,” even though they are possible in theory.⁵⁴ The argument that sovereign powers must be able to protect property rights is less convincing when examined under the Outer Space Treaty’s requirement that the uses of outer space maintain international peace.⁵⁵ States can and will defend their sovereign territory through the use of force. However, requiring that the uses of outer space be for peaceful purposes greatly reduces the chance that nations would resort to force to protect their citizens’ claims.

In contrast to the ambiguous language of benefit, national appropriation, and sovereignty, Article VI of the Outer Space Treaty makes it extremely clear that state parties to the treaty maintain international responsibility over national activities in space.⁵⁶ This responsibility covers both government and non-government actors.⁵⁷ Not only are states responsible for the activities they, or their citizens, carry out in space, the Outer Space Treaty requires states to authorize and continuously supervise their national activities conducted in space.⁵⁸ This requirement for authorization and supervision forces states to keep abreast of their entities’ actions, ensuring they are carried out in conformity with the Outer Space Treaty. Therefore, any space resource extraction would be with the knowledge and consent of the state where the entity resides. States are less likely to authorize activities that go against their international responsibility for assuring conformity with the Outer Space Treaty.

The Outer Space Treaty is the United Nations’ foundation for governing space activities. It outlines broad policies regarding space regulations. Its purpose is not to restrict the use of outer space, but rather to promote the free exploration and use of outer space.⁵⁹ As such, where activities are not expressly prohibited, ambiguities should be construed in a permissive rather than restrictive way in order to avoid unnecessarily impeding the development of the uses of outer space.⁶⁰ This broad interpretation should apply to the meaning of “benefit.” Beneficial activities should be viewed liberally, where a use can be seen as beneficial even if there are some harmful aspects. In a similar vein, because Article II expressly prohibits national appropriation,⁶¹ the Outer Space Treaty should be broadly interpreted to allow for international or private appropriation of resources extracted from celestial bodies. Since no property regime for celestial resources exists in the Outer Space Treaty, “the general view is that while no material can be controlled while in-situ, removal of such material assets renders them subject to ownership by the removing authority.”⁶²

THE MOON AGREEMENT

The Moon Agreement was adopted by the General Assembly of the United Nations in 1979, and entered into force until 1984.⁶³ The United States did not sign on to the Moon agreement,⁶⁴ and the international community has almost completely rejected it as a binding international document.⁶⁵ Despite its non-binding nature on non-signatories, the Moon Agreement holds legal value because it contains important provisions regarding international views on property rights over outer space resources, primarily in Article VI and Article XI.⁶⁶ Further, the lack of international acceptance is often directly attributed to its controversial provisions regarding property rights over natural resources, which arguably reflects the international community's desire to permit property rights over space resources.⁶⁷

Article VI

In general, the Moon Agreement was meant to build upon the Outer Space treaty in an attempt to clarify the international regulations found in the Outer Space Treaty.⁶⁸ Article I and Article II of the Outer Space Treaty have been interpreted as permitting removal and subsequent ownership of celestial resources.⁶⁹ Article VI of the Moon Agreement confirms this interpretation, explicitly stating: "States Parties shall have the right to collect on and remove from the Moon [and presumably other celestial bodies] samples of its mineral and other substances."⁷⁰ Although this permission is limited to scientific investigations,⁷¹ this language demonstrates that the Outer Space Treaty did not promulgate a complete ban on resource extraction. Some members of the international community ratified the Moon Agreement, agreeing that the Moon Agreement permits resource extraction, but that it should be reserved for scientific purposes only. Conversely, other nations rejected the Moon Agreement because it was too restrictive on property rights over extracted materials.⁷² Thus, it is apparent that both sides of the extractive debate agree that the Moon Agreement permits resource extraction, whether or not nations specifically opposed or supported it.

Article XI

Another pertinent section of the Moon Agreement regarding outer space resource ownership is Paragraph 3 of Article XI, which reads:

Neither the surface nor subsurface of the Moon, [or any other celestial bodies], nor any part thereof or natural resource in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or nongovernmental entity or of any natural person.⁷³

This is an explicit ban on the ownership of any natural resources, and would have definitively cleared up any ambiguities caused by the use of “national appropriation” in the Outer Space Treaty, had the Moon Agreement passed. Not only would states be prohibited from owning natural resources of celestial bodies, but international organizations (such as the United Nations), national entities (such as Planetary Resources), and natural persons would also be prohibited from owning space resources. While likely not the sole reason for the United States’ refusal to sign the Moon Agreement, the United States has expressed the view that the Outer Space Treaty authorizes the right of exploitation of celestial natural resources,⁷⁴ and, therefore, this provision would go against that assumption.

The Moon Agreement was an attempt to clarify some of the ambiguities that were found within the Outer Space Treaty. Because the Moon Agreement permits the extraction of resources for scientific purposes, it can be ascertained that the Outer Space Treaty does not prohibit resource extraction *per se*, only national appropriation. While the Moon Agreement explicitly

bans property ownership of surface or subsurface natural resources, the Moon Agreement is not binding on the United States.

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THE SPACE RESOURCE EXPLORATION AND UTILIZATION ACT OF 2015

Since 1979 there have been no new space treaties or agreements from the United Nations.⁷⁵ However, this hiatus in binding international agreements can be contrasted with increases in national space legislation—occurring in about 20 states.⁷⁶ While some of these acts attempt to ensure comprehensive national regulation of space activity, many, including the United States’ recently passed SREU Act, concern only certain aspects of space law. Congress recently passed, and the President recently signed

into law, the Commercial Space Launch Competitiveness Act (“CSLCA”), which contains an updated version of the SREU Act of 2015.⁷⁷

CSLCA is a collection of acts covering topics including: (1) promoting and spurring private aerospace competitiveness and entrepreneurship,⁷⁸ (2) requirements for reports on commercial remote sensing operations,⁷⁹ (3) detailing the administrative functions of the Office of Space Commerce,⁸⁰ and (4) establishing property rights in outer space.⁸¹ The Space Resource Exploration and Utilization Act of 2015 contained in Title IV of CSLCA has the same short title of its predecessor, H.R. 1508.⁸² This section of CSLCA establishes the legal framework governing property rights for resources obtained from outer space, thus enabling a new industry by providing legal clarity for future entrepreneurs.⁸³ The enacted SREU Act underwent changes from its 1508 version, and examining these changes can help clarify their importance.

Congress designed the SREU Act to promote space resource utilization. However, its H.R. 1508 version was significantly limited in its applicability because it created a distinction between space resources and asteroid resources. Further, it only authorized property rights over asteroid resources. The SREU Act, as it appears in CSLCA, continues to differentiate between asteroid resources and space resources, but the SREU Act passed in November 2015 authorizes property rights in both space resources and asteroid resources. It defines asteroid resources as “a space resource found on or within a single asteroid,”⁸⁴ and space resources as “an abiotic resource *in situ* in outer space,” which includes water and minerals.⁸⁵ Inclusion of the element “abiotic” means that in the event humans discover life, such as plants or bacteria, these could not be considered resources or property. It is unlikely that an asteroid would have the necessary habitat to effectuate non-abiotic resources; however, it provides an essential protection against ownership of bacteria—or any other form of living resource—obtained in space.

The section of CSLCA addressing asteroid resource and space resource rights contains the most significant differences with H.R. 1508. As stated earlier, H.R. 1508 would have established property rights for the person who obtained asteroid resources.⁸⁶ CSLCA goes a step further, establishing property rights—including the right to possess, own, transport, use, and sell—in both asteroid resources *and* space resources for United States citizens engaged in commercial recovery of those resources.⁸⁷ This distinction creates property rights in any resources obtained in outer space, not just resources found on a single asteroid. In effect, it authorizes resource extraction and ownership from the Moon, the planets, other moons, asteroids, and any other conceivable celestial bodies.

Similar to the H.R. 1508 version, the SREU Act found in CSLCA also obligates the President to facilitate commercial exploration and recovery of space resources, discourage government barriers to the development of space resource extraction industries, and promote the right of United States citizens to engage in the industry of space resource recovery.⁸⁸ These provisions are significant because they dictate that the President must advocate for space resource utilization internationally, meaning that the United States could not adopt the Moon Agreement under this law. It further means that the United States would not support any international treaties attempting to curtail ownership rights of space or asteroid resources as long as this law is in effect. CSLCA also imposes the requirement that the President carry out these duties in a manner “consistent with the international obligations of the United States.”⁸⁹ This requirement ensures that the President, or the agencies acting under the President’s authority, will work to keep the space resource utilization industry internationally compliant through authorization and supervision.⁹⁰

COMPLIANCE WITH THE OUTER SPACE TREATY

While the SREU Act authorizes the property rights of asteroid and space resources found in-situ in outer space, it does so in a manner attempting to remain compliant with the Outer Space Treaty, and possible future treaties regarding space resource property rights. It tries to accomplish this goal by requiring the newly created property rights to be in accordance with applicable international laws and obligations. More specifically, the SREU Act includes a disclaimer renouncing sovereignty claims by the United States through the national exploration and utilization of outer space resources. Finally, the SREU Act attempts to remain in compliance with the Outer Space Treaty by treating resource extraction as one of the permitted uses of outer space.

In an attempt to remain compliant with the Outer Space Treaty, the SREU Act states that commercial exploration and commercial recovery of space resources is to be carried out in a manner “consistent with the international obligations of the United States.”⁹¹ Similar language is found in two different provisions of the SREU Act.⁹² By not explicitly naming the Outer Space Treaty, the SREU Act leaves the door open for the likely possibility that international treaties regarding the use and exploitation of outer space resources will change in the future. However, the major problems that are foreseeable with the compliance of the SREU Act and the current Outer Space Treaty primarily include questions of sovereignty, national

appropriation, and use.

A separate section of the SREU Act protects itself from possible international treaty violations by explicitly proclaiming that the United States is not asserting sovereignty or national appropriation over the ownership of any celestial body.⁹³ This protection was similarly found in the House's Science, Space, and Technology Committee's Report on the SREU Act's predecessor, H.R. 1508, and has been a standing sentiment toward the creation of citizens' property rights over outer space resources.⁹⁴ By creating these property rights for citizens of the United States, but not for the United States itself, the Committee effectively worked within the international obligations prescribed by the Outer Space Treaty. While treaty law creates obligations and rights binding on states, obligations on, and rights conferred to, natural persons can only be given effect if they have been made a part of the domestic law of that state.⁹⁵ In this way, the SREU Act gives effect to the rights of United States citizens to use outer space while also protecting them from the obligations of non-appropriation and sovereignty.

The final point to examine to determine whether the SREU Act violates the Outer Space Treaty involves determining whether resource extraction is a permitted use under the Outer Space Treaty. The Outer Space Treaty authorizes the free exploration and use of outer space, including the moon and other celestial bodies, by all states.⁹⁶ In a 1980 session regarding the Moon Agreement, a State Department legal advisor asserted that the United States believes that the word "use" in Article I of the Outer Space Treaty "recognizes the right of exploitation" of outer space resources.⁹⁷ This sentiment holds true today, as evidenced by the passage of the SREU Act.

Despite believing that the Outer Space Treaty authorizes exploitation as a permitted use of outer space, the United States also recognizes that not all nations share this belief.⁹⁸ However, state practices of the United States, Russia, and Japan show that it is not uncommon for other space powers to believe that resource extraction is a permitted use of outer space.⁹⁹ Furthermore, state parties to the Outer Space Treaty have not protested the removal of outer space resources by any nation.¹⁰⁰ While the lack of protest could signal the international community's acceptance of property rights over outer space resources, just because there has not yet been a claim against this notion, it does not mean that one could not be brought in the future. At best, the United States has created a regime of imperfect property rights, insofar as they may be limited by future international adjudicatory clarification.

In conclusion, the SREU Act does not violate the Outer Space

Treaty because it contains provisions forcing it to conform to the United States' international obligations under the Outer Space Treaty. Further, the SREU Act includes a disclaimer of sovereignty that mirrors the Outer Space Treaty's prohibition on claims of sovereignty and national appropriation thus maintaining conformity with that provision. Lastly, while the meaning of the word "use" within the Outer Space Treaty is ambiguous, the practices of state parties to the Treaty evidence that resource extraction and recovery are permitted uses of outer space.

CONCLUSION

The Space Resource Exploration and Utilization Act of 2015 contained in H.R. 2262 establishes property rights over resources extracted from celestial bodies and does not in its current form conflict with international regulations. Although it would have been convenient for space resource extraction entities to claim a sort of aboriginal title over the places where they conducted mining operations continuously before any others could claim a right, current international treaty laws prohibit that category of right in outer space. The Outer Space Treaty bans the concept of aboriginal title in outer space by prohibiting sovereignty and national appropriation of celestial bodies. While the Moon Agreement attempted to further limit the prohibitions to include ownership of resources extracted from celestial bodies, its rejection by the U.S. and most of the international spacefaring community prevented it from serving as a binding international treaty.

While the Outer Space Treaty explicitly prohibits claims of sovereignty and national appropriation, it is more ambiguous about its meaning of what approved uses of outer space include. As such, the SREU Act, as it is currently written, does not violate international laws regarding property rights over resources extracted in outer space. Yet, if this is not found to be the case, and the United States is considered in violation of the Outer Space Treaty, the SREU Act requires the President to advocate for and promote international treaties that

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authorize space resource extraction and ownership. In sum, the SREU Act ensures a bright future for the celestial mining industry both in the United States and abroad, because it both clarifies the United States' policy toward celestial property rights and also establishes a precedent that other nations can use to authorize property rights over space resources. *f*

ENDNOTES

- 1 The author wishes to thank his professors, Michael Dodge and Andrea Herrington, for their guidance with this article. Further, the author would like to thank his family for their continued support.
- 2 See Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347 (effective Oct. 10, 1967) [hereinafter cited as "Outer Space Treaty"]; Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979 [hereinafter cited as "Moon Agreement"].
- 3 Space Resource Exploration and Utilization Act of 2015, 51 U.S.C.A. 513 §51303, available at <https://www.congress.gov/bill/114th-congress/house-bill/2262/text/pl>.
- 4 Two major corporations interested in the space resource extraction industry include Planetary Resources, Inc. and Deep Space Industries. See Planetary Resources, at <http://www.planetaryresources.com/> (Apr. 8 2016); Deep Space Industries, at <http://deepspaceindustries.com/> (Apr. 8, 2016).
- 5 Outer Space Treaty.
- 6 Moon Agreement.
- 7 Outer Space Treaty Art II.
- 8 Outer Space Treaty Art I.
- 9 *U.S. Commercial Space Launch Competitiveness Act*, PL 114-90, Nov. 25, 2015, 129 Stat 704, found at <https://www.congress.gov/bill/114th-congress/house-bill/2262/text#toc-HEE062BAAFBD4A43859C0142C68E67F9> [hereinafter cited as "CSLCA"].
- 10 CSLCA
- 11 *Report with Minority Views*, Space Resource Exploration and Utilization Act of 2015, Report 114-153 (June 15, 2015), available at <http://www.gpo.gov/fdsys/pkg/CRPT-114hrpt153/pdf/CRPT-114hrpt153.pdf> [hereinafter cited as "H.R. 1508 Report with Minority Views"].
- 12 Restatement (First) of Property § 7.
- 13 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 245 (2013).
- 14 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 245 (2013).
- 15 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 245 (2013).
- 16 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 245 (2013).
- 17 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 245 (2013).
- 18 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 244 (2013).

- 19 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 244 (2013).
- 20 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 248 (2013).
- 21 If they use humans, or if humans ever leave their craft and set foot on the celestial body they are mining.
- 22 *July 20th, 1969: One Giant Leap for Mankind*, NASA, July 30 2015 available at http://www.nasa.gov/mission_pages/apollo/apollo11.html (Apr. 8, 2016).
- 23 *Id.*
- 24 The flag was left behind with a patch honoring the fallen crew of Apollo 1, and a plaque that was attached to one of the legs of their lunar lander, *Eagle. Id.*
- 25 Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 245 (2013).
- 26 *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, UNITED NATIONS: OFFICE FOR OUTER SPACE AFFAIRS, available at <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html>.
- 27 Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 144 (1997).
- 28 Outer Space Treaty Art. 1.
- 29 *Forward*, United Nations Treaties and Principles on Outer Space, 2002, available at <http://www.unoosa.org/pdf/publications/STSPACE11E.pdf>.
- 30 *See* Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 138 (1997).
- 31 Outer Space Treaty Arts. I, III, IV.
- 32 Outer Space Treaty Art. II.
- 33 Outer Space Treaty Art. V.
- 34 Outer Space Treaty Arts. VI & VII.
- 35 Outer Space Treaty Arts. VIII-.
- 36 Outer Space Treaty Art. I.
- 37 H.R. 1508 Report with Minority Views at 7.
- 38 Outer Space Treaty Art. I.
- 39 Outer Space Treaty Art. II.
- 40 Outer Space Treaty Art. II.
- 41 Outer Space Treaty Art. I.
- 42 Some scholars claim it is only a statement of general purpose or moral principle, while others contend that it is an obligation or even a preemptory norm of international law. *See* V.S. Vereshchetin, *The Law of Outer Space in the General Legal Field (Commonality and Particularities)*, Proceedings of the ISSL 2009, available at <http://sbda.org.br/revista/1826.pdf>
- 43 H.R. 1508 Report With Minority Views p. 7.
- 44 Katrin Nyman Metcalf, ACTIVITIES IN SPACE – APPROPRIATION OR USE? 378, note 2 (1999).
- 45 Outer Space Treaty Art. I.
- 46 Outer Space Treaty Art. I.
- 47 Outer Space Treaty Art. II.
- 48 Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 140-141 (1997).
- 49 Nikhil D. Cooper, *Circumventing Non-Appropriation: Law and Development of United States Space Commerce*, 36 HASTINGS CONST. L.Q. 457, 460 (2009) (Article II failed to “adequately account for the actions of private actors” when trying to restrict appropriation).

- 50 Outer Space Treaty Art. VI.
- 51 Outer Space Treaty Art. II.
- 52 See Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 141 (1997).
- 53 See Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 259 (2013).
- 54 See Austin C. Murnane, *Prospectors Guide to the Galaxy*, 37 FORDHAM INT'L L.J. 235, 259 (2013).
- 55 Outer Space Treaty Art. III.
- 56 Outer Space Treaty Art. VI.
- 57 Outer Space Treaty Art. VI.
- 58 Outer Space Treaty Art. VI.
- 59 See generally Outer Space Treaty.
- 60 V.S. Vereshchetin, *The Law of Outer Space in the General Legal Field (Commonality and Particularities)*, Proceedings of the ISSL 2009, available at <http://www.sbda.org.br/revista/1826.pdf>.
- 61 Outer Space Treaty Art. II.
- 62 Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 141 (1997).
- 63 *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS, available at <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html>.
- 64 Matthew Feinman, *Mining the Final Frontier: Keeping Earth's Asteroid Mining Ventures from Becoming the Next Gold Rush*, 14 U. PITT. J. TECH. L. & POL'Y 202, 217-18 (2014).
- 65 See Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 144 (1997).
- 66 See Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL. L.J. 126, 144 (1997).
- 67 See Michael Listner, *The Moon Treaty: Failed International Law or Waiting in the Shadows?*, THE SPACE REVIEW (Oct. 24, 2011) available at <http://www.thespaceview.com/article/1954/1>. See also Glenn Harlan Reynolds, Key Objections to the Moon Agreement, NSS CHAPTERS, available at <http://www.nsschapters.org/hub/pdf/MoonTreatyObjections.pdf>.
- 68 See Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL L.J. 126, 143 (1997).
- 69 Lawrence D. Roberts, *Ensuring the Best of All Possible Worlds: Environmental Regulation of the Solar System*, 6 N.Y.U ENVTL L.J. 126, 142-143 (1997)..
- 70 Moon Agreement Art. 6 para. 2.
- 71 Moon Agreement Art. 6 para. 2.
- 72 Rickey J. Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space*, 268 (2012).
- 73 Moon Agreement Art. XI para. 3.
- 74 H.R. 1508 Report with Minority Views at 8.
- 75 V.S. Vereshchetin, *The Law of Outer Space in the General Legal Field (Commonality and Particularities)*, Proceedings of the ISSL 2009, available at <http://www.sbda.org.br/revista/1826.pdf>.
- 76 V.S. Vereshchetin, *The Law of Outer Space in the General Legal Field (Commonality and Particularities)*, Proceedings of the ISSL 2009, available at <http://www.sbda.org.br/revista/1826.pdf>.

- 77 *H.R. 2262 – U.S. Commercial Space Launch Competitiveness Act*, CONGRESS.GOV, available at <https://www.congress.gov/bill/114th-congress/house-bill/2262/text#toc-HEE062BAAFBD4A43859C0142C68E67F9>.
- 78 CSLCA Title I.
- 79 CSLCA Title II.
- 80 CSLCA Title III.
- 81 CSLCA Title IV.
- 82 CSLCA Title IV Sec. 401.
- 83 H.R. 1508 Report with Minority Views at 15.
- 84 CSLCA Title IV Chapter 513 § 15301(1).
- 85 CSLCA Title IV Chapter 513 § 15301(2).
- 86 H.R. 1508 Chapter 513 § 15303(a).
- 87 CSLCA Title IV Chapter 513 § 15303.
- 88 CSLCA Title IV Chapter 513 § 15302.
- 89 CSLCA Title IV Chapter 513 § 15302(2).
- 90 CSLCA Title IV Chapter 513 § 15302(3).
- 91 CSLCA Title IV Chapter 513 § 15302(2).
- 92 CSLCA Title IV Chapter 513 § 15302(3) and § 15303 (state that the recovery and obtainment of space materials is to be conducted “in accordance with” the international obligations).
- 93 CSLCA Title IV Chapter 513 § 403.
- 94 H.R. 1508 Report with Minority Views at 6-7.
- 95 H.R. 1508 Report with Minority Views at 7.
- 96 Outer Space Treaty, Article I.
- 97 H.R. 1508 Report with Minority Views at 7-8.
- 98 These nations “take the position that the nonappropriation provisions in Article [II] of the [Outer Space] Treaty preclude exploitation of celestial natural resources...” H.R. 1508 Report with Minority Views at 8.
- 99 *Id.* “The United States, Russia, and Japan have all removed, taken possession of, and used in-situ natural resources.” *Id.*
- 100 *Id.*