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MINING THE MOON: FRAGMENTATION AND THE FUTURE OF MULTILATERAL SPACE GOVERNANCE

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ABSTRACT

This paper aims to address the growing fragmentation and ambiguity in the realm of space law, particularly surrounding lunar resource extraction. The existing legal frameworks reveal significant vacuums and fail to address modern concerns. For instance, the Outer Space Treaty (OST) of 1967, prohibits national appropriation of celestial bodies, yet remains silent on the ownership and commercialization of extracted resources. The rise in agreements such as the Artemis Accords and national space legislation in countries like the U.S., Luxembourg, and the UAE, enables commercial mining through unilateral or bilateral frameworks. These raise significant legal concerns about erosion of the multilateral order and the exclusion of Global South states from future benefits.

This research undertakes a doctrinal and comparative legal analysis of emerging practices around lunar mining to assess whether they align with the existing treaty obligations and customary international law. It examines case studies including NASA's Artemis III mission, Luxembourg's legal framework, India's Draft Space Activities Bill, and the Sino-Russian lunar station project. This paper underscores the argument that these ignorant measures signify a shift toward unilateral norm-setting, potentially undermining the principles of equitable access and common heritage. This study concludes by advocating for a negotiation under the United Nations framework of a

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Lunar Resources Protocol, which aims to preserve legal uniformity, promote equitable participation of the Global South and ensure long-term sustainability in lunar governance.

KEYWORDS: Lunar mining, Resource extraction, international treaties, National frameworks, Global South, Fragmentation, Multilateral governance.

INTRODUCTION

The current space law framework is revealing its craters as the world is witnessing a significant rise in lunar mining and extraction. This task, once deemed a miraculous feat, has become a common achievement among nations due to its increasing feasibility facilitated by the State as well as private actors. This trend signals towards a wider shift to exploring and utilizing extraterrestrial resources beyond the Earth, with moon mining being the most economically sound choice[2]. The sudden change in the interests of nations to outer space, is also influenced by the environmental and economic costs associated with Earth-based mining. Although lunar mining is said to pave the way for future space missions and settlements and bolster supply chains on Earth leading to various positive economic impacts, it poses serious risks with private and public sectors racing each other to the moon leading to conflicts and disputes between various nations. The safety of the personnel travelling to the moon on such mining expeditions is also a serious concern taking into account the harsh lunar environment. The legality of the same, especially remains ambiguous, raising issues related to property rights, environmental impact, and international cooperation that need to be addressed.

[2]The Lunar Rush: Mining the Moon, Canadian Mining Journal, https://www.canadianminingjournal.com/featured-article/the-lunar-rush-mining-the-moon/.

The Outer Space Treaty (OST) of 1967 had established space as the "province of all mankind", prohibiting national appropriation, however it failed to provide clarity on the legality of the growing concern of the legality of commercial resource extraction. Non-binding agreements such as the OST and the Artemis Accords, led by the US, consistently advocate for national frameworks on extraction and use of lunar resources, which brings forth concerns regarding de facto appropriation by a few States. On the other hand, the Moon Agreement of 1979, remains largely unratified, though it calls for equitable benefit-sharing and collective governance. Concurrently, nations such as Luxemburg, the United States, and the UAE have enforced national frameworks which stand for commercial exploitation of space resources. These developments bring to light the fragmentation of space governance and the erosion of multilateral consensus.

This paper aims to examine the contemporary international legal framework governing lunar resource extraction, with specific reference to the Outer Space Treaty, 1967, and the Moon Agreement, 1979. It would also include an analysis of the legal and normative implications of the Artemis Accords and national space legislations on the principle of non-appropriation and the concept of the common heritage of mankind. The study would include an evaluation of the role and participation of Global South countries, particularly India, in shaping or responding to evolving legal architectures for lunar governance and assess how emerging state practices and bilateral agreements are contributing to the fragmentation of multilateral space governance, and whether these practices are forming new customary international norms.

This paper is limited to the legal and institutional analysis of lunar resource extraction under public international law, with a particular focus on the fragmentation of space governance frameworks following the introduction of the Artemis Accords and the enactment of national space legislation permitting resource utilization. This research undertakes a doctrinal and comparative legal analysis of emerging practices around lunar mining to assess whether they align with the existing treaty obligations and customary international law by making use of primary sources such as international treaties and national frameworks along with secondary sources such as journal articles, research papers and web-articles. It examines case studies including NASA's Artemis III mission, Luxembourg's legal framework, India's Draft Space Activities Bill, and the Sino-Russian

lunar station project in order to understand the way in which diverse legal strategies contribute to evolving space norms. The paper does not cover asteroid mining, space tourism, or deep space exploration. It also does not delve into the scientific or technical feasibility of lunar extraction, focusing instead on the normative, legal, and governance implications at the international level.

INTERNATIONAL LEGAL FRAMEWORKS GOVERNING LUNAR RESOURCES

The concept of preserving space for peaceful purposes was first discussed in the 1950s after the Cold War during which the Soviet Union and the United States competed to develop powerful rockets and nuclear weapons, going so far as to test nuclear weapons in space.[3] This raised concerns about space being used as a hostile war zone, urging nations such as the United States and its Western allies to submit proposals on reserving space exclusively for "peaceful and scientific purposes"[4], which were rejected by the Soviet. However, after the approval of the United Nations in 1963, the UN Resolution of 1962[5], set out legal principles on outer space exploration, which stipulated that all countries have the right to freely explore and use space. After this, the United States and Soviet Union provided drafts of outer space treaties. A mutually beneficial agreement, formally known as the 'Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies' was formulated, signed by the US, the UK and Soviet Union as the depository nations, entering into

[3]What is the Outer Space Treaty?, The Planetary Society, https://www.planetary.org/articles/what-is-the-outer-space-treaty.

[4]The Outer Space Treaty at a Glance, Arms Control Association, https://www.armscontrol.org/factsheets/outer-space-treaty-glance.

[5]U.N. General Assembly Resolution 1962 (XVIII), Dec. 13, 1963, United Nations.

force on October 10, 1967. At present, this treaty has 116 parties and has been signed by 89 countries, who have not completed ratification.[6]

The main purpose of this treaty was to keep space a peaceful terrain, free from any nuclear weapons or weapons capable of mass destruction. The agreement also emphasizes on the point that space is the "province of mankind" in Article 1[7], highlighting the exploration of space must benefit and be in the interests of all countries, irrespective of their economic position or degree of scientific development. A salient feature of the treaty is its emphasis on the prohibition of nations claiming sovereignty over any part of outer space. This is provided for in Article 2 of the treaty which states, "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."[8] Thus, the main objective of the treaty is to ensure accessibility to space and its resources without discrimination of any kind while avoiding appropriation by developed nations.

However, in the contemporary world this treaty falls short in acknowledging the commercial extraction of resources, especially lunar resources. The ownership of these extracted minerals has created a legal void due to its ambiguity. Though the treaty ensures that no State claims ownership of celestial bodies, the extracted resources brought back to Earth fall outside the ambit of this agreement. Article 9 of the treaty discusses the harm to the environment caused by any resources brought back to Earth, yet, it does not mention a clear resolution for the same and as much of the treaty's content, remains rather vague, resulting in uncertain implementation and enforcement. The issue of commercial exploration and extraction and its impact on the States and their advancement is not adequately addressed. This leaves the question of legality surrounding commercial resource

[6]Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, United Nations Office for Disarmament Affairs.

[7]Outer Space Treaty art. I.

[8]Outer Space Treaty art. II.

extraction by private and State actors along with the ownership of these resources obtained from the province of mankind, unanswered.

Another key international framework implemented in the post-cold war era is the Moon Agreement of 1979, officially known as the 'Agreement Governing the Activities of the States on the Moon and Other Celestial Bodies'. Following the moon landing on 20 July 1969, Argentina again submitted for discussion a proposal for a draft agreement, after their previous attempt in June of the same year.[9] This draft aimed to declare the Moon and other celestial bodies as a "common heritage of mankind". As a result of various extensive negotiations conducted by the Committee on the Peaceful Uses of Outer Space (COPUOS) and its Legal Subcommittee, a finalized resolution was adopted by the General Assembly on December 5, 1979. As per 2025, the treaty has 17 party nations and has been signed by 11 countries, of which India is a signatory and is yet to complete ratification.[10]

The motivation for concluding the Moon Agreement is stated in its Preamble. It aims to promote cooperation among States in the exploration and use of the Moon in order to prevent it from becoming an area of international conflict., while acknowledging the potential benefits of this exploitation.[11] Similar to other space treaties, the Moon Agreement elaborates further on certain principles provided in the Outer Space Treaty. For instance, in Article 11, the Moon Agreement set out, in less equivocal terms than those found in Article 1 of the Outer Space Treaty, a prohibition on the moon's resources becoming the property of any state, non-governmental agency or natural or legal person.[12] The Moon Treaty is designed to permit governmental as well as private

[9]U.N. Doc. A/AC.105/C.2/L.71 and Corr.1.

[10]Status of the Moon Agreement, U.N. Treaty Collection, https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXIV-2&chapter=24&clang=_en.

[11]Agreement Governing the Activities of States on the Moon and Other Celestial Bodies pmbl.

[12]The International Legal Framework for Space Mining Is Becoming Less of an Alien Concept, Practical Law Arbitration Blog, http://arbitrationblog.practicallaw.com/the-international-legal-framework-for-space-mining-is-becoming-less-of-an-alien-concept/.

entities to explore and use the Moon and other celestial bodies in an orderly manner.[13] It also establishes the right to collect and remove samples from the Moon and other celestial bodies to support scientific missions.[14]

However, Article 11(3) makes it clear that any resources on or below the surface of the Moon shall not become the possession of any State, however it does not talk about resources that are extracted and brought back to Earth. Article 11(5) necessitates the establishment of an international governing regime, which would regulate exploitation of the natural resources of the Moon. It also calls for a moratorium on exploitation until the establishment is complete.[15] A problem of ambiguity, similar to that in the case of the Outer Space Treaty arises here, as the manner in which this regime must be formed is not addressed. The agreement is also silent on whether lunar resources such as regolith and Helium-3 can be owned, sold, or traded. It also focuses heavily on state responsibilities, offering little legal clarity or protection for private companies. These ambiguities present a legal vacuum that national legislation is now exploiting.

FRAGMENTATION OF GOVERNANCE: RISE OF BILATERAL AND NATIONAL INITIATIVES

The Outer Space Treaty (OST) remains the bedrock treaty of international space law,[16] but there is now a budding schism regarding the general regulation of space activities, especially resource

[13]The Role of the Moon Agreement in Lunar Governance, ESPI Perspectives, https://www.files.ethz.ch/isn/124689/espi_%20perspectives_14.pdf.

[14] *Id.*

[15]Myths of the Moon Agreement, ResearchGate, https://www.researchgate.net/publication/268569640_Myths_of_the_Moon_Agreement.

[16]The Moon Agreement: Hanging by a Thread?, McGill Institute of Air and Space Law, https://www.mcgill.ca/iasl/article/moon-agreement-hanging-thread.

extraction. The older model based on multilateral consensus and shared principles is giving away to bilateral agreements and a patchwork of national-level legislation. This does not stand as a formal displacement of the OST, but rather a blurring of blurred competences of dissonant legal landscapes that aggravates questions over prospects in coherence, coordination, and long-term legitimacy. Given that the changes in international space law are unprecedented, the clearest instance of this is, however, that which was initiated by the United States in 2020 through the Artemis Accords[17]. These Accords are presented by the U.S. as a political agreement that is non-binding, and establish principles on cooperation in space activities, including safety, transparency, interoperability, and use of resources. While they do link back to the OST and its foundational principles, the Accords innovated on several existing concepts, most notably, the idea of "safety zones" is not recognized under current treaty law. These zones are purportedly designed to maintain protection from operational interference, but also give an impression of semi-controlled areas established around lunar sites. They begin to resemble soft territorial claims in practice.

The Accords do allow for unilateral recognition of rights over resources, by-passing the notion of a common legal regime. In doing so, the agreement seems purposefully vague on ownership but confines itself also to not forbidding or regulating commercial extraction. It thus leaves participation matters to the discretion of states. This raises concerns about the erosion of the non-appropriation principle set under Article 2 of the OST[18], which prohibits any national appropriation by claim of sovereignty over any part of a celestial body. While the Accords do not overtly contravene the OST, they lean toward a permissive interpretation of the meaning of "use", one which allows extraction without a concomitant revisit of the ownership or benefit-sharing framework in legal terms.

[17]The Artemis Accords, NASA.

[18]Outer Space Treaty art. II.

In parallel, various states have taken domestic initiatives that empower commercial entities to carry out space mining. The U.S. Commercial Space Launch Competitiveness Act[19], passed in 2015, recognizes the right of U.S. nationals to own resources extracted from celestial bodies. Luxembourg's 2017 Space Resources Act goes further and provides a legal framework for licensing and protecting companies working on space resource activities. By now, one can imagine that Philippine-Icelandic-Argentinean-like legal frameworks contemplate exploding in many lands. This decentralization is, in a sense, a trend of decentralization. As opposed to states coordinating their activities within recognized multilateral forums, such as UNCOPUOS, they are now working to develop legal avenues aligned with their own strategic and economic objectives. While this might be to the advantage of short-term innovation and private investment, it very well can be at the cost of long-term stability. In the absence of a common framework, there is an ambiguity on the resolution of a conflicting claim, an overlapping activity, or the damage to the environment.

This is important because it means that the transfer of law-making power is toward whoever spaces them. Consequently, legal norms for lunar resource use are being fashioned through practice rather than consensus. Risking becoming default standards accepted, not quite because they are agreed upon, but simply because of their early widespread implementation that made challenging them increasingly difficult. This kind of broken approach leaves a legal source of problem. If there are, manage pluralities well. The growth of parallel frameworks, national laws, bilateral pacts, and informal coalitions, undercuts the consistency international law is supposed to offer. These instruments can undoubtedly enhance present effectiveness, mainly for private sector actors. But they give no guidance as to responsibility if things go wrong, problem-solving mechanisms that are likely to be fair and acceptable by all sides when quarrels arise between different groups, long-

[19]U.S. Commercial Space Launch Competitiveness Act, U.S. Congress.

term direction in general terms for how to handle conflicts between industries and conservation or development projects that might cause an adverse impact on some other developer's more modest efforts. The Moon is beyond the reach of any earthly law.

United Nations negotiations for countries to be independent in their satellite launching activities, US at first took an understanding attitude but later voiced reservations.[20] The United States wanted its international trade organization to become the headquarters for international operations of all countries. But China, and they in fact make up a majority, wanted the headquarters in Geneva. Few attempts have been made to take up multilateral guidance through the Second Committee. Although it continues to serve as an arena for discussion, no legislation on this has yet come into force. Various national interests are behind ideas for working groups or guidelines, especially issues such as benefit-sharing and the role of the State. Soft law principles, without binding mechanisms to support them, are stepping in to fill the vacuum. Both their exclusiveness and their limited nature.

There is not a lack of enforcement and review mechanism that would give rise to one more layer of confusion. For example, there is no global body authorized to officially review whether the Artemis "safety zones" are legally reasonable or in any way merciful. At the same time, there is no joint method whereby resource claims under national laws do not disturb scientific missions, heritage sites, future access from other states. In short, the governance of space is moving from a treaty-based framework to one which is actually built on experience and norms.

CASE STUDIES: CONFLICTING LEGAL NORMS IN PRACTICE

[20]Mining in Space: Who Owns the Moon?, Mining Technology, https://www.mining-technology.com/features/mining-in-space-who-owns-the-moon/.

Fragmentation of the law mentioned above is not a hypothetical problem, already it is occurring. Recent practice provides an example of how states are establishing lunar governance not on the basis of international agreement, but on the basis of national law, bilateral treaties, and political blocs. These developments show how existing legal norms are being interpreted in the here and now. This chapter examines four significant case studies demonstrating this phenomenon: the Artemis III mission under the Artemis Accords, Luxembourg's law on space resources, India's Draft Space Activities Bill, and the China-Russia joint lunar station initiative. Each case is a variant of resource governance, and each raises outstanding problems of consistency, accountability, and inclusion.

The Artemis Accords and NASA's Artemis III Mission

The Artemis III mission by NASA will be the first to bring humans back to the Moon, with a goal of a crewed landing at the lunar south pole. It's not an arbitrary selection, there is believed to be water ice in great quantity at the south pole, a scientifically and economically desirable resource. The mission is not in a legal void. It is in the context of the broader Artemis Accords, an informal treaty signed by over thirty countries. The Accords establish principles of space exploration, including transparency, interoperability, peaceful uses, and protection of heritage sites.[21] Their most consequential, and controversial, feature is the encouragement of "safety zones." Although defined as operational measures to prevent interference, these safety zones are problematic in law. They are not referenced in the Outer Space Treaty (OST), nor are they defined in terms of size, temporal application, or enforcement mechanism. Their establishment risks establishing a de facto territorial claim, or an informal one. Article 2 of the OST prohibits national appropriation of celestial bodies "by means of use or occupation."[22] It is questionable whether the establishment of such zones, and particularly in areas of resource abundance, would be in contravention of this

[21]International Agreements and ISRU, Space Ambition, https://spaceambition.substack.com/p/international-agreements-isru.

[22]Outer Space Treaty art. II.

provision. The Artemis model also permits resource extraction, claiming this is not appropriation. This is an interpretation away from the OST's multilateral restraint towards a permissive, activity-based model of governance. Significantly, there is no binding process for resolving disputes over the meaning or scope of this model. The Artemis III mission, although a scientific success, will also be a precedent-setting mission, particularly if extraction activity is combined with protected areas and exclusive operational footprints.

Luxembourg's National Space Resource Law

Luxembourg was among the first nations to pass legislation clearly authorizing commercial space mining. Its Space Resources Act of 2017[23] enables companies to own extracted resources from celestial objects, subject to them being licensed by Luxembourg's regulatory bodies. The legislation is based on the model pioneered by the United States back in 2015 but takes it further by providing legal certainty and a business-friendly regulatory framework. Luxembourg's response is remarkable for its transparency and for its express use of the difference between appropriation of resources and appropriation of territory. The state claims that while celestial bodies cannot be appropriated, resources extracted from them are removed from the commons and can be owned. This understanding is not unequivocally supported by the OST, nor is it outlawed. The legal grey area has become an opening for national legislation to fill, even in the absence of an international agreement. Unlike the Artemis Accords, Luxembourg law does not create international norms or shared frameworks. It is, however, exclusively domestic legislation but with worldwide impact. By creating legal protections for actors who are non-state, the law sets a regulatory benchmark that other countries may feel a need to follow, simply in an effort to remain competitive. In the long run, such practice might help form customary law, a process where consistency of practice and

[23]Space Resources Act, 2017, Luxembourg Government.

belief in legal obligation, opinio juris can crystallize new rules. Whether that is fitting in a space as under-regulated as lunar extraction is still unclear.

India's Draft Space Activities Bill, 2017

India takes a more measured approach. Its Draft Space Activities Bill was introduced in 2017 but never passed. The key feature of the bill is the establishment of a legal framework for commercial space activity, with a public sector, state-wide oversight. The draft bill outlined a licensing regime, liability provisions and general rules for private enterprises. However, little was specified around the commercialization of resources. While it does not govern primarily around individual private ownership in the same way the U.S. and Luxembourg models permitted, the draft only authorises general terms of "commercial exploitation" without any express authority to commercially exploit resources mined from the moon or asteroids.

This uncertainty may be indicative of India's complex status within the international legal landscape. On the one hand, India has endorsed the Moon Agreement, which supports the idea of common heritage and envisages future international regulatory schemes for resources. On the other hand, India has neither ratified the Agreement nor made a strong public statement on whether lunar mining should either be permitted or regulated internationally. The Draft Bill is analogous. It acknowledges the existence of a legal framework, yet at the same time avoids endorsing contested notions. India's indecision can be viewed in a variety of ways: it may be waiting for a clearer international position or may simply be averse to positioning itself in a way that limits its own future activity. Regardless, India is losing its place in the governance discussion as it has not enacted legislation in the face of technical evolution. For example, India's pivotal success missions, such as Chandrayaan-3, display India as having lunar competency with no legal or normative leadership stake at the moment.

The China–Russia Lunar Research Station Initiative

In response to the Artemis program, both China and Russia have announced a joint effort to establish a lunar research station, likely at the Moon's south pole.[24] While framed as scientifically and voluntarily collaborative, it has clear geopolitical dimensions. Neither China nor Russia sign the Artemis Accords, and both nations have stated publicly that the Accords are neither legitimate nor authorized by the international community. Their lunar partnership presumably represents a strategic alternative, an attempt to create alternative space norms outside of the U.S.-led legal framework. The legal importance of the China–Russia initiative is not the scientific aims, but the prospect of establishing competing norms. If the project enables long-term, sustainable operations, it will create a new set of informal normative practices , around site use, shared resource operations, and shared use for operations and potentially resource oriented activities. In the absence of binding law on these issues, any such practices might acquire normative significance through repetitive and regular use and states acknowledge them. While neither China nor Russia have implemented domestic law instituting private resource claims, and both support a more formal centralized authority in governance. But neither has presented a definitive replacement to the Artemis model. Rather, their approach appears to follow parallel development, demonstrating capability, denying current frameworks, and possibly inviting additional states into a different model for lunar cooperation. This could, if successful, lead to a bipartite, governance framework with multiple power lines and disparate regulatory visions.

These case studies all depict the fragmentation that is happening in lunar governance today. Actors addressed the legal ambiguity in the current framework with different reactions: some legislation, some alliances, and others silence. These actions are not illegal in and of themselves, but they each

[24]China-led Lunar Base to Include Nuclear Power Plant on Moon's Surface by 2028, Reuters, https://www.reuters.com/business/energy/china-led-lunar-base-include-nuclear-power-plant-moons-surface-space-official-2025-04-23/.

suggest an increasing lack of coordination, shared values, or dispute resolution processes.[25] Yet, it remains unclear what the long-term implications are. One thing that is obvious, however, is that law is no longer being developed through accords or treaties - it is being developed through missions, legislation, and some coordination.

CUSTOMARY LAW FORMATION OR LEGAL FRAGMENTATION

The developments described in the previous chapter leads to a larger question: are we observing the emergence of new norms under international space law, or are we witnessing a diminution of its coherence? The answer to this question may depend on how one interprets the relationship between emerging state practice and existing treaty obligations. This chapter will explore whether the practice of different states such as the United States and Luxembourg contribute to the formation of customary international law, or merely reflect a trend towards legal fragmentation and lack of consensus. Under international law, customary norms require two elements: consistent and general state practice; and a belief that such practice is legally obligatory, opinio juris. The Outer Space Treaty (OST) incorporates this model, though a treaty, it has shaped some expectations as customary for purposes of peaceful use, non-appropriation and international cooperation. However, it was much less clear if the same could be said for resource or mineral extraction.

Certain scholars suggest that the continuing claim by states that resource extraction respects Article 2 of the OST, when combined with national law and practice, is indicative of new customary law under development. There are, for example, the laws in the U.S., Commercial Space Launch Competitiveness Act (2015), and in Luxembourg, The Space Resources Act (2017) that provide

[25]EAGLE Report on Space Resources, SGAC / UNOOSA,

for private actors to own extracted material. The Artemis Accords supports this perspective in stating that such activity accords with already existing obligations in treaties. These customary norms are likely to crystallize if states continue to lead toward these practices without cogent opposition. That being said, we must remain cautious. First, the number of states engaging in lunar resource extraction, or legalizing it, is still limited; second, it is difficult to discern opinio juris when the state is pursuing such practices through national law or soft bilateral instruments, absent binding multilateral consensus; and third, the evidence to support that other states accepting such practices as lawful, especially those states without active lunar programs, is not decisive; silence or inaction is not agreement.

What we may be seeing instead of a norm formation, is legal fragmentation. A state of play where states are coming to different legal interpretations and frameworks not because they have agreed to do so, but because there is no formal avenue for resolving disagreement. The outer space regime does not have the same institutional framework that exists for other areas of international law, and it lacks either mechanisms to clarify legal uncertainty or institutional structure to arbitrate between diverging state practices. UNCOPUOS is a discussion body, but has no legal adjudicative function, and has thus far not established binding rules on resource extraction. In this absence, we are seeing national laws starting to take shape as de facto legal standards, especially where those are backed by technical capacity. Where states have the capacity to undertake lunar missions they are setting expectations through action, while those who lack the capacity to further participate will find themselves largely isolated from this discussion. It is not so much law-making through negotiation, or even practice, but law-making through momentum, with the caveat that this momentum may prioritize efficiency over legitimacy. In conclusion, while some elements of recent state practice may help form new norms, the criteria for true customary law are wholly lacking. We have an emerging legal picture in which parallel systems are evolving each in its own right, but not in concert. Whether this picture stabilizes into a new legal order or becomes entrenched as long-term conflict will depend on the path space and non-space faring states take in the coming years.

EQUITY AND THE GLOBAL SOUTH: RECLAIMING THE COMMON HERITAGE PRINCIPLE

The Moon Agreement was meant to offer a correction, a way to re-center space law around equity, restraint, and global participation. But today, the principle it tried to safeguard, that the Moon and its resources are the common heritage of mankind, has been sidelined by a model of extraction-first, regulation-later. This principle, articulated in Article 11(1)[26] was born out of a very specific moment: post-colonial nations had just begun to challenge the rules of global economic order, and the idea of "common heritage" emerged as both a legal claim and a political demand. It was never abstract. It was meant to prevent exactly what is happening now. What we are witnessing is a slow undoing of that commitment. The Artemis Accords[27], led by the United States and adopted by several other spacefaring allies, promotes a legal architecture that bypasses multilateralism entirely. They frame lunar activity as peaceful and cooperative, yet they legitimize resource extraction and propose "safety zones" which, while not called territorial claims, begin to function like them.[28] These zones effectively insulate extraction activities from outside interference, even though the Moon, by law, belongs to no one.

This shift cannot be separated from global power asymmetries. The countries drafting and signing these accords are the ones with the technological means to reach the Moon. Meanwhile, the Moon Agreement, which explicitly prohibits both state and private appropriation of lunar resources under Article 11(3)[29], has been ratified by only a handful of countries, none of them space powers. The legal regime that prioritizes equity exists, but it has been made irrelevant by design. What this

[26]Moon Agreement art. 11(1).

[27]The Artemis Accords, supra note 15.

[28]The Ethics of Space Resource Utilization, Philos. Trans. Royal Soc'y A, https://royalsocietypublishing.org/doi/10.1098/rsta.2019.0563.

[29]Moon Agreement art. 11(3).

produces is fragmentation, not just in treaty law, but in how law is being made and by whom. There is no functioning international regime, as envisaged under Article 11(5)[30], to govern how lunar resources will be extracted or shared. There is no process, no institution, and no equitable framework to ensure that states not currently capable of reaching the Moon can access its benefits in the future.[31] The common heritage principle, rather than guiding lunar governance, has become a footnote to more "practical" legal arrangements between capable states.

The Global South is being written out of the future. That exclusion is not just economic; it is legal. Countries like India, which have signed but not ratified the Moon Agreement, now face a strategic dilemma: whether to align with emerging power blocs or reclaim the legal and moral framework that once underpinned space law. The risks of inaction are high. Norms are being formed in real time, and without resistance, they will solidify around interests that are neither inclusive nor accountable. This moment calls not for nostalgia, but for legal reinvention. If space law is to serve more than those who write it, the Global South must assert a new claim: not just to benefit-sharing, but to co-authorship of the rules themselves. What's needed is a Lunar Resources Protocol, a binding, multilateral framework under the United Nations that codifies extraction standards, establishes oversight, and guarantees that the Moon does not become another site of extractive colonialism under a different name.

RECOMMENDATIONS FOR A MULTILATERAL FUTURE

The legal developments surrounding lunar resource extraction have strongly emphasized to us that none of the existing legal architecture, relying primarily on the Outer Space Treaty of 1967, will be sufficient to deal with the newer realities of space exploration. Although some progress has been made by the Artemis Accords and the patchwork of national legislation seeking to implement

[30]Moon Agreement art. 11(5).

[31]EAGLE Report on Space Resources, supra note 23.

resource use, their fragmented and aspirational nature raises questions of legal continuity, jurisdictional clarity, and equal access. Thus, given the ever-changing environment, a structured, multilateral framework is necessary to reasonably address the sustainability and efficacy of lunar resource extraction.

A logical first step is negotiating a Lunar Resources Protocol under the current UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) institutional structure, that again, would be akin to the Kyoto Protocol[32] or the Nagoya Protocol[33] as one potential path. Such an agreement would have a similar relationship to the Outer Space Treaty and, where politically possible, the Moon Agreement, to establish a subsidiary legal regime that gives life to the principles of both treaties. The most important thing is, this would not need to re-legislate the essence of international space law, but would, instead, provide transparent procedures for the licensing of lunar resources, benefit-sharing, transparency, and dispute resolution. The draft protocol must address four fundamental dimensions. First, it must clarify the legal status for extracted resources, distinguishing between a prohibition on the appropriation of celestial bodies and how one may both use and commercially transfer the material. Second, a global licensing and registration framework should be used to create clarity in relation to extracted resources. We need to have a public licensing and registration framework to avoid ambiguity and potential overlap and exclusivity, similar to existing frameworks under the UN, or a newly created Lunar Resource Authority. Thirdly, the draft protocol should contain a benefit-sharing provision, especially with non-space-faring nations based on the principle of common heritage. These could take any number of formats: a technology transfer, data transfer sharing, or a pooled fund based on international licensing fees. While this may be politically inconvenient, such benefit-sharing frameworks are not without precedent; similar mechanisms exist through the International Seabed Authority and norms created through UNCLOS. Last but not least, environmental issues must be embedded in a

[32]Kyoto Protocol, UNFCCC.

[33]Nagoya Protocol, Convention on Biological Diversity.

governance regime from the outset. Whenever lunar resources are extracted, fresh elements of planetary protection are involved, as well as sustainability, and debris issues. The protocol must include mandatory environmental impact assessments, as well as baseline operational performance standards protecting lunar terrain and future scientific missions from irreversible loss. The prospect of a multilateral protocol hinges on political will. To be clear, the protocol need not initially include all spacefaring nations; however, it must have a credible core group and a viable path for broader accessions. In addition, there are precedents from treaties on climate and the environment that suggest partial consensus can yield norms, especially where a regime provides predictability and legitimacy to public and private actors.

To conclude, the legal and political situation may have shifted to bilateralism and national regulation, but that does not have to be permanent. A decentralized treaty framework can support national space programs, as long as it provides predictable rules, procedural safeguards, and aspects of inclusiveness. The current time presents an opportunity to lay down a legal order that can accommodate innovation, but is grounded in predictability, sustainability, and multilateral legitimacy.

CONCLUSION

The governance of lunar resource extraction has found a place in a legal framework that was not designed to adequately encapsulate it. The Outer Space Treaty, although it brought monumental changes to the way nations viewed space law, has remained rather vague with general provisions. The Moon Agreement aimed to tackle this concern and create a more specific framework is facing the concern of a stark lack in ratification and recognition, especially by key space-faring nations. These non-binding agreements do not wield the power to rule over the resource extraction that is currently taking place. In this vacuum, states have begun to legislate independently, form bilateral accords, and build alliances around contested interpretations of law. This legal void does not merely face the concern of ambiguity but it also is witnessing a shift in how space law is made, and who gets to make it.

This paper has argued that what we are seeing is less the formation of new customary international law and more a process of legal fragmentation. Practices around safety zones, national licensing regimes, and ownership of extracted resources are emerging unevenly, shaped by technological capacity and geopolitical influence rather than shared rules. In the absence of a multilateral framework, these practices risk becoming entrenched through repetition rather than consensus. A sustainable legal landscape cannot be built on soft law and policy declarations. The rise in lunar activity calls for a clear and enforceable framework developed not unilaterally or through default, but through negotiation and institutional design. The proposal for a Lunar Resource Protocol under the UN framework is not idealistic, it is necessary. It provides a way of channeling principles into procedures, and ambition into structure.

The Moon has always occupied a place in human imagination. What it becomes now, commons or commodity, contested zone or cooperative frontier, will depend not on science alone, but on law. And at this early stage, the shape of that law remains unwritten.

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