

THE LEGAL CONUNDRUM OF SPACE MINING: PROPERTY RIGHTS BEYOND EARTH

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ABSTRACT

The cosmos, once the domain of mere speculation, has now become the arena for humanity's next frontier in resource exploitation. As celestial bodies become potential mining sites, a labyrinthine legal conundrum arises: who owns the asteroids, the moons, and the celestial debris? This scholarly inquest examines the corpus juris governing space mining, dissecting international conventions such as the Outer Space Treaty¹ and the Moon Agreement², while meticulously scrutinizing nascent national space legislations. The discourse delves into the jurisprudence of property rights, exploring its terrestrial underpinnings and its extraterrestrial implications. It meticulously juxtaposes these international legal edicts with the intricate web of Indian property laws to unveil the concordances and dissonances between them. By intricate web elucidating the legal lacunae and identifying areas of potential legal friction, this exegesis seeks to illuminate the path toward a harmonized legal framework for space mining. This harmonization is imperative not just for legal clarity but also for fostering an environment conducive to the sustainable and equitable exploitation of celestial resources. The goal is not merely to answer the question of "who owns the cosmos" but to establish a legal order that ensures the cosmos benefits all of humanity, not just a privileged few.

Keywords: Space Mining, Property Rights, Outer Space Treaty, Moon Agreement, Indian Property Laws, Extraterrestrial Resource Exploitation, Legal Conundrum, Celestial Bodies, Jurisprudence, Legal Framework.

INTRODUCTION

The audacious and avant-garde venture of space mining presents a legal conundrum of

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¹ The outer space treaty 1967

<https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html> accessed on 4th august 2024.

² The Moon Agreement (1984) <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html> accessed on 4th august 2024.

unprecedented proportions, as it traverses the intersection of celestial resource appropriation and terrestrial property rights. This exploration endeavors to delineate the intricate nexus between international space law and Indian property law, elucidating the ramifications of space mining within the existing legal framework.

In the pantheon of international legal instruments, the Outer Space Treaty, of 1967³ stands as a cornerstone, delineating the principles governing the activities of states in the exploration and use of outer space, including the Moon and other celestial bodies. Article II of this seminal treaty unequivocally prohibits national appropriation of outer space by any means. Complementing this, the Moon Agreement of 1984⁴ further stipulates that the Moon and its natural resources are the common heritage of mankind, thus precluding any proprietary claims. Despite these provisions, the advent of the Artemis Accords and the U.S. Commercial Space Launch Competitiveness Act of 2015⁵ heralds a paradigm shift, permitting the extraction and utilization of space resources by private entities, thereby engendering a legal dichotomy.

Within the ambit of Indian jurisprudence, the Transfer of Property Act, of 1882⁶, and the Indian Contract Act, of 1872⁷, form the bedrock of property law, supplemented by the Mines and Minerals (Development and Regulation) Act, of 1957⁸. The Constitution of India⁹, albeit relegating the right to property to the status of a legal right under Article 300A, enshrines property rights within the overarching framework of Indian law. Judicial precedents such as *Keshavananda Bharati v. State of Kerala*¹⁰ and *Indira Gandhi v. Raj Narain*¹¹ have further fortified the sanctity of property rights. However, the extension of these terrestrial doctrines to the extraterrestrial realm remains an unresolved legal quandary.

The Indian Space Research Organization (ISRO)¹² has been at the vanguard of India's foray into space exploration, yet the regulatory landscape governing space mining remains

³ Supra¹ accessed on 4th August 2024.

⁴ Supra² accessed on 4th August 2024.

⁵ The U.S. Commercial Space Launch Competitiveness Act (2015)https://www.spacefoundation.org/space_brief/us-space-law/ accessed on 4th August 2024

⁶ The Transfer of Property Act, 1882<https://www.indiacode.nic.in/bitstream/123456789/2338/1/A1882-04.pdf> accessed on 4th August 2024.

⁷ The Indian Contract Act, 1872

⁸ The Mines and Minerals (Development and Regulation) Act, 1957<https://www.indiacode.nic.in/bitstream/123456789/1421/3/A1957-67.pdf> accessed on 4th August 2024.

⁹ The Constitution of India

¹⁰ AIR 1973 SC 1461

¹¹ (1975) Supp SCC 1.

¹² Indian Space Research Organisation's (ISRO)<https://www.isro.gov.in/> accessed on 4th August 2024.

nascent. The Indian Space Activities Bill of 2017¹³, albeit in draft form, endeavors to establish a comprehensive legal regime for space activities, addressing the commercial exploitation of space resources. However, this legislative initiative must be juxtaposed against the National Space Legislation of Luxembourg¹⁴ and the United Arab Emirates¹⁵, both of which have enacted laws to facilitate space resource utilization, thereby positioning themselves as pioneers in this domain.

The legal landscape of space mining, thus, oscillates between the extant principles of the Outer Space Treaty and the emerging national legislations that seek to carve a niche in the extraterrestrial resource domain. This dichotomy necessitates a meticulous reevaluation of the international legal framework to reconcile the prohibition of celestial appropriation with the burgeoning commercial interests in space resource exploitation.

In this milieu, the jurisprudential expositions of Indian courts, such as *Bishamber Nath Kohli v. State of Uttar Pradesh*¹⁶ and *Narinder Singh & Ors v. State of Punjab & Others*¹⁷, underscore the dynamic interpretation of property rights within the Indian legal context. The application of such jurisprudential principles to space mining will require an innovative and holistic approach, transcending the conventional paradigms of property law.

This exposition aims to navigate the labyrinthine legal intricacies of space mining, examining the interplay between international space law and Indian property law, while contemplating the prospective evolution of the legal regime governing the celestial expanse.

INTERNATIONAL LEGAL FRAMEWORK

Outer Space Treaty, 1967¹⁸

The cornerstone of international space jurisprudence, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies colloquially referred to as the Outer Space Treaty (OST) was

¹³ Draft space activities bill [2017https://prsindia.org/billtrack/draft-space-activities-bill-2017](https://prsindia.org/billtrack/draft-space-activities-bill-2017) accessed on 4th august 2024.

¹⁴ Luxembourg Space Resources Act (2017) https://ghum.kuleuven.be/ggs/publications/working_papers/2017/189 accessed on 4th august 2024.

¹⁵ The UAE's space regulations <https://www.wfw.com/articles/key-features-of-the-new-united-arab-emirates-regulations-on-space-activities/> accessed on 4th August 2024

¹⁶ AIR 1966 SC 573

¹⁷ (2014) 6 SCC 466

¹⁸ *Supra*¹ accessed on 5th August 2024.

promulgated in 1967. Article II of the OST categorically proscribes national appropriation of outer space, encompassing the Moon and other celestial bodies, through any means of sovereignty. This fundamental precept enshrines the principle that outer space remains the domain of all humankind, thereby precluding sovereign claims and forestalling potential geopolitical conflicts. The OST's edicts are foundational, establishing a paradigm wherein outer space is to be explored and utilized for the benefit of all states, irrespective of their degree of economic or scientific advancement.

The OST further stipulates that celestial bodies shall be free for exploration and use by all states without discrimination of any kind, on a basis of equality and by international law. This stipulation ensures that outer space is an arena for cooperative international endeavors, rather than a theatre for territorial conquest. The Treaty also imposes stringent obligations on states to avoid harmful contamination of space and celestial bodies, underscoring the commitment to preserve these environments for future generations.

Moon Agreement, 1984¹⁹

The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, commonly known as the Moon Agreement, was adopted in 1984 to augment the principles outlined in the OST. The Agreement designates the Moon and its natural resources as the common heritage of mankind, a doctrinal advancement aimed at fostering international cooperation and equitable sharing of benefits derived from lunar activities. The Moon Agreement envisages an international regime to oversee the exploitation of lunar resources, emphasizing the necessity for an equitable and judicious management of such resources.

The Moon Agreement has garnered limited ratification, with few states acceding to its provisions, thereby diminishing its impact on the extant legal framework governing space activities. Despite this, the Agreement underscores the imperative of shared benefits and the collective management of celestial resources, reflecting the principles of common heritage. The provisions of the Moon Agreement advocate for the peaceful use of the Moon, prohibiting the establishment of military bases, installations, or fortifications, as well as the testing of weapons of any kind.

The Moon Agreement requires that the exploration and use of the Moon be conducted in a

¹⁹ Supra² accessed on 5th August 2024.

manner that avoids harmful interference with the activities of other states. It also mandates the provision of assistance to astronauts in distress, extending the humanitarian provisions of the OST. The Agreement further calls for the establishment of an international regulatory body to supervise resource extraction activities, ensuring that such activities are carried out in a manner that benefits all humankind.

Beyond these seminal treaties, the international community continues to grapple with the complexities of space mining and property rights in outer space. The increasing interest in the commercial exploitation of space resources has prompted calls for a more comprehensive legal regime that addresses contemporary challenges and technological advancements. The nascent field of space mining necessitates a balanced approach that respects the principles of the OST and Moon Agreement while fostering innovation and economic development.

The international legal framework governing space mining is predicated on the principles of non-appropriation, common heritage, and equitable benefit-sharing. The OST and Moon Agreement provide a foundational basis for these principles, though their efficacy is contingent on broader international consensus and adherence. As humanity ventures further into the cosmos, the evolution of space law will be pivotal in ensuring that outer space remains a realm of peaceful and cooperative exploration, to the benefit of all humankind.

NATIONAL LEGAL FRAMEWORKS FOR SPACE ACTIVITIES

Journal of Legal Research and Juridical Sciences

The U.S. Commercial Space Launch Competitiveness Act (2015)²⁰

Informally known as the Space Act, marks a watershed moment in space law. Codified at 51 U.S.C. §§ 50901-50923, this statute catapults the United States to the forefront of private space exploration by providing a clear and coherent framework for the commercial exploitation of space resources. The legislation grants U.S. citizens the right to engage in the extraction and utilization of space resources, imbuing them with property rights over the harvested materials, albeit constrained by international obligations under the Outer Space Treaty of 1967. The Act signifies a paradigm shift, as it incentivizes private sector investment and innovation in the burgeoning domain of space resource utilization.

²⁰ Supra⁵ accessed on 5th August 2024.

Luxembourg's Space Resources Act of 2017²¹

formally the Law of 20 July 2017 on the Exploration and Use of Space Resources, exemplifies a visionary approach to space legislation. This pioneering statute empowers private entities to appropriate space resources, contingent upon acquiring the necessary licenses from Luxembourg's Ministry of the Economy. Article 1 of the Act lays the groundwork for the legal framework governing space resource utilization, while Article 2 underscores Luxembourg's commitment to international treaties, particularly the Outer Space Treaty. This legislative masterpiece positions Luxembourg as a hub for space mining enterprises, blending progressive national policy with unwavering adherence to international legal standards.

National Space Legislation of the United Arab Emirates²²

The United Arab Emirates (UAE) has crystallized its aspirations in the space sector through Federal Law No. 12 of 2019 concerning the Regulation of the Space Sector. This statute establishes the UAE Space Agency, which is entrusted with overseeing space activities and ensuring compliance with both national and international legal norms. The legislation encompasses provisions on licensing, registration of space objects, and liability for damages stemming from space activities, thus cultivating a secure and legally sound milieu for space ventures. The UAE's legal framework reflects its ambitions to become a formidable player in the global space arena, leveraging its regulatory regime to attract and facilitate private sector participation in space exploration.

Indian Legislative Framework

India's legislative corpus concerning space activities, property rights, and resource management is intricate and multifaceted. The following statutes are particularly salient:

India's Draft Space Activities Bill, 2017²³

Represents a comprehensive legislative effort to regulate space activities conducted by both governmental and non-governmental entities. The bill delineates a licensing regime for space activities, imposes stringent liability norms for damages, and mandates adherence to

²¹ Supra¹⁴ accessed on 5th August 2024.

²² Supra¹⁵ accessed on 5th August 2024.

²³ Supra¹³ accessed on 5th August 2024.

international space treaties. Section 3 prescribes the establishment of a regulatory body to oversee space activities, while Section 15 enumerates the liability provisions for space-related damages. This bill, though not yet enacted, heralds a structured approach to fostering India's space endeavors.

Indian Space Research Organisation (ISRO) Publications and Reports²⁴

Disseminates a plethora of publications and reports that provide invaluable insights into India's space endeavors. These documents elucidate ISRO's strategic plans, technological advancements, and scientific achievements, serving as a vital repository of knowledge for policymakers and researchers alike. ISRO's comprehensive reports highlight its pioneering contributions to space science and technology, reinforcing India's stature in the global space community.

The Transfer of Property Act, 1882²⁵

Is pivotal in governing the transfer of property rights in India. Encompassing a gamut of provisions, the Act delineates the modalities of property transfer, whether through sale, mortgage, lease, or gift. Sections 5 to 56 elucidate the general principles of transfer, while Sections 58 to 104 provide a detailed exposition of mortgages, charges, and leases. This statute serves as the bedrock of property law in India, ensuring the orderly transfer of property rights.

The Indian Contract Act, 1872²⁶

Is the cornerstone of contractual obligations in India. This Act, comprising Sections 1 to 266, governs the formation, execution, and enforcement of contracts. Key sections include Section 10, which stipulates the essentials of a valid contract, and Sections 73 to 75, which address the remedies for breach of contract. The Act's meticulous provisions ensure the sanctity and enforceability of contractual agreements, underpinning commercial transactions across the country.

²⁴ Supra¹² accessed on 5th August 2024.

²⁵ Supra⁶ accessed on 5th August 2024.

²⁶ Supra¹² accessed on 5th August 2024.

The Mines and Minerals (Development and Regulation) Act, 1957²⁷

Regulates the extraction and development of minerals in India. Section 4 mandates the acquisition of licenses for mining activities, while Section 13 empowers the central government to frame rules for mineral development. This Act is instrumental in managing the country's mineral resources, including any potential extraterrestrial mining ventures. Its comprehensive regulatory framework ensures sustainable and responsible mineral development.

The Constitution of India²⁸

The supreme law of the land enshrines the right to property under Article 300A. Though not a fundamental right, Article 300A ensures that no person is deprived of their property save by the authority of law, thereby safeguarding property rights within a legal framework. The Constitution's provisions reflect a delicate balance between individual property rights and the state's regulatory authority.

The Indian Easements Act, 1882²⁹

Delineates the law governing easements in India. Sections 4 to 25 define the nature, creation, and extinction of easements, while Section 15 specifically addresses the acquisition of easements by prescription. This Act provides a comprehensive legal framework for the regulation of easements, ensuring the orderly use and enjoyment of property rights.

In summation, the legal frameworks of the United States, Luxembourg, the United Arab Emirates, and India are meticulously designed to regulate and promote space activities while ensuring compliance with international norms. The detailed provisions of these legislations reflect a concerted effort to navigate the complex legalities of space exploration, resource utilization, and property rights, thereby fostering an environment conducive to the advancement of human endeavor in the final frontier. The convergence of national legislation and international treaties underscores the imperative of collaborative governance in the domain of space activities, ensuring that humanity's foray into outer space is guided

²⁷ Supra⁸ accessed on 5th August 2024.

²⁸ Supra⁹ accessed on 5th August 2024.

²⁹ The Indian Easements Act, 1882 <https://www.indiacode.nic.in/bitstream/123456789/2349/1/A1882-05.pdf> accessed on 5th August 2024.

by principles of legality, sustainability, and mutual benefit.

JUDICIAL PERSPECTIVES

United States v. One Lucite Ball Containing Lunar Material (One Moon Rock) ³⁰

Presented a unique judicial perspective on extraterrestrial property. The court's decision to confiscate lunar material under federal law underscores the stringent regulatory approach the US might adopt towards space resources. This case serves as a precedent for the US stance on property rights in outer space, potentially influencing international norms.

Nemitz v. United States (2004) ³¹

Gregory W. Nemitz filed a claim asserting ownership of the asteroid Eros and demanded parking fees from NASA for the NEAR Shoemaker spacecraft landing. The court dismissed Nemitz's claim, ruling that property rights in outer space are not recognized under current international law. This case reinforces the prevailing interpretation of the Outer Space Treaty (OST), 1967, which precludes national appropriation and, by extension, private ownership of celestial bodies.

Kesavananda Bharati v. State of Kerala (1973) ³²

This case, while not directly related to space mining, established the doctrine of the "basic structure" of the Indian Constitution. This doctrine could be interpreted to imply that any legislation concerning space mining must adhere to the fundamental principles enshrined in the Constitution, including property rights

Indira Gandhi v. Raj Narain (1975) ³³

This case reaffirmed the supremacy of the rule of law and the importance of judicial review. It suggests that any executive action or legislation related to space mining would be subject to judicial scrutiny to ensure compliance with constitutional norms and principles of natural justice.

³⁰ 252 F. Supp. 2d 1367 (S.D. Fla. 2003)

³¹ ILDC 1986 (US 2004) (OUP reference)

³² AIR 1973 SC 1461

³³ (1975) Supp SCC 1

Bishamber Nath Kohli v. State of U.P. (1966)³⁴

This case emphasized the concept of "eminent domain," which allows the State to acquire private property for public use. However, it also highlighted the necessity of fair compensation. This principle could be extrapolated to the context of space mining, implying that while the State might have a claim over celestial resources, it would be obligated to compensate any private entity that has invested in their extraction.

Narinder Singh & Ors v. State of Punjab & Ors (2014)³⁵

This case dealt with the acquisition of land for public purposes and emphasized the need for a balance between public interest and individual rights. In the context of space mining, this would imply a need for legislation that not only promotes the national interest in acquiring extraterrestrial resources but also safeguards the rights of private entities involved in space exploration and resource extraction.

CONCLUSION

In conclusion, the burgeoning field of space mining presents a complex legal landscape, intertwining international space law with domestic property rights frameworks. The Outer Space Treaty, while a cornerstone of space governance, offers ambiguous guidance on the appropriation of celestial resources. The Moon Agreement, envisioning a "common heritage of mankind," remains largely unratified, leaving a gap in international jurisprudence. National legislation, such as the U.S. Commercial Space Launch Competitiveness Act and the Indian Space Activities Bill (Draft), seeks to address this gap, but with divergent interpretations of property rights in space.

The Indian legal framework, steeped in centuries of jurisprudence, offers a unique perspective on property rights. While the Transfer of Property Act³⁶ and the Indian Easements Act provide a terrestrial framework, their applicability to celestial bodies remains unclear. The Indian Constitution³⁷, while guaranteeing the right to property as a legal right, leaves room for legislative interpretation. As we venture into the cosmos, the legal challenges surrounding space mining necessitate a nuanced and comprehensive approach. A

³⁴ AIR 1966 SC 573

³⁵ (2014) 6 SCC 466

³⁶ *Supra*⁶ accessed on 6th August 2024.

³⁷ *Supra*⁹ accessed on 6th August 2024.

harmonious interplay between international space law and national property regimes is crucial for celestial resources' equitable and sustainable utilization. The legal discourse on space mining is not merely academic; it is a call for jurisprudential innovation to navigate the celestial labyrinth and unlock the vast potential of the cosmos.

The legal complexities surrounding space mining are vast and multifaceted, requiring a collaborative and innovative approach from the international community. As we embark on this new frontier, we must develop a legal framework that is both equitable and sustainable, ensuring that all of humanity shares the benefits of space exploration.

