India's Ascendancy As A Space Power And Fragmentation Of Outer Space Law: Challenges And Opportunities

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1. Introduction

With the successful completion of the Chandrayaan 3 mission, India has become the fourth country that has successfully reached the Moon and is the first country to make a landing on the South pole of the Moon ¹. The increasing space prowess of India was never in doubt. For instance, in 2017, IaSRO achieved a remarkable feat when it launched more than 100 satellites from a single rocket ². India has also launched an interplanetary mission, i.e., the Mars Orbiter Mission, also known as the Mangalyaan. India also displayed its military capability in outer space with the successful test of the ASAT system in 2019 ³. By successfully landing on the Moon's south pole India has cemented its place as an important space-faring nation. The fact that it has achieved this feat as part of the Global South makes it even more commendable. In his speech made just after the landing of the Vikram Lander, the Prime Minister also stated that he hopes that other countries, specifically from the Global South, carry out similar feats ⁴.

India's heritage as an important member of the Global South means that its accomplishments in space technology are entwined with tremendous responsibilities in space politics and law. As a significant space power, of particular interest will be the role India plays in shaping the emerging contours of international space law.

This paper argues that India at present enjoys a unique position. On the one hand, it has joined the elite club of States that possess advanced space-faring technology, while at the same time, it has a long history of championing the cause of the Global South. Moreover, India's relationship with the United States (a significant space-faring power and the architect of the

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¹ Geeta Pandey, *Chandrayaan-3: India Makes Historic Landing near Moon's South Pole*, BBC News (23 August 2023), https://www.bbc.com/news/world-asia-india-66594520

² ISRO, *PSLV-C37 Successfully Launches 104 Satellites in a Single Flight*, https://www.isro.gov.in/SuccessfullyLaunches104.html

³ Manu Pubby, *India Tests First Anti-Satellite Missile System, Codenamed Mission Shakti*, The Economic Times (28 March 2019), https://economictimes.indiatimes.com/news/politics-and-nation/pm-modis-big-announcement-india-successfully-tests-anti-satellite-weapon/articleshow/68592702.cms?from=mdr

⁴ Brett Tingley, *India's Successful Chandrayaan-3 Moon Landing "belongs to All of Humanity," Prime Minister Modi Says*, Space.com (23 August 2023), https://www.space.com/india-chandrayaan-3-moon-landing-prime-minister-modi-all-humanity

Artemis Accords) in the field of space exploration is not based on competition. The combination of these factors puts India in a unique position with significant responsibilities. India has an opportunity to contribute towards further development of international law pertaining to outer space. In this context, the issue of ownership and use of resources contained in celestial bodies will emerge as the biggest test of India's leadership in space politics.

The paper is structured as follows. The first part of the paper provides a brief overview of the evolution and current trajectory of international space law and politics. Afterward, the paper focuses on the contentious issue of ownership and use of resources that are situated in celestial bodies. The last part of the paper examines India's unique and distinctive position and the corresponding responsibilities, opportunities, and advantages. While doing so it also addresses the issue of emerging fragmentation of legal regulations relating to exploration and use of outer space.

2. International law relating to outer space

International space law developed during the Cold War rivalry between the USA and the former USSR ⁵ and is based on certain essential rules and principles. They are reflected in the 1967 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (OST) and subsequent treaties, which are essentially elaborations of the specific provisions of the 1967 OST⁶. Under the international space law states are prohibited from making claims of sovereignty relating to outer space or celestial bodies, and outer space is to be used for peaceful purposes and for the benefit of humankind⁷.

In addition to the core rules relating to the prohibition of sovereignty claims and freedom of exploration of outer space that benefits all countries, the outer space law covers various aspects involved in the exploration and use of outer space. These include the prohibition on placing weapons of mass destruction in outer space⁸, status of astronauts as 'envoys of mankind'⁹, liability for damage caused by space objects¹⁰, and rules relating to

⁵ Yun Zhao, *An International Space Authority: A Governance Model for a Space Commercialization Regime*, 30 Journal of Space Law 277, (2004).

⁶ United Nations Office for Outer Space Affairs, *Space Law Treaties and Principles*, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html

⁷ See *OST*, art. I & II, Jan. 27, 1967, 610 U.N.T.S. 205. Articles I and II of the OST

⁸ *Id.* Article IV.

⁹ *Id*. Article V.

¹⁰ Id. Article VI.

contamination of celestial bodies¹¹. As mentioned above, most of the provisions of the OST are elaborated in detail in subsequent treaties dealing with various aspects relating to outer space exploration. For example the *Convention on International Liability for Damage Caused by Space Objects* and the *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* elaborate on Articles VII and V of the OST respectively.

However, it is essential to reiterate that the outer space law developed in a Cold War framework. The overriding concern at that time was avoiding dangerous weaponization of outer space. Commercial exploitation of outer space took a backseat due to technological limitations existing at that time.

3. Outer space law and space resources

The foundational principles as well as rules of international law relating to outer space can be subject to multiple interpretations, some of which are contentious. These include questions like what constitutes a peaceful use of outer space, what should be the role of the private sector in the exploration and use of outer space, how to equitably access the geostationary orbit, and where is the exact boundary between air space and outer space ¹². However, in the years ahead, the status of the natural resources in celestial bodies will potentially emerge as the most contentious issue in outer space law. Can the resources contained in celestial bodies be appropriated by private actors, and how should the benefits of such resources be distributed? Questions like these will become more critical when commercial exploitation of outer space becomes feasible due to technological advancements ¹³.

The ownership and use of celestial resources remains contentious in international space law. Scholars have offered multiple, and at times conflicting, interpretations of the legal provisions that address this specific issue. These interpretations originate from the manner in which natural resources that are situated beyond the territorial jurisdiction of States are treated. For instance, resources that are situated in areas beyond the territorial jurisdiction of States can be considered as *res nullius*, i.e., they can be appropriated as they do not belong to any state.

¹¹ Id. Article IX.

¹² KR Sridhara Murthi, V Gopalakrishnan and Partha Sarathi Datta, *Legal Environment for Space Activities* 93 Current Science 1823, (2007).

¹³ Luxembourg Space Agency, *Resources in Space*, http://space-agency.public.lu/en/space-resources/ressources-in-space.html, (last visited April 15, 2024).

Alternatively, such resources could be treated as *res communis*, i.e., they belong to all, and each state can use them without depriving others of similar use. This approach has been used by the USA for interpreting the Common Heritage of Mankind (CHM) principle ¹⁴. A more complex form of resources management, which builds upon the *res communis* approach, is that of *res communis humanitatus*. In this case, the resources, including the area where they are situated, belong to all but can only be exploited through collectively agreed arrangements, and the benefits that accrue have to be distributed equitably ¹⁵. Aspects of this particular approach are evident in the principle of Common Heritage of Mankind (CHM), although distinctions can be made between *res communis humanitatus* and *res communis omnium* ¹⁶. CHM has been implemented, after much debates and discussions, in the case of the law of the sea. The *United Nations Convention on the Law of the Sea* (UNCLOS) designates ocean floor and sea-bed that is outside national juridiction (named as the Area) as Common Heritage of Mankind¹⁷ and Part XI of UNCLOS laid down detailed rules relating to the management of the Area and its resources.

3.1 Space resources and Moon Agreement

The legal texts concerning exploration and use of outer space provide different approaches on how outer space, celestial bodies and their resources should be treated. For instance, one approach maintains that lunar resources belong to entire humanity and an international regime should regulate their extraction and use. Further, the benefits resulting from use of resources of the Moon are subject to equitable distribution among states through the international regime established for this purpose. This approach can be found in the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the Moon Agreement), which essentially states that the Moon and its resources are a Common Heritage of Mankind¹⁸. Further, the Moon Agreement states that this approach is applicable to all other celestial bodies within the solar system till specific treaty regimes are created for them¹⁹.

¹⁴ LFE Goldie, *A Note on Some Diverse Meanings of the Common Heritage of Mankind*, 10 Syracuse Journal of International Law and Commerce 69, (1983).

¹⁵ Brandon C Gruner, A New Hope for International Space Law: Incorporating Nineteenth Century First Possession Principles into the 1967 Space Treaty for the Colonization of Outer Space in the Twenty-First Century, 35 Seton Hall Law Review 299, (2004).

¹⁶ Jonathan Tjandra, *The Fragmentation of Property Rights in the Law of Outer Space*, 46 Air and Space Law 373, (2021).

¹⁷ UNCLOS, art. 136, Dec. 10, 1982, 1833 U.N.T.S. 3.

¹⁸ Moon Agreement, art. 11, Dec. 5, 1979, 1363 U.N.T.S. 3. 11.

¹⁹ *Id.* Article 1.

It is essential to mention here that once an area is designated as a Common Heritage of Mankind the following attributes follow: prohibition of sovereignty claims, benefits from using resources should reach the entire humankind in an equitable manner, peaceful use of the concerned area, and joint management of the area and its resources ²⁰. Accordingly, the Moon Agreement provides that the exploitation of the resources of the Moon shall be done by an international regime to be established by the States Parties²¹. It further provides that the benefits resulting from such use should be distributed in a manner where "the interests and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration"²². However, the Moon Agreement has received very limited ratifications, and important space-faring countries from the Global South have yet to ratify it either ²³.

On the other hand, other interpretations relating to the ownership of space resources exist, essentially distinguishing between the extraterrestrial bodies and their resources. While the former cannot be subject to private ownership, space resources, once extracted, can be owned and used for commercial and other purposes ²⁴. Following the structure in place in the case of the *Convention on the High Seas* (where the high seas are open to all; however, the resources in the high seas, i.e., the fish, are subject to appropriation) ²⁵, this interpretation differentiates between celestial bodies and the resources contained therein. While the former cannot be appropriated, the latter, i.e., the celestial resources, can be utilized and even appropriated ²⁶.

3.2 Space resources and the OST

The most recognized treaty relating to outer space, i.e., the OST, being a framework agreement, does not go into detail concerning ownership and use of outer space resources. The OST states that "The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their

²⁰ John E Noyes, *The Common Heritage of Mankind: Past, Present, and Future*, 40 Denver Journal of International Law and Policy 447, (2011).

²¹ Moon Agreement, supra note 18, art 11.5.

²² Moon Agreement, supra note 18, art 11.7.d.

²³ United Nations Treaty Collection, *Agreement governing the Activities of States on the Moon and Other Celestial Bodies*, https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXIV-2&chapter=24&clang= en , (last visited March 10 2024).

²⁴ Greg Melchin, You Can't Take the Sky from Me: A Gramscian Interpretation of the Common Heritage of Mankind Principle in Space Law, 24 Dalhousie Journal of Legal Studies 141, (2015).

United Nations Treaty Collection, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXI-2&chapter=21, (last visited March 10 2024).

²⁶ Melchin, *supra* note 24.

degree of economic or scientific development, and shall be the province of all mankind"²⁷. Although a case can be made that the Moon Agreement elaborates on the OST, the limited ratifications of the former undermine such assertions.

However, it is essential to mention that the following two inferences relating to OST can be drawn: first, the rule relating to the prohibition of appropriation applies to private entities as well, as private actors have to engage in activities in outer space under the supervision and control of their respective States ²⁸. Second, as outer space is free for exploration and use to all States, it imposes a corresponding obligation on States to ensure that their activities do not hinder other states from enjoying the benefits resulting from exploring and using outer space²⁹. Therefore, at a bare minimum no state can engage in activities that are prejudicial to the rights of other states³⁰.

4. Multilateralism and outer space law: importance and challenges

The ownership of space resources is an issue that pertains to areas outside the territorial jurisdiction of States. It is well established that with respect to the exploration and use of such areas a free-for-all approach or a first-come-first-serve approach is fraught with dangerous implications. For example, disagreements relating to demarcation of territorial sea and continental shelf resulted in numerous and varied claims necessitating the initiation of the third international conference on the law of the sea, which eventually culminated in the adoption of UNCLOS ³¹.

For this reason, the areas outside the national jurisdiction are regulated through regimes that contain fundamental principles like non-appropriation, joint management, and peaceful uses. In the case of ocean floor beyond states' territorial jurisdiction, the UNCLOS adopts the CHM regime³². At the same time, the OST labels outer space as the Province of Mankind³³. On the other hand, the Moon Agreement establishes the use of the CHM regime for resources

²⁷ OST, supra note 7, art I.

²⁸ Tjandra, *supra* note 16.

²⁹ Ajay Lele and V Gopalakrishnan, Artemis Accords: Unilateralization In Space, Society for the Study of Peace and Conflict, Artemis Accords: Unilateralization In Space (October 24 2020), https://sspconline.org/opinion-analysis/artemis-accords-unilateralization-space-sat-10242020, (last visted March 28 2024).

³⁰ *Id*.

³¹ UN Division for Ocean Affairs and the Law of the Sea, *Overview - Convention & Related Agreements*, The United Nations Convention on the Law of the Sea (A historical perspective), https://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm , (last visited April 02 2024).

³² *UNCLOS*, *supra* note 18, art. 136.

³³ OST, *supra* note 7, art I.

in the Moon³⁴, which is also applicable to other celestial bodies in the solar system till specific legal regimes are adopted for them³⁵. Irrespective of the labels used, the instances cited above demonstrate that a multilateral approach is essential for the management of areas that are beyond the territorial jurisdiction of States. Further, it is essential to emphasize that with respect to resources located in areas beyond the territorial jurisdiction of States, often called the Global Commons, it is imperative that any disagreement relating to interpretational issues should be resolved through multilateral consensus.

4.1 Concerns relating to Artemis Accords

The Artemis Accords, initiated by the USA, seek to establish a framework for exploring the celestial bodies and using their resources, beginning with the exploration of the Moon ³⁶. The Artemis Accords state that the extraterritorial resources can be subject to appropriation by private entities. For instance, the Artemis Accords states, "The Signatories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the OST...." This assertion is concerning from the perspective of many developing countries, especially those who have not yet developed the required technological capabilities. As already stated, the OST prohibits States from using resources in outer space in a manner that effectively obstructs other States from acquiring the benefits of celestial resources ³⁸. Further, the approach towards possession of celestial resources contained in the Artemis Accords has developed outside the multilateral process of formulating space law under the aegis of the United Nations. In other words, the Artemis Accords could threaten multilateralism in outer space as it adopts an unequivocal position towards ownership and use of resources situated in celestial bodies ³⁹.

Furthermore, it is important to mention here that regulations pertaining to ownership rights of resources in outer space are ambiguous. This is because the OST is silent on the issue of commercial use celestial resources, and the Moon Agreement, which lays down regulations concerning commercial application of space resources, has failed to receive adequate acceptance. Furthermore, the provisions of the OST that are related to the issue have been

³⁴ *Moon Agreement, supra* note 18, art. 11.

³⁵ *Id*. art 1.

³⁶ NASA, *NASA: Artemis Accords*, https://www.nasa.gov/specials/artemis-accords/index.html , (last visited April 03 2024).

³⁷ Artemis Accords, Para 2 of Article 10.

³⁸ Lele and Gopalakrishnan, *supra* note 29.

³⁹ Athar Ud Din, *The Artemis Accords: The End of Multilateralism in the Management of Outer Space?*, 20 Astropolitics 135, (2022).

subject to multiple interpretations as far as their applicability to space resources is concerned. That is why the regulation of property rights in outer space has been described as fragmented 40

As the Artemis Accords state that they are based on the principles contained in OST⁴¹, the assertion is in essence based on a particular interpretation of the OST among many other possible interpretations. As of now there is no multilateral consensus or agreement within the UN system pertaining to the use and ownership of celestial resources.

Although, States are within their rights to articulate and publicize their interpretations of international legal texts, the specific problem in this particular case is that the interpretation has been arrived at without a multilateral consensus. It is important to note that India is now a part of the Artemis Accords ⁴².

5. The distinctive position of India: opportunities and expectations

India, at present, is situated in a unique position. It has firmly established itself as one of the leading space-faring powers. Given the pace at which India's space technology is progressing, it would not be unrealistic to assume that in the near future, it will be an important player in the commercial exploitation of outer space resources. When these emerging dynamics are contextualized within the backdrop of India's historical role as one of the leaders of the aspirations of the Global South, the opportunity, as well as the weight of expectations on India, become much more apparent.

As mentioned above, India aspires to represent developing countries in international forums. The speeches made after the successful landing of the Chandrayaan 3 mission, and the recent interest in studying India's potential to be a voice of the Global South on account of developments in the G20 summit are a case in point ⁴³. Thus, while on the one hand, India has been traditionally associated with the Global South, it also enjoys a prominent position as one of the pioneers of future space exploration. Although, on account emerging dynamics the term

⁴⁰ Tjandra *supra* note 16.

⁴¹ Artemis Accords, Article 10.

⁴² NASA, NASA Welcomes India as 27th Artemis Accords Signatory, NASA (June 23, 2023), http://www.nasa.gov/press-release/nasa-welcomes-india-as-27th-artemis-accords-signatory, (last visited 14 April 05, 2023).

⁴³ Tingley *supra* note 4; Hung Tran, *Will the G20 Summit Help India Become the Voice of the Global South?*, Atlantic Council (September 07, 2023), https://www.atlanticcouncil.org/blogs/new-atlanticist/will-the-g20-summit-help-india-become-the-voice-of-the-global-south/, (last visited April 02, 2024.

'Global South' is at times contested ⁴⁴, a detailed discussion on the issue is beyond the scope of this paper.

India's position is particular because, unlike Russia and China, it has no adversarial and competitive relationship with the United States or EU. For instance, in the case of China Artemis Accords are considered in terms of competition, and a perception exists that they are not in compliance with OST ⁴⁵. In the case of Russia, it is important to mention that it has collaborated with China to create a research station of the Moon (the International Lunar Research Station) and has extended an invitation to other countries to join the initiative ⁴⁶. The step has been taken to operationalize an alternate framework for the Moon and other celestial bodies. By contrast, India's joining of the Artemis Accords signals that it does not intend to compete with the United States led coalition for the exploration and use of the outer space.

In the years ahead, most developing countries, especially those with nascent and emerging space programs, will carefully observe India's position on various issues relating to exploring outer space. Of particular significance will be the position India takes on the ownership and commercial exploitation of the outer space resources. In this context both the substantive outcome and the process through which that outcome is arrived at. In other words, India's responsibility is two folds: it needs to ensure that any legal framework relating to ownership and use of outer space resources should be arrived at through the process of multilateral consultations; and second, it needs to ensure that the framework established to regulate space resources aligns with the needs and interests of the developing countries. If India can achieve this objective, i.e., pursuing its outer space ambitions while accommodating interests of the developing countries, it will help elevate its leadership position ⁴⁷.

For a long period, developing countries under the umbrella of the Global South have been persistently seeking reforms to various facets of international law. Previous endeavours like the efforts to bring in a New International Economic Order (NIEO) did not succeed for a

⁴⁴ Robert B Zoellick, *The End of the Third World - Modernizing Multilateralism for A Multipolar World*, 16 Law and Business Review of the Americas 371, (2010).

⁴⁵ Elliot Ji, Michael B Cerny and Raphael J Piliero, *What Does China Think About NASA's Artemis Accords?*, The Diplomat (September, 17, 2020), https://thediplomat.com/2020/09/what-does-china-think-about-nasas-artemis-accords/, (last visited March 28, 2024).

⁴⁶ Mike Wall, *Not Just Artemis: China and Russia Plan to Put Boots on the Moon, Too*, Space.com (September 03, 2022), https://www.space.com/china-russia-moon-base-ilrs, Last visited April 02, 2024).

⁴⁷ Stefan A Schirm, *Leaders in Need of Followers: Emerging Powers in Global Governance*, in Enrico Fels, Jan-Frederik Kremer and Katharina Kronenberg (eds), Power in the 21st Century (Springer Berlin Heidelberg 2012).

number of reasons ⁴⁸, one of them being that NIEO was perceived as imposing one-sided obligations on developed countries ⁴⁹. Since then, necessary course corrections have been made. However, now, with the rise of India, a distinctive opportunity has arisen. With a historical legacy of leading the cause of the Global South, India possesses significant economic and technological capabilities while concurrently maintaining a non-adversarial relationship with influential space-faring powers like the USA and China. This is in contrast to the space politics-related developments emerging in the case of China and Russia. On the one hand, India's distinctive position on account of joining the Artemis Accords can be construed as assimilation within the existing system led by the USA, a general concern relating to emerging powers underscored in scholarly writings ⁵⁰. However, as has been discussed above, it could also be seen as a unique opportunity to address increasing fragmentation in outer space law. More clarity will unfold with the passage of time.

6. Conclusion

With the success of the Chandrayaan 3 mission, India has cemented its place as a leading space-faring nation. It has also joined the Artemis Accords, an initiative of the USA, demonstrating that its relationship with major space-faring powers is based on cooperation. With a historical legacy of leading the cause of the Global South, these developments put India in a unique and distinctive position.

The existing international law relating to the exploration and use of outer space is fragmented. While many areas relating to space exploration are of specific interest to the developing countries, the possession and use of space resources is one area that will likely gain prominence as the corresponding technology develops. At present the existing legal framework relating to ownership rights in outer space is ambiguous. In this context, the Artemis Accords are concerning as they adopt an unequivocal position on the ownership of resources in celestial bodies, a development that is outside the multilateral system for creating international space law under the auspices of the United Nations. The Accords have initiated a process wherein outer space exploration and use of celestial resources could potentially be carried out under competing and sometimes conflicting legal frameworks. However, with India joining the

⁴⁸ Antony Anghie, Legal Aspects of the New International Economic Order, 6 Humanity: An International Journal of Human Rights, Humanitarianism, and Development 145, (2015); Margot E Salomon, From NIEO to Now and the Unfinishable Story of Economic Justice', 62 International and Comparative Law Quarterly 31, (2013).

⁴⁹ Philippe Cullet, *The Global Warming Regime after 2012: Towards a New Focus*, 43 Economic and Political Weekly 109, (2008).

⁵⁰ Anghie, *supra* note 48.

Accords, it can only be hoped that multilateralism will gain ascendancy in the developing international law for outer space.

In the years ahead, the developing countries will look up to India and its role in shaping legal framework relating to critical areas like the use of space resources. It is encouraging that India keeps stressing its historical linkages with the Global South. Its position on the status of space resources will be clearer in the years to come and will be keenly followed. While India's joining of the Artemis Accords may be construed as an integration in the US led space order, this paper contends that it also presents a unique opportunity for India to push for multilateral consensus on contentious issues like ownership rights in outer space, thus mitigating the increased fragmentation of international space law.