

THE LAW GOVERNING TOURISM IN OUTER SPACE: AN OVERVIEW

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Abstract

The advent of 'space tourism', more accurately termed 'private spaceflight', necessitates adaptations in outer space law to accommodate this groundbreaking development, stemming directly from increased private sector involvement in these endeavours. This paper begins by defining pertinent concepts and subsequently examines critical legal issues such as authorisation, supervision, liability, and registration, exploring their implications for space tourism. Additionally, it addresses key legal considerations pertaining to the certification of spacecraft, crew, and passengers, acknowledging the current lack of comprehensive international standards and emphasising the predominant role of national legislation. Furthermore, the potential application of air law or adventure tourism law in regulating these activities is also briefly discussed.

Keywords: Space tourism, Space Law, Outer Space, Outer Space Law.

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INTRODUCTION

Space law encompasses the set of international regulations that govern human activities in outer space. These regulations are universally recognized and binding, detailing the conduct of nations and individuals in space and on celestial bodies. They address a wide range of issues, including sovereignty in space, the exploitation of space resources, environmental preservation in space, space transportation, liability for space operations, arms control in space, remote sensing capabilities from space, and the operation of space stations. Central to modern space law is the principle of promoting peaceful uses of outer space and celestial bodies by all nations. This legal framework has become integral to contemporary international law. ‘Space tourism’ is frequently celebrated for revolutionising human access to the challenging and seemingly boundless expanse of outer space. This phenomenon is already sparking and will continue to fuel profound debates about the existing framework of outer space law and the necessary adaptations to accommodate these transformative advancements. Indeed, it may herald a third era in humanity’s exploration of outer space. In the initial era of space exploration, the participants and stakeholders involved were quite restricted. Primarily, only a select few governments or their agencies, occasionally joined by intergovernmental organisations (still legally classified as public bodies), engaged in launching space objects, managing and overseeing them. Private enterprises primarily functioned as manufacturers for these public entities, as downstream consumers of space-based applications developed by them, or as providers of ancillary services in support of their operations. Consequently, the five primary United Nations space treaties established in the late 1960s and 1970s were seen as adequate, focusing on the rights and responsibilities of these state agencies. The involvement of the private sector necessitated minimal national implementation of international obligations, as these treaties generally addressed space activities themselves rather than preparatory, downstream applications, or supportive activities. Space tourism, therefore, marks a third era where privatization extends into manned space travel. Beyond the scenario where vehicle manufacturers or insurers, though private, remain fundamentally under their respective state’s jurisdiction, responsibility, and liability under international space law, now providers of launch services, operators of space vehicles, and the individuals transported may also be private entities. These new developments introduce a host of novel legal challenges. For instance, contracts for spaceflights are now being negotiated between passengers or their sponsors and operators, whether they are public (such as for flights to the ISS) or private (such as for upcoming suborbital flights to the edge of space).

OBJECTIVES

The goal of this research is to learn about space law relating to space tourism. What does it mean? Which laws are already relevant to space tourism around the world and in India, and what sort of changes are required to accommodate space tourism?

RESEARCH METHODOLOGY

The doctrinal research technique is used in this study. Various pieces of legislation, books, journals, remarks, reports, magazines, newspapers, and other materials have been cited for this purpose. We are investigating current legislation, international treaties, and the role of these legislations, how effective they are, and evaluative and critical viewpoints on them.

SPACE TOURISM AND THE LAW IN GENERAL

The term ‘space tourism’ refers to commercial activities that offer participants the opportunity to travel in outer space for recreational purposes. Those who engage in such activities are known as space tourists. Currently, governmental agencies like Russia’s and private companies such as SpaceX and Virgin Galactic are offering space tourism opportunities, generating significant public interest. These developments underscore the expanding possibilities and imminent future of space tourism.¹

These agencies and companies utilize various aerospace vehicle models to launch space tourists. In 2001, American businessman Dennis Tito became the world’s first space tourist by traveling aboard the Russian Soyuz to the International Space Station (ISS). He was followed by others including Mark Shuttleworth, Gregory Olsen, Anousheh Ansari, Richard Garriott, and several more. Initially, the cost of space travel in the early 21st century was prohibitively high, limiting this adventure to a select few billionaires. However, advancements in space technology, such as Reusable Launch Vehicles (RLVs), and increased involvement of private space companies in the sector have significantly reduced costs. Space travel now costs less than \$200,000, with predictions that it could drop to \$35,000 within the next decade. Consequently, space tourism is transitioning from science fiction to a practical reality poised to become part of everyday life for people worldwide².

Space tourism encompasses various forms, including sub-orbital and orbital trips, inter-continental point-to-point rocket transportation through space, as well as orbital travel with

¹ Ankit Kumar Padhy & Amit Kumar Padhy, “Legal conundrums of space tourism”184 *Acta Astronautica* 269 (2021)

² Ibid.

accommodation in space hotels or aboard the ISS. Despite substantial advancements in space technology, the emergence of private space companies, and increasing market demand over the past two decades, the legal framework to regulate space tourism activities has lagged behind. Currently, space tourism activities are primarily governed by four key space treaties: the Outer Space Treaty, Rescue Agreement, Liability Convention, and Registration Convention. The Moon Agreement, having few State Parties and lacking ratification from major spacefaring nations, is widely contested among space law experts who argue it cannot be considered an international legal norm regulating space tourism activities. Drafted during the Cold War era, these treaties reflect a cautious approach, primarily concerned with exploratory activities of governmental space agencies like NASA and Roscosmos. As a result, they are loosely worded and pose several interpretational ambiguities. They are ill-suited to address modern legal challenges posed by private companies engaged in space adventures, including space tourism.

The absence of a comprehensive regulatory framework for space tourism poses long-term challenges, leading to divergent practices among states and uncertainties for space passengers, private companies, insurance providers, and governments regarding their rights and liabilities in the event of incidents such as the Columbia disaster. Currently, the United States domestic laws provide the most detailed norms supporting commercial space tourism activities, representing a significant effort to address gaps left by international treaties.

‘Space tourism’ is often celebrated for heralding a revolution in enabling human access to the inhospitable and theoretically boundless realm of outer space. This inevitable shift is already catalyzing and will continue to drive profound discussions on the existing framework of outer space law, urging adaptations to accommodate such transformative developments. Indeed, it could potentially mark the dawn of a third era in humanity’s exploration of outer space.³

In the first era, the participants and stakeholders in space activities were quite limited. Primarily, only a handful of governments or their agencies (and occasionally intergovernmental organisations considered public bodies legally) were engaged in roles such as launching space objects and operating and controlling them. Private enterprises played a restricted role as manufacturers serving these public entities, as downstream customers utilising space-based applications developed by them, or as providers of ancillary services for their benefit. As a result, the five main UN space treaties established in the late 1960s and 1970s were deemed adequate in addressing the rights and obligations of these state agencies. The involvement of the private

³ Ibid.

sector necessitated minimal national implementation of international obligations, as these treaties generally focused on space activities themselves rather than preparatory, downstream applications, or supportive activities. With the gradual entry of the private sector into space activities, significant transformations ensued. This second era saw private entities beginning to offer launch services and operate space objects themselves. Legally, this necessitated individual states asserting jurisdiction over these entities to fulfill their international responsibilities and liabilities under the space treaties. Consequently, starting from the early 1980s, states progressively implemented national space laws, licensing frameworks, and other regulatory mechanisms to oversee private space operators and ensure their activities were legally supervised.⁴

Until recently, manned spaceflight remained outside this evolution due to its high technological demands and costs. Private entities found it impractical to engage as providers of launch services and operators of spacecraft (typically combined roles in manned spaceflight). Moreover, until Dennis Tito's 2001 flight to the ISS demonstrated otherwise, the costs were considered prohibitive for private individuals. The existing international space treaties, augmented by national legislation, regulations, and governance, adequately managed private space activities during this period.

Space tourism now signifies a third era, marking the extension of privatisation into manned spaceflight. Beyond manufacturers or insurers who were already private entities under their state's jurisdiction, responsibilities, and liabilities according to international space law, now providers of launch services, operators of space objects, and the transported humans themselves may also be private entities. These new developments introduce a host of fresh legal considerations. For instance, contracts are now being established for spaceflights between passengers or their sponsoring entities on one side and operators-whether governmental (such as for ISS flights) or private (like upcoming suborbital flights into near space)-on the other. Fundamentally, the most significant and notable legal aspects of space tourism arise from the contrast between the inherently public nature of international space law and the distinctly private nature of 'space tourism'. International space law originated from political, military, and scientific motivations, where state responsibility and liability, regulated through national space laws,

⁴ Ibid

primarily addressed private and commercial interests in specific segments of space activities. This legal framework has never before accommodated anything akin to private international law.⁵

Space tourism thus represents a significant advancement in commercialisation and privatisation. Its core premise is that all aspects of manned spaceflight-vehicle manufacturing, launch and in-space operations, marketing and service provision, and notably, the space travellers themselves can be wholly private entities.

Legal experts at The University of Law have ventured into uncharted territory by elucidating the governing laws of space travel, propelled by NASA's discovery of ancient water on Mars and the identification of a new exoplanet just 72 light-years away.⁶ Contrary to what science fiction movies often depict, the prospect of a full-scale war in outer space remains unlikely in the near future. According to The University of Law: "Travel into space and exploration of celestial bodies are regulated by The Outer Space Treaty, which entered into force in 1967 and has been ratified by over 100 countries."

"The Treaty stipulates that space is open for exploration by all nations, prohibits any nation from claiming sovereignty over celestial bodies they discover, and importantly mandates that the moon and other celestial bodies be used exclusively for peaceful purposes. This means no country can station weapons of mass destruction on the Moon or in orbit. Moreover, the Treaty establishes liability for any damage caused by space objects."⁷

The Treaty encompasses the following principles:

- Outer space exploration and utilization shall be conducted for the benefit and in the interests of all countries, and shall be the province of all humankind.
- Outer space shall be freely accessible for exploration and use by all states.
- Outer space is not subject to national appropriation by sovereignty claims, use or occupation, or any other means.

⁵ Michael J. Listner, *The Ownership and Exploitation of Outer Space: A Look at Foundation Law and Future Legal Challenges to Current Claims*, 1 REGENT J. INT'L L.75, 84 (2003).

⁶ Legal experts at The University of Law have boldly gone where no-one has gone before to explain the governing laws of space travel, *available at*: <https://www.law.ac.uk/about/press-releases/space-travel-laws/> (last visited on June 12, 2024)

⁷ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies *available at*: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html> (last visited on June 17, 2024)

- States are prohibited from placing nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies, or stationing them in outer space in any manner.
- The Moon and other celestial bodies shall be utilized exclusively for peaceful purposes.
- Astronauts shall be considered as envoys of humankind.
- States are responsible for national space activities, whether carried out by governmental or non-governmental entities.
- States are liable for damages caused by their space objects.
- States must avoid harmful contamination of space and celestial bodies.⁸

It is noteworthy that no nation has breached the Outer Space Treaty in the more than five decades since its inception. Nevertheless, numerous countries have developed their own regulations concerning space exploration. For instance, the United States enacted the Commercial Space Launch Competitiveness Act of 2015, permitting companies to possess and market resources extracted from celestial bodies like asteroids. This legislation has sparked controversy, with critics arguing it contravenes the principles outlined in the Outer Space Treaty.

What would occur if someone were to violate a law related to outer space?

According to The University of Law, The consequences of breaching the Outer Space Treaty would hinge on the seriousness of the violation. For instance, launching nuclear weapons into orbit would undoubtedly have grave repercussions, potentially escalating into an arms race in outer space. Lesser infractions would likely prompt discussion at the United Nations among all signatory nations, possibly leading to amendments to the Treaty.⁹

As the commercialisation of space advances, there is an increasing need for new legal frameworks to adapt to evolving circumstances. With numerous billionaire entrepreneurs planning ventures like space tourism and asteroid mining, there have been proposals for new treaties and agreements to regulate these activities.

⁸ Ibid.

⁹ Ibid.

However, the question of how humanity should respond to the discovery of extraterrestrial life remains unanswered by law. Currently, there are no regulations stipulating how humans should interact with alien life forms. The crucial consideration would be: are they peaceful?¹⁰

AIR LAW VERSUS SPACE LAW DEBATE

Space travel currently stands at a pivotal juncture akin to air transportation in the early 1920s, with potential liability for accidents posing a significant hurdle. The absence of clear legal frameworks discourages the commercialisation of space travel. Addressing liability through insurance is impractical due to the exorbitant costs, which would inevitably inflate ticket prices beyond reason and stifle the entire space industry. Therefore, establishing an appropriate liability regime for space travel becomes increasingly imperative.

There are several parallels between air transportation and space travel, prompting discussions about extending the regulatory principles of air transportation to space. Fundamental to this debate is the longstanding question of where outer space begins and air space ends and, consequently, how air law and space law should apply. Currently, there is no universally recognised boundary for outer space, which complicates the delineation of applicable legal frameworks despite distinct bodies of international law governing air space and outer space.¹¹

The distinction between air space and outer space for legal purposes hinges on several “striking criteria,” including the purpose and function of the activity, technical configurations and capabilities, and the predominant medium of operation. Space travel, by its very nature, operates predominantly in outer space and is clearly classified as such. Activities conducted at sufficient distances from Earth readily justify the application of space law to regulate space travel.

The air transportation regime, characterized by state sovereignty over airspace, contrasts significantly with the space travel regime, where no state can assert sovereignty over outer space. This fundamental distinction underscores the need for a distinct legal framework for space travel. Nonetheless, as noted by a scholar, “air law became a subject for comparison when the potential for space flight emerged, despite lingering sovereignty concerns... Air law analogies have primarily been invoked in discussions concerning the regulation of aerospace vehicles and pre-flight requirements for space tourists.” It is important to recognize that while air

¹⁰ The missing plan for alien first contact, *available at*: <https://www.bbc.com/future/article/20221101-should-extraterrestrial-life-be-granted-sentient-rights> (last visited on June 16, 2024)

¹¹ Stephan Hobe, *Military, Commercial, and Tourism Dimensions: Legal Aspects of Space Tourism*, 86 NEB. L. REV. 439, 455 (2007).

transportation and space travel occur in different physical realms, both fundamentally involve transportation. Rockets used for space tourism are propelled by rockets and are designed to enter outer space, but they take off and land similarly to airplanes.¹²

Modern aerospace vehicles exhibit diverse operational models. For instance, Virgin Galactic's Spaceship 2 utilizes a hybrid model that integrates characteristics of both aircraft and spacecraft. Initially, the aircraft component is activated, propelling the aerospace vehicle to a predetermined altitude within the airspace. Subsequently, the attached spacecraft component (Spaceship 2) is ignited, launching it into outer space.

REGISTRATION AND JURISDICTION

According to the Registration Convention, each party is required to register and maintain a registry of its launched space objects. In addition, the party must provide the UN Secretary-General with information to prove the establishment of the registry. The UN Secretary-General then has the duty to maintain a registry and open the contents of the registry for public inspection. The Registration Convention relies on the view that preserving outer space for peaceful purposes depends largely on a complete registry of spacecraft. Jurisdiction under international law refers to the power of a State to deal with legal matters within its territory. States have the authority to apply their laws and authorise activities (including air and space endeavours) within their jurisdiction. Registration is the key prerequisite for a State to claim jurisdiction and control over an aerospace vehicle.¹³

LEGAL STATUS OF SPACE TOURISTS

The emergence of space tourists who go to outer space for leisure poses challenges to the existing space legal regime. Unlike international air law, international space law does not clearly define the legal status of passengers. It has been nearly fifty years since humans first landed on the moon, yet there remains debate over whether space tourists should be classified as 'astronauts' or 'personnel of a spacecraft'. This distinction is significant because each category of individuals travelling to outer space is entitled to different special rights under international law.¹⁴

LIABILITY ISSUES IN SPACE TOURISM ACTIVITIES

¹² K.R. Sridhara Murthi, *Commercialisation and Privatisation of Outer Space- Issues for National Space Legislation* 3-13 (K.W Publishers, New Delhi, 2016).

¹³ Peter Sloterdijk, *In the World Interior of Capital: Towards a Philosophical Theory of Globalization* (Cambridge: Polity, 2013)

¹⁴ Space Treaties available at: <https://www.spacelegalissues.com/space-law-history-101/> (Last visited on July 1, 2024)

When discussing liability issues in outer space, one typically refers to the 1967 Outer Space Treaty¹⁵ and the 1972 Liability Convention¹⁶. Article VII of the Outer Space Treaty stipulates that states bear international responsibility for any damage caused by their space objects or personnel while in space. The Liability Convention builds upon Article VII by establishing a legal framework for ensuring full compensation for damage caused on Earth as a result of space activities. It outlines two scenarios where the launching state(s) may be held liable: (1) damage caused by their space objects on Earth's surface or to aircraft in flight, and (2) damage occurring elsewhere in space to a space object of one state or to persons or property on board such an object by a space object of another state. Strict liability applies to the first scenario, while negligence liability applies to the latter.

From these provisions, it is evident that states, not private entities, are the entities liable in case of damage. Due to its international scope, the Liability Convention does not address the specific needs of individuals, including nationals of the launching state. Moreover, only a state has the right to file a claim for compensation, thus the Convention does not explicitly cover civilian liability in outer space. Before proceeding further, it would be pertinent to examine the ISS Intergovernmental Agreement (IGA). The ISS Intergovernmental Agreement (IGA), a significant multilateral treaty in outer space, incorporates the Liability Convention and includes a provision for mutual exemption of liability on board the ISS to enhance cooperation among its partner states. This provision specifically applies to claims brought by a Partner State against another Partner State, related entities, or their employees. However, it is clear that space passengers cannot seek recourse under this provision. The public nature of the IGA does not align well with the current commercial space regime. Under the existing liability framework, space tourism is not covered, as it pertains only to activities conducted by states or international non-governmental organizations involved in sending equipment and astronauts for exploration and scientific research. Private entities have no provisions for recourse or accountability under the Outer Space Treaty or the Liability Convention. Consequently, the current liability regime fails to adequately address the issue of liability for space tourists, which remains a significant concern in the context of space tourism.

In the legal of air transportation, a distinction is made between domestic and international transport, which is not mirrored in space travel. There is a pressing need for a unified regime that directly applies to all space tourists and cargo. Similar to international air transportation,

¹⁵ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space 1967.

¹⁶ Convention on International Liability for Damage Caused by Space Objects 1972.

domestic tourists of a launching state should have the right to claim compensation for any damages suffered.

The Warsaw Convention serves as a notable example of a uniform multilateral system for international air transportation. This regime has effectively enabled insurance companies to provide reliable services within the field, fostering confidence. It is reasonable to anticipate similar outcomes with the establishment of a comparable regime for space tourism. Under the Warsaw Convention, a negligence standard, rather than strict liability, was adopted, and initially, the maximum compensation for passengers was set at 125,000 francs. This framework facilitated the growth of the aviation industry in its early stages, establishing it as one of the safest modes of transportation.¹⁷

However, the limitation of liability imposed by the Convention is now viewed as unnecessary due to advancements in aviation reliability. Recent revisions, such as the 1999 Montreal Convention, reflect efforts to balance industry interests with those of passengers and other stakeholders, adjusting the maximum compensation amounts in light of social and economic developments. Despite these changes, the negligence standard remains central to the Warsaw Convention.

The success of the international aviation system suggests that adopting a negligence standard early in the development of space travel would be beneficial. Limiting liability for carriers would not necessarily deter potential space tourists, as they could purchase additional insurance, similar to practices in aviation. Clear guidelines should define the maximum damages payable to passengers, taking into account factors such as promoting the growth of space travel, the financial stability of the industry, and the profile of early space tourists.

Liability should be defined to cover incidents occurring onboard space objects or during embarkation and disembarkation operations, mirroring the jurisdiction of the launching state whose laws would prevail. Disputes over liability in space travel could effectively be resolved in national courts, guided by international and national laws.

Legislation that incorporates these principles is crucial for space tourism. Uncertainty regarding liability issues can deter potential investors, jeopardizing investments in the sector. Adapting the Warsaw Convention or drafting a new document specifically for space tourism would provide clarity. By referencing such a document, space tourists, governments, commercial operators, and

¹⁷ Kang Lin Pen, Lokteng Esther kou *et al*, *Space tourism value chain* 101-111 (Springer, Singapore, 2024)

insurance companies would have clear expectations of liabilities in advance, enabling informed decision-making. This transparency and legitimacy would benefit international society as a whole.¹⁸

INTELLECTUAL PROPERTY RIGHTS AND SPACE TOURISM

Protection of intellectual property rights could prove to be another critical concern in relation to space tourism. Outer Space Treaty broadly attempts to protect space objects and the people of the State Parties in outer space. It also lays down principles of jurisdiction and control with respect to space objects. However, the Outer Space Treaty does not expressly provide any protection to intellectual property rights of State Parties. In addition, it also fails to provide elaborate enforcement.

SPACE TOURISM AND LAW IN INDIA

ISRO plans to launch India's first space station into orbit, expected to be operational by 2035. Indian efforts in space tourism are currently nascent, with development underway for a reusable and secure space tourism module anticipated to enable space travel by 2030. Passengers embarking on these journeys will qualify as astronauts. The Chandrayaan and Mangalyaan missions were notably more cost-effective compared to similar missions by other countries, suggesting potential for the development of affordable space tourism methods.¹⁹ Currently, there are no regulations in place for space tourism within the country, and there are no intentions to create specific legislation for this purpose. According to Union Minister Dr. Jitendra Singh, India is advancing technologies and safety protocols necessary for human space missions. Approximately 15 start-ups are engaged in providing satellite services, including value-added services utilising satellite data. However, as such, no legislation is going to come into force for space tourism.²⁰

CONCLUSION

While space technology has evolved exponentially in the last few decades and participation of private space companies has substantially increased in the space sector, including space tourism, the international legal framework dealing with the concerned issues has remained stagnant since

¹⁸ Ibid.

¹⁹ Space Tourism: Indian Perspective *available at*: <https://www.dailyexcelsior.com/space-tourism-indian-perspective/> (last visited on June 30, 2024)

²⁰ Department of space *available at*: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1845769> (last visited on June 30, 2024)

the Moon Agreement. A strong international legal regime is an elementary requirement for the sustainable development of space tourism activities. Significantly divergent from other forms of transportation like shipping and aviation, which are governed by robust national and international commercial laws, space activities rely on inter-governmental treaties forged during the Cold War era. The current legal framework for outer space does not adequately cater to the emerging realm of space tourism. While commercial space tourism is becoming a reality, the legal framework remains underdeveloped. This uncertainty and inadequacy could deter investments in space travel technologies and tourism. Drawing parallels with aviation, which shares many similarities with space travel, this article argues for adapting existing aviation legal principles to formulate a suitable legal regime for space tourism. There is a growing consensus that treating space tourism as an extension of aviation regulation is the most appropriate approach. Establishing clear and favourable “space hotel rules” and a comprehensive legal framework will be crucial for ensuring the safety and responsibility of commercial space tourism. A robust and predictable legal environment will enhance investor confidence, facilitate more frequent space launches, generate revenue, ensure return on investment, and benefit society at large. This, in turn, will foster long-term investment in space technologies and promote sustainable growth in space tourism.

SUGGESTIONS

- Amendments need to be made to the existing laws of outer space with respect to the registration and liability of spacecraft for space tourism.
- Better provisions need to be prepared when it comes to the demarcation of boundaries with respect to spacecraft of space tourism between air law and outer space law.