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**THE ANALYTICAL PERSPECTIVE ON THE INVOLVEMENT OF LAWYERS IN  
SPACE LAW.**

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**Summary: -**

This research article focuses on the current developments in space law and emphasizes the critical role played by lawyers in driving its progress. It provides a comprehensive analysis of the contemporary legal issues that are prevalent in the international space law arena. As the space industry continues to expand and space technologies become commercialized, there is a growing need for legal professionals to tackle the complex legal challenges that arise from these valuable transactions. Space lawyers have a primary responsibility to handle international laws and draft treaties that govern the activities and exploration of outer space. To pursue a career as a space attorney, one must have at least a bachelor's degree in law or a doctorate in a related field. Additionally, a strong legal background in international law, intellectual property, and other essential legal concepts is crucial for developing expertise and knowledge in this field.

The legal regulations that govern actions in outer space fall under the scope of space law. This body of law, much like general international law, comprises a series of international agreements, conventions, and resolutions ratified by the United Nations General Assembly, as well as rules and regulations established by international organizations. The aim of this article is to provide a thorough examination of the current advancements and challenges encountered within the realm of space law. It delves into the fundamental treaties and legal structure that serve as the foundation for space law. The main goal is to bring attention to the sluggish progress in enforcing international space law and examine potential remedies to attain its goals.

**1. Introduction:**

Exploring the Role of a Space Lawyer and the Challenges of International Space Law It emphasizes the role of space law professionals in crafting treaties and governing space-related activities. The article also explores the growing need for a suitable legal structure in the rapidly expanding space industry. It highlights ongoing developments and challenges in the field of outer space law. Having ownership of private companies, institutions, and research centers is a vital component for the growth of the space sector. This piece seeks to offer a comprehensive insight into the current patterns and obstacles within space law, specifically focusing on topics such as space tourism, the emergence of 'new space'. The article delves into the foundational treaties of space law, the legal framework, and pertinent scientific literature. Its primary objective is to shed light on novel developments and prospects in space exploration, explore alternative viewpoints present within the space industry, and propose solutions through legislative means.

The aim of this research is to provide a comprehensive examination of the advancements in space law and the responsibilities of legal practitioners in this field. Furthermore, it delves into an assessment of prevalent legal issues within the realm of international space law. The growth of the space sector and the commercialization of space technologies have led to a heightened need for legal experts to address the legal implications of these lucrative transactions. Space lawyers frequently collaborate with international law and play a crucial role in the development of agreements that govern activities and exploration in space. The expansion of the aviation industry and the commercialization of space technologies have resulted in a demand for individuals with expertise in managing and resolving legal complexities that arise from these valuable transactions. This has led to the emergence of a field known as Space law, which encompasses the legal framework for activities related to outer space. Similar to general international law, Space law is composed of international agreements, treaties, conventions, UN General Assembly resolutions, and regulations from international organizations.

In order to become a space attorney, one must obtain either a bachelor's degree in law or a doctorate degree in a relevant field. This legal background, which covers areas such as international law, intellectual property, and other essential legal principles, can greatly enhance one's expertise and understanding in this field.<sup>1</sup>

### **Review of literature**

In this article, the fundamentals of space law are explored, as well as the role of space lawyers, the reasons for pursuing such a career, and the necessary skills for success in this field.<sup>2</sup>

The importance of space lawyers cannot be overstated in this area, as they hold the responsibility of comprehending and deciphering the intricate legal systems that control space operations. These lawyers offer guidance to governments, international bodies, and private corporations on a range of legal matters pertaining to space, including the authorization of satellite launches, safeguarding intellectual property in space technology, and determining liability for harm caused by space objects. Moreover, they are instrumental in negotiating and composing global agreements and treaties, as well as representing individuals in legal conflicts related to space operations.

The responsibilities of space lawyers encompass a range of crucial issues pertaining to international law, including the development of treaties governing outer space exploration and operations. A fundamental principle established by these legal experts is the notion that the Moon, planets, and other celestial bodies cannot be claimed as the property of any nation. Furthermore, they play a vital role in shaping national policies concerning space-related activities, particularly in the United States and the Russian Federation. Article 7 of the 1972 Outer Space Treaty, also known as the Space Liability Convention, outlines the legal responsibilities of space objects in case of any damage caused - for instance, the Canadian government's claim against the Soviet satellite, Cosmos 954 (Кóсмoc), for scattering radioactive debris over northern Canada in 1978.

Operation Morning Light, a collaborative effort between Canada and America, was responsible for clearing a debris-filled area of approximately 48,000 square miles. The Canadian government invoiced the Soviet Union \$6,041,174.40 (CAD) for the expenses incurred during the recovery process, although only half of the amount was ultimately paid by the Soviets. The Rescue Agreement, which mandates that nations take necessary actions to rescue and assist astronauts in distress, has been significantly shaped by the contributions of space lawyers. This is exemplified in the 2013 film *Gravity*, where Sandra Bullock utilizes the Chinese space station Tiangong and spacecraft Shenzhou to return to Earth following the destruction of her crew's shuttle.

Despite Sandra Bullock's safe return to Earth, the Tiangong ultimately falls apart and causes debris to scatter over an unidentified country. This country may be eligible for compensation for the damages according to the 1972 Space Liability Convention. The Technology Law and Public Policy Clinic is an excellent choice for those interested in the legal aspect of these issues. The clinic's team of experts tackles a range of technology and public policy matters, including the banning of non-consensual and 'revenge' pornography through Washington House Bill 1788, and the establishment of an autonomous vehicle workgroup through Washington House Bill 2970. <sup>3</sup> Space lawyers: They exist<sup>4</sup> Rather than relying on ambulance-chasing to get ahead, lawyers now have the chance to hitch a ride on the rockets of private corporations' intent on finding fortunes beyond Earth's atmosphere. This offers an exciting opportunity for legal pioneers, as space law is becoming increasingly important in the rapidly evolving aerospace industry. Whether working in private practice or academia, space lawyers can potentially deal with a range of legal issues, from liability laws related to space tourists to the legal implications of human contact with extraterrestrial life.

According to Doug Griffith, a space attorney employed in the commercial space sector and previously a Marine helicopter pilot, affluent individuals are the usual clientele for space tourism,

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<sup>1</sup> <https://www.indeed.com/career-advice/finding-a-job/what-is-space-lawyer>. Accessed on October 23,2023

<sup>2</sup> What Is a Space Lawyer? A Definitive Guide, Updated January 27, 2023, <https://www.indeed.com/career-advice/finding-a-job/what-is-space-lawyer> accessed on 9-12-2023

<sup>3</sup> Where will your legal education take you? <https://lib.law.uw.edu/c.php?9062384> accessed on 9-12-2023

<sup>4</sup> Space lawyers: They exist, <https://www.fastcompany.com/3000243/space-lawyers-they-exist> accessed on 9-12-2023

making the question of insurance coverage for private space flights a critical consideration. The majority of space lawyers are ex-military personnel, and almost all share a passion for science and space, which they have successfully incorporated into their legal profession.

At the University of Mississippi Law School, the National Center for Remote Sensing, Air, and Space Law is responsible for publishing the Journal of Space Law, which delves into a wide range of space law topics such as commercial space flight accident death liability, international regulations for suborbital flights, and lunar mining mineral rights. For those interested in furthering their understanding of space law, the University of Nebraska-Lincoln presents the Space, Cyber, and Telecommunications Law program. Additionally, law schools throughout the United States have incorporated space law courses into their curriculum.

Surprising as it may be, a degree in the legal profession is not comparable to a degree in fine arts. Quite the opposite is true. If one were to venture into the realm of space law, they would find themselves facing the ultimate challenge: asteroid mining. The venture, backed by filmmaker James Cameron, google founders Larry Page and Eric Schmidt, is something that has yet to be fully explored legally.

Michael Listner, a lawyer, wrote an article about the legal status of outer space mining, mentioning that no one has been able to decide on the sovereignty laws regarding private exploration and non-governmental organizations. Planetary Resources, in their defense, argue that asteroids do not fall under the 1967 treaty, as meteorites, which are asteroids that have landed on earth, are not encompassed by it. If Planetary Resources is successful in their attempts at mining in space, the minerals they find may not be as valuable as the billable hours from the many space lawyers they will have employed.

### **Lawyers specializing in space and satellite law.**

Satellites play a significant role in space law, serving a multitude of functions including broadcasting television, providing GPS signals, and supporting military and government operations. As a result, numerous global agreements have been established, such as the 1972 Convention on International Liability for Damage Caused by Space Objects and the 1967 Outer Space Treaty, to regulate the liability and potential hazards associated with satellites. Depending on the geographical location, these treaties serve to determine responsibility in cases of malfunctioning satellites or harm caused to individuals or property on Earth by falling satellites.

NASA and the United Nations have retained space lawyers in order to update and create legal guidelines for the potential of humanity reaching other planets. This policy was created by Apollo-era space lawyers during the Cuban Missile Crisis in order to quarantine astronauts from bringing back any potential pathogens. In 1991, the aforementioned policy was rescinded. The Committee on Space Research (COSPAR), a global entity headquartered in France, collaborates on matters pertaining to space exploration and GPS technology. A planetary protection policy was released by COSPAR several years ago, outlining voluntary recommendations for astronauts traveling to other celestial bodies.

Sadly, this policy does not apply to conspiracy theorists. The field of space exploration is a rapidly growing and thrilling industry for UK businesses, yet it is also subject to complex regulations and unique commercial obstacles. Our firm has extensive experience advising on a wide range of space projects, including the supply of satellites and other space equipment, the development of UK spaceports, outsourcing of services and operations, integration with existing systems, project financing, and military or security considerations.

Our expertise covers both private and public sector projects, in both civil and military sectors, and we make it a priority to stay informed on industry trends and changes in laws and regulations. This combination of experience sets us apart from other UK law firms and enables us to provide tailored and comprehensive commercial guidance for all aspects of a space project.

Our team of lawyers specializing in satellite and space projects offers a diverse range of services, including space system procurement, contracts for design, manufacturing, and operation, outsourcing of satellite services, military satellite projects, financing, regulatory and licensing matters,

liability and risk management, regulated procurements, sole source procurements, service and asset transition management, project and risk management, and contract management.<sup>5</sup>

As technology continues to advance and barriers to entry are reduced, the space industry is becoming increasingly attractive to both startups and established businesses. This presents numerous opportunities, but also brings along complex challenges such as regulatory uncertainty and risks. In order to navigate through these challenges, it is crucial to have a trusted partner who understands the intricacies of the industry.

At HWL Ebsworth, we have a deep understanding of the technology, business, and regulatory issues that impact the space industry. With a team of experts located across Australia, we offer unparalleled breadth of expertise in all areas of law. Our specialists are equipped with the industry knowledge to provide practical and effective advice throughout the lifecycle of new or existing projects.

Our space team consists of experts in regulatory compliance, making us well-equipped to advocate for your business during the process of obtaining permits or licenses. We also have extensive experience in advising on the Australian telecommunications and radiocommunications legislative frameworks. Beyond ensuring strict compliance, we provide industry-focused legal support for activities such as R&D grants and collaborations, technology commercialization, tax and structuring issues, property transactions, environmental and native title matters, intellectual property protection, IT procurement, and data and cybersecurity.

In addition to our expertise in the legal aspects of the space industry, our team is actively involved in space industry events and stays up-to-date with the constantly evolving regulatory and legislative landscape. This allows us to effectively guide our clients through the fast-paced and dynamic nature of the industry.

space industry continues to grow and evolve, having a trusted and knowledgeable legal partner is crucial for success. At HWL Ebsworth, we have the expertise and experience to support space industry participants in navigating the complex landscape and achieving their goals.<sup>6</sup>

Meet the space lawyer: The space technology developed by the Indian Space Research Organisation (ISRO), which was once perceived as overly ambitious, has now achieved global acclaim. ISRO's impressive achievements with the Mangalyaan and Chandrayaan missions have solidified its position as a top space research organization worldwide, offering endless possibilities for exploration not just in space but also on our own planet. The legal regulations surrounding space endeavors pose a unique and captivating obstacle, making it essential for a space attorney to possess comprehensive knowledge of current advancements in space science. Sireesh Pallikond, a space lawyer and CEO of Marici Space, has taken on this crucial role as a facilitator for ISRO. In describing his responsibilities, Sireesh explains that there is an outer space treaty outlining the principles for countries engaging in space exploration and utilization, including celestial bodies. For instance, if two countries have satellites in outer space and an accident occurs, the consequences will not only affect those two countries but also other satellites in space. In such a scenario, space law determines which country is responsible for the damages. However, this is just one example, as the law covers various other aspects as well.

Formerly deemed as excessively ambitious, the advancements in space technology by the Indian Space Research Organisation (ISRO) have now gained international acclaim. With the triumphant completion of the Mangalyaan and Chandrayaan missions, ISRO has solidified its position as a top space research organization, providing numerous prospects not only in outer space but also on our planet. One particularly daunting and intriguing aspect of space is the legal structure governing space missions, necessitating the knowledge and proficiency of a space lawyer to keep abreast with the latest advancements in space technology.

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<sup>5</sup> Space and satellites lawyers <https://www.burges-salmon.com/expertise/specialist-expertise/technology-and-communications/space-and-satellites> accessed on 10-12-2023

<sup>6</sup> Space law - Ebsworth lawyers, <https://hwlebsworth.com.au/expertise/technology/space-law/> accessed on 10-12-2023.

celestial bodies. For instance, if two countries have satellites in outer space and an accident occurs, the consequences will not only affect those two countries but also other satellites in space. In such a scenario, space law determines which country is responsible for the damages. However, this is just one example, as the law covers various other aspects as well.

He declares that he has always been intrigued by the universe. Once he finished his aeronautical engineering degree at Hyderabad's Institute of Aeronautical Engineering, he devoted six years to working as an unmanned aerial vehicle pilot for Hindustan Aeronautics Limited. During this period, his interest in space intensified, motivating him to pursue a degree in space law at the International Space University in France. At the age of 33, he now serves as a space technology facilitator for several nations and corporations.

The nations of the US, France, Russia, Japan, and India are all highly regarded. In particular, India has a strong reputation for reliability and trustworthiness in satellite launches. My company's objective is to support other countries in gaining access to ISRO's launch site in Sriharikota, which offers both geosynchronous satellite launch vehicle (GSLV) and polar satellite launch vehicle (PSLV) options. Sireesh is confident that India's successes with the Mangalyaan and Chandrayaan missions are just the beginning of a larger space revolution. While the US has a flourishing private space sector, India's is mostly limited to government involvement. Nevertheless, Sireesh envisions significant potential for growth in India's space industry.<sup>7</sup>

### **Concept of space law**

The legal framework known as space law is specifically crafted to govern operations in outer space. This legal system can be divided into two distinct categories: international space law and domestic/commercial space law. International space law falls under the scope of public international law, as it is formulated and enforced by countries with regards to other nations. On the other hand, domestic or national space law is created by a specific state but it also applies to non-governmental organizations, such as private corporations. As a result, it is crucial for a space law practitioner to have a comprehensive understanding of both international and domestic space and commercial regulations.<sup>8</sup>

Space lawyers are specialized legal experts who focus on the laws and regulations that govern activities in outer space. Their crucial responsibility is to guarantee the safe, moral, and conscientious execution of these activities. They possess extensive knowledge of the intricate legal frameworks and global treaties related to space activities, including the Outer Space Treaty and the Moon Agreement.

Space lawyers, also known as space law attorneys, provide legal services related to space activities and space law. Some of the services that space lawyers may provide include:

1. Space lawyers specialize in providing advice on space-related regulations and treaties. They have the expertise to help individuals and organizations navigate the intricate legal system that governs space activities. Their services include offering guidance on both national and international laws, regulations, and treaties that pertain to space exploration and use. Additionally, space lawyers can also assist with the negotiation and drafting of various contracts related to space activities, such as launch contracts, satellite leases, and space tourism agreements. They also play a crucial role in protecting intellectual property rights related to space technologies, such as patents, trademarks, and copyrights.
2. Risk management: Space activities involve inherent risks, and space lawyers can help individuals and organizations manage those risks. This includes advising on liability issues, insurance coverage, and risk mitigation strategies.
3. Litigation and dispute resolution: In the event of a legal dispute related to space activities, space lawyers can provide representation and advocacy in court or arbitration proceedings.
4. Regulatory compliance: Space lawyers can help ensure that individuals and organizations are complying with all relevant space-related regulations and laws, such as export controls and licensing requirements.

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<sup>7</sup> Deccan Chronicle, Namrata Srivastava Published on: January 24, 2017 | Updated on: January 24, 2017, Meet the space lawyer <https://www.deccanchronicle.com/lifestyle/viral-and-trending/240117/meet-the-space-lawyer.html> accessed on 10-12-2023

<sup>8</sup> Who is a space lawyer? <http://www.space-awareness.org/bg/careers/career/who-space-lawyer/> accessed on 9-12-2023



In general, the role of space lawyers is crucial in assisting people and companies in navigating the intricate legal system surrounding activities in outer space.<sup>9</sup>

### **3. The Challenges of International Space Law practice**

The constantly evolving and intricate domain of international space law is responsible for regulating the utilization and operations of outer space. With the continuous growth of the space industry and the emergence of new players, the difficulties in enforcing and implementing international space law are becoming more evident.

A major obstacle in the practice of international space law is the lack of a comprehensive and unified legal framework. Unlike other branches of law, such as maritime or air law, there is no single international treaty that governs all aspects of space activities. Instead, there exists a multitude of treaties, agreements, and principles that have been developed over time, resulting in a complex web of regulations that can be challenging to navigate.

This lack of a unified framework also leads to issues of ambiguity and interpretation. As space activities become more complex and innovative, there is often a lack of clarity on how existing laws and regulations apply. For example, the use of private companies for space exploration and the growing interest in space tourism raise questions about liability and responsibility in case of accidents or damage to property.

Another challenge of international space law practice is the issue of jurisdiction. Outer space is considered to be a global common, meaning that it is not subject to the sovereignty of any one nation. However, this also means that there is no clear authority to enforce international space laws. In cases of disputes or violations, it can be difficult to determine which country or international organization has the power to take action.

Additionally, the rapid advancement of technology in the space industry poses new challenges for international space law practice. As new technologies are developed and used, they may not be explicitly addressed in existing laws and regulations. This can create a legal grey area and make it difficult to determine the legality of certain activities.

The widespread reach of space endeavors also poses difficulties in effectively coordinating and collaborating among nations. The involvement of numerous countries and entities in space exploration and utilization makes it challenging to establish shared objectives and regulations. As a result, conflicting interests may arise, impeding advancements in the formation of global space legislation.

Furthermore, the cost and resources required for space activities also pose challenges for international space law practice. Space exploration and utilization are expensive endeavors, and not all countries have the financial means to participate. This creates a power imbalance, as wealthier countries may have more influence in shaping international space laws and regulations.

### **4. Legal and Regulatory Considerations for Outer Space Activities**

Outer space activities have become increasingly prevalent in recent years, with the advancements in technology and the exploration of new frontiers. However, as these activities continue to expand, there are various legal and regulatory considerations that must be taken into account. This is crucial not only for the safety and success of these activities, but also for the preservation of outer space for future generations.

The Outer Space Treaty, adopted by the United Nations General Assembly in 1967, is a crucial aspect of the legal framework for outer space activities. It serves as the cornerstone of international space law and establishes fundamental principles for the utilization and exploration of outer space. This treaty declares that all countries have the right to freely explore and utilize outer space for peaceful purposes, forbids the deployment of weapons of mass destruction in outer space, and holds nations accountable for the actions of their citizens in outer space.

One crucial legal factor to consider is the liability for damages resulting from space activities. According to the Outer Space Treaty, countries are accountable for any harm caused by their space

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<sup>9</sup>David Coleman, Consultant and Principal @ Lawyers and Legal Services Sydney Pty Limited | Artificial Intelligence and Data Ethics, Greater Sydney Area, what does a space lawyer do? <https://www.linkedin.com/pulse/what-does-space-lawyer-do-david-coleman> accessed on 9-12-2023

objects, whether it affects other nations or individuals. This has become more significant with the emergence of commercial space ventures, as private companies must ensure that their operations do not cause harm to others. Aside from international agreements, there are also domestic laws and regulations that govern outer space endeavors. For instance, the National Aeronautics and Space Act of 1958 in the United States established the National Aeronautics and Space Administration (NASA) and granted them the power to regulate and issue licenses for commercial space activities. This includes launching and re-entering space objects, as well as managing space stations and commercial spaceports. Another vital aspect to consider is the safeguarding of the space environment. With the increasing amount of space debris and the potential for contamination of other celestial bodies, there is a growing concern about the impact of human activities in outer space. In response, the United Nations has developed the Space Debris Mitigation Guidelines, which offer recommendations for the design and operation of space objects to mitigate the creation of space debris.

Ethical and financial considerations must be addressed for outer space activities, including the treatment of potential extraterrestrial life and the cost of space missions, especially with international partnerships. Outer space endeavors must consider legal, regulatory, ethical, and financial implications and follow established treaties and protocols for safe and ethical usage. All parties involved must be well-informed and compliant to ensure peaceful and sustainable exploration and utilization for future generations.

## **5. Manned Spaceflight and Astronaut Protection and role of international space lawyer**

Manned spaceflight has been a dream of humanity since the beginning of time. The idea of exploring and discovering what lies beyond our planet has captivated the minds of many. However, the journey to space is not without its risks, and the safety of astronauts is of utmost importance. This is where the role of international space lawyers comes into play.

In 1961, the Soviet Union achieved the first successful manned spaceflight when Yuri Gagarin completed an orbit of the Earth. Since then, there have been numerous missions involving humans, with the United States and Russia leading the way. The continuous advancements in technology have not only enabled humans to travel to space, but also to inhabit and work on the International Space Station (ISS). However, with these advancements comes the important responsibility of ensuring the safety and well-being of astronauts. This is where international space lawyers come in - they play a crucial role in drafting and implementing laws that govern space activities. The United Nations Office for Outer Space Affairs (UNOOSA) is the primary international body responsible for space law. They collaborate closely with member states to develop and enforce laws that regulate all aspects of space activities, including manned spaceflight.

The primary concern for international space lawyers is the safety of astronauts. The harsh environment of space poses numerous challenges, from exposure to radiation to the lack of gravity. These risks are carefully evaluated and addressed through the implementation of safety protocols and regulations. For example, astronauts are required to undergo rigorous physical and mental examinations before they are cleared for a mission. This is to ensure that they are fit to withstand the demands of space travel.

Another crucial aspect of astronaut protection is the design and construction of spacecraft and spacesuits. International space lawyers work closely with engineers and scientists to develop safety standards for these vehicles and equipment. This includes measures to protect against the hazards of space, such as micrometeoroids and solar radiation.

In addition to physical safety, the mental well-being of astronauts is also a top priority. International space lawyers have played a crucial role in developing laws that address the psychological effects of long-duration space missions. This includes ensuring that astronauts have access to medical and psychological support both during and after their missions.

Space law also covers the legal aspects of accidents or incidents that occur during a manned spaceflight. In the unfortunate event of an accident, international space lawyers work to determine liability and compensation for affected parties. This includes not only the astronauts but also any damage to property or harm caused to other countries due to the accident.

In addition, the involvement of international space lawyers is crucial in promoting harmony and collaboration between countries in their space endeavors. The Outer Space Treaty, which has been ratified by more than 100 nations, explicitly prohibits the deployment of weapons of mass destruction in outer space or on celestial bodies. This serves as a significant demonstration of how international space law strives to prevent the emergence of disputes in the realm of space.

## **6. Space Station Law and International Space Treaties**

As space exploration continues to advance, the need for laws and treaties governing activities in outer space becomes increasingly important. The vastness of space and the potential for conflict among different nations or private companies can have serious consequences, making it imperative to have a set of rules and regulations in place. This is where space station law and international space treaties come into play.

The regulations and rules that control the functioning and administration of space stations, encompassing the duties and privileges of the nations or groups involved, are known as space station law. The International Space Station (ISS), currently the most prominent space station, is a collaborative project between five space agencies: NASA, Roscosmos, ESA, European Space Agency, JAXA,<sup>10</sup> and CSA.<sup>11</sup> The ISS is managed by a comprehensive series of agreements, such as the Intergovernmental Agreement (IGA), the Memorandum of Understanding (MOU), and the Space Station Agreement, which delineate the responsibilities and entitlements of each nation.

The primary goal of these agreements is to prioritize the safety and protection of both astronauts and the space station itself. This is exemplified in the IGA, which outlines that all participating nations are responsible for ensuring the well-being of their astronauts and spacecraft, as well as the ISS and its facilities. Additionally, emergency procedures such as medical emergencies and evacuation protocols are also addressed in the IGA. Another critical aspect of space station law is the safeguarding of intellectual property. Given the collaborative efforts of multiple countries and organizations on the ISS, it is imperative to have clear guidelines on the ownership and use of any technology or research conducted on the station. The MOU explicitly tackles this issue by stating that any intellectual property developed on the ISS shall be owned by the country or organization that created it. Liability is another significant concern when it comes to space station law. In the event of property damage or loss, who bears the responsibility? The Space Station Agreement addresses this by declaring that each partner will be accountable for any damages caused by their own activities or personnel. However, in the case of damage caused by a joint activity, the partners will share the liability equally.

Apart from laws specifically designed for space stations, there are also international treaties that regulate activities in outer space. One of the most significant treaties is the Outer Space Treaty,

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<sup>10</sup> <https://www.britannica.com/topic/Japan-Aerospace-Exploration-Agency> accessed on 7-1-2024 (On January 7, 2024, the website Britannica accessed the information on the Japan Aerospace Exploration Agency (JAXA). JAXA is a government agency based in Tokyo that conducts research in both aviation and space exploration. Comprised of seven bodies, JAXA oversees various areas of focus, including the development of launch vehicles through the Space Transportation Mission Directorate, the management of Earth-observing satellites through the Space Applications Mission Directorate, and the administration of Japan's crewed spaceflight program through the Human Space Systems and Utilization Mission Directorate. Other areas of focus include the improvement of technology for aviation and space travel through the Aerospace Research and Development Directorate, the operation of scientific satellites through the Institute of Space and Astronautical Science, the exploration of new technologies for aviation through the Aviation Program Group, and the dedicated exploration of the solar system through the Lunar and Planetary Exploration Program Group.)

<sup>11</sup> <https://www.britannica.com/topic/Canadian-Space-Agency> accessed on 7-1-2024 (The Canadian Space Agency (CSA) was established in 1989 and serves as the primary government organization responsible for coordinating all space-related activities in Canada. Its headquarters are located in Longueuil, Quebec, and it is led by a president who is supported by a senior vice president and directors of four branches: Space Science, Space Technologies, Space Programs, and General Operations. The president directly reports to the Minister of Industry. A key focus of the CSA is managing the Radarsat-1 Earth-observation satellite, which utilizes radar technology to monitor Earth's resources. Additionally, the CSA operates the MOST orbiting telescope, which conducts research on physical processes within stars. The CSA also places a strong emphasis on collaboration with other international space agencies. Canada's contributions to space technology include the Canadarm, a robotic arm used on U.S. space shuttles, as well as the Canadarm 2 and Dextre robotic systems, which were sent to the International Space Station for equipment repairs. Furthermore, Canadian-developed instruments have been used on European science satellites, such as Herschel and Planck. The CSA continues to play a significant role in advancing space exploration and technology.)



which was signed in 1967. Its purpose is to establish guidelines for the peaceful utilization of outer space and prohibit the deployment of weapons of mass destruction in orbit around the Earth or any other celestial body.

Other noteworthy international space treaties include the Rescue Agreement, which mandates countries to provide assistance to astronauts in distress, and the Liability Convention, which outlines liability for damages caused by space objects. These treaties aim to promote cooperation and prevent conflicts and misunderstandings in outer space.

However, despite the existence of these laws and treaties, there are still challenges and loopholes in the legal framework governing space activities. With the emergence of private companies in the space industry, there is a growing need for updated laws and regulations to address their involvement. Additionally, there are ongoing debates regarding issues such as resource exploitation and the use of military personnel in space.

### **7. The issue of space debris and pollution has raised concerns among experts, and has also sparked a need for lawyers specializing in space law to play a crucial role in addressing these challenges.**

To address these concerns, space lawyers play a crucial role in developing and implementing laws and regulations related to space debris and pollution. This includes advocating for responsible launch and disposal practices, as well as promoting international cooperation and enforcement of guidelines to reduce the amount of debris in orbit. They also work to hold accountable those who contribute to the problem through negligent or intentional actions. Additionally, space lawyers are involved in finding solutions for removing existing debris from orbit and preventing further accumulation through technologies such as debris-cleaning satellites and sustainable design practices for future space missions.

The growing presence of space debris and pollution has become a pressing concern as humanity continues its exploration and utilization of outer space. As the number of satellites, rockets, and other space objects sent into orbit increases, the risk of collisions and the build-up of debris poses a tangible threat. This not only endangers ongoing space missions but also jeopardizes the future of space activities. Thus, the role of a space lawyer has become essential in addressing these issues and devising solutions to mitigate the negative impact of space debris and pollution.

Space debris encompasses any man-made object orbiting Earth that no longer serves a practical purpose. These can include outdated satellites, remnants of rockets, and other fragments from past space ventures. These objects can vary in size, ranging from a few millimeters to several meters, and travel at speeds up to 17,500 miles per hour. This makes them potential hazards to active space missions, as even a tiny piece of debris can cause significant damage upon impact with a spacecraft or satellite.

The accumulation of space debris is a direct consequence of the growing number of countries and private companies launching objects into space without proper protocols for disposal. Additionally, the lack of international regulations and enforcement of existing guidelines has contributed to this issue. Consequently, the amount of space debris has reached a critical level, with over 128 million pieces currently orbiting the Earth.

To tackle these concerns, space lawyers play a pivotal role in developing and implementing laws and regulations concerning space debris and pollution. This includes advocating for responsible launch and disposal practices, as well as promoting international cooperation and enforcement of guidelines to reduce the amount of debris in orbit. They also work to hold accountable those who contribute to the problem through negligent or intentional actions. Furthermore, space lawyers are instrumental in finding solutions for removing existing debris from orbit and preventing further accumulation through innovative technologies like debris-cleaning satellites and sustainable design practices for future space missions.

The potential consequences of this situation for future space missions and the continued viability of space operations are considerable. The Kessler Syndrome, a scenario in which the quantity of space debris reaches a critical point and collisions between objects generate even more debris,

presents a legitimate threat. If left unchecked, it could potentially trigger a domino effect of collisions, rendering endeavors such as launching satellites and exploring space nearly impossible.

Space lawyers are essential in dealing with concerns and finding solutions to minimize the negative consequences of space debris. They operate at the intersection of law, technology, and policy, developing and implementing regulations and guidelines for space operations. They collaborate with governments and international organizations to establish standards for the disposal of space objects and the mitigation of space debris. Negotiating and drafting agreements between countries and private companies for the responsible use of outer space is a critical aspect of a space lawyer's role. This includes developing protocols for disposing of space objects and preventing collisions, as well as reducing the amount of debris in orbit. Additionally, space lawyers advocate for the enforcement of these agreements and promote responsible behaviour in space activities. They also address the issue of space pollution, which goes beyond physical debris in orbit and includes harmful chemicals and materials, such as rocket fuel and nuclear waste. Regulating their use and disposal is crucial to protect the environment and human health, making it a key responsibility of space lawyers.

Aside from tackling the pressing matters of space debris and pollution, space lawyers hold a pivotal position in shaping the trajectory of space endeavors. With the ongoing expansion of the space industry and the development of new technologies, it is imperative for space lawyers to stay abreast of these advancements and anticipate potential legal hurdles that may arise. Their role also involves crafting policies and laws that promote responsible and sustainable utilization of outer space for the benefit of generations to come.

The urgency to address the issues of space debris and pollution cannot be overstated. The expertise of space lawyers is crucial in identifying effective solutions to mitigate the detrimental effects of these problems. As the scope of space activities continues to broaden, the demand for space lawyers will undoubtedly escalate. Therefore, it is imperative for governments and organizations to invest in this field to ensure the responsible and sustainable use of outer space. The ever-evolving landscape of technology further highlights the need for space lawyers to remain proactive and well-informed in anticipating and resolving potential legal complexities that may arise in the future.

### **8. The concept of space property rights has been a hotly debated issue, with many questioning the role of a space lawyer in this matter.**

As the presence of space exploration and commercial activities increases, the topic of space property rights has become a highly contentious issue. With the rise of companies like SpaceX and Blue Origin, who are launching rockets and satellites into outer space, the idea of owning property in space has become a tangible possibility. As a result, a new field of law has emerged – space law – and the demand for space lawyers to navigate the intricate legal complexities surrounding space property rights has risen.

While the concept of property rights in space may seem far-fetched, it is not a novel idea. In fact, in 1967, the Outer Space Treaty was ratified by over 100 countries, including the United States and Russia. This treaty declares that outer space is the 'common heritage of mankind' and prohibits any nation from claiming sovereignty over any celestial body. Essentially, this means that no country can assert ownership over the moon, Mars, or any other planet or moon in our solar system. However, the Outer Space Treaty fails to address the issue of private ownership of property in space. This has created a legal ambiguity where private entities and individuals are vying to establish their ownership of celestial bodies and resources in outer space.

One of the key challenges in determining space property rights is the lack of physical boundaries in space. On Earth, property rights are determined by physical boundaries such as land or water bodies. In space, there are no such boundaries, making it difficult to establish ownership.

Another challenge is the issue of jurisdiction. With multiple countries and private companies involved in space activities, it becomes a complex task to determine which laws apply and who has the authority to enforce them. This is where space lawyers play a crucial role in navigating these legal complexities.

Space lawyers are legal experts who specialize in space law and are responsible for advising clients on issues related to space activities and property rights. They work with governments, private

companies, and individuals to ensure that their activities comply with international laws and regulations.

One of the key responsibilities of a space lawyer is to help their clients establish property rights in space. This can include registering satellites, obtaining permits for space launches, and negotiating contracts for the use of space resources. Space lawyers also assist in resolving disputes between different parties claiming ownership of the same space property.

Aside from property rights, space attorneys are also responsible for handling various other legal matters related to space operations. These can include issues such as liability for damages caused by space debris, protection of intellectual property rights for inventions created in space, and the legal implications of space tourism.

With the continuous growth of the space industry, the demand for space lawyers is also on the rise. Although there are currently only a few law firms in the United States that specialize in space law, this number is expected to increase as the industry expands. In fact, some law schools have started offering courses in space law to cater to the growing need for legal experts in this field.

One of the main challenges faced by space lawyers is the ever-changing nature of space activities. With the emergence of new technologies and the increasing interest in space exploration, laws and regulations are constantly evolving. Therefore, it is crucial for space lawyers to stay current and well-informed about any changes in the legal landscape of space activities.

The issue of space property rights is a complex and evolving one that requires the expertise of space lawyers to navigate. As more countries and private companies venture into space, the need for clear and enforceable laws regarding property rights will become even more crucial. Space lawyers will play a crucial role in ensuring that these laws are in place and that their clients' interests are protected in the rapidly expanding frontier of outer space.

## **9. Private Space Exploration and Commercialization with role of space lawyer**

The concept of space exploration has fascinated humanity for centuries. From the first successful launch of the Soviet satellite Sputnik in 1957 to the Apollo 11 moon landing in 1969, space exploration has been primarily driven by government agencies like NASA. However, in recent years, there has been a shift towards private space exploration and commercialization, with the emergence of companies like SpaceX,<sup>12</sup> Blue Origin, and Virgin Galactic. This transition has brought about a whole new set of challenges, and the role of a space lawyer has become more crucial than ever before.

Private space exploration and commercialization refer to the exploration and utilization of outer space by private entities for commercial purposes. This includes activities such as launching satellites, mining asteroids, and even space tourism. The idea of commercializing space has gained traction due to the potential for immense profits and technological advancements. However, it also raises several legal and ethical concerns that need to be addressed.

The main responsibility of a space lawyer in the private space industry is to guarantee that all actions are in accordance with international space laws and regulations. The Outer Space Treaty, which was ratified by more than 100 nations, regulates all activities associated with outer space. It upholds the principle of utilizing outer space for peaceful purposes and prohibits the placement of weapons of mass destruction in orbit. A space lawyer must ensure that these principles are respected and that private companies refrain from engaging in any activities that go against international law. Another crucial role of a space lawyer is to assist private companies in obtaining necessary licenses and permits

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<sup>12</sup> <https://www.britannica.com/topic/SpaceX> accessed on 7-1-2024 (Established in 2002, SpaceX is an American aerospace company that played a crucial role in the development of commercial space travel. Under the leadership of entrepreneur Elon Musk, it became the first private company to successfully launch and retrieve a spacecraft from Earth's orbit, as well as the first to send a manned spacecraft to dock with the International Space Station (ISS). Headquartered in Hawthorne, California, SpaceX was founded with the goal of revolutionizing the aerospace industry and making space travel more affordable. Its entry into the market was marked by the launch of the Falcon 1 rocket, a two-stage liquid-fueled craft specifically designed for launching small satellites into orbit. Unlike its competitors, which were mostly publicly owned or government-funded, SpaceX's Falcon 1 was significantly cheaper to build and operate. This was made possible in part by the company's cost-effective Merlin engine, which served as a more affordable alternative to those used by other companies. Additionally, SpaceX focused on creating reusable rockets, a concept that was not common in the industry where most launch vehicles were designed for one-time use only.)

for their space activities. The launch of a satellite or a spacecraft requires multiple approvals and permits from government agencies. A space lawyer can guide companies through this complex process and ensure that they comply with all legal requirements.

The commercialization of space also raises questions about property rights and ownership of resources in outer space. Can a private company claim ownership of an asteroid or a part of the moon? This is a grey area in space law, and a space lawyer can help navigate through these legal complexities. They can advise companies on the legal implications of their actions and help them develop strategies that are in line with international laws.

The emergence of space tourism is another area that requires the expertise of a space lawyer. With companies like Virgin Galactic and Blue Origin offering suborbital flights to space, the issue of liability in case of accidents or injuries needs to be addressed. A space lawyer can assist companies in drafting contracts and waivers that protect them from legal consequences while safeguarding the rights of their customers.

Commercialization of space also raises concerns about the protection of intellectual property rights. With the advancement of technology, private companies are developing new technologies and ideas that can be patented. A space lawyer can help companies secure their intellectual property rights and prevent unauthorized use of their innovations.

#### **10. The Role of a Space Lawyer and the obstacles faced in the field of international space law.**

For centuries, the exploration and utilization of outer space have captivated and intrigued people. However, with the advancement of technology and the rise of interest in space tourism and commercial activities, the need for proper regulation and legal framework in the use of outer space has become crucial. This is where the expertise of a space lawyer becomes essential.

A space lawyer is a legal professional who specializes in the laws and regulations governing activities in outer space. They play a vital role in ensuring the responsible and peaceful use of outer space, as well as safeguarding the rights and interests of all nations involved in space exploration.

The concept of space law dates back to the 1960s when the United Nations established the Committee on the Peaceful Uses of Outer Space (COPUOS) to address the legal challenges arising from space exploration. Since then, space law has evolved into a dynamic and intricate field, encompassing various aspects including international treaties, national laws, and commercial agreements.

Space lawyers face several challenges, one being the lack of a comprehensive international treaty governing outer space activities. The existing 1967 Outer Space Treaty serves as the foundation of space law, but it has its limitations and does not cover all legal issues arising from current space activities. The rapid advancement of technology and the emergence of private companies in the space industry have presented new challenges for space lawyers. As more private companies launch satellites and plan commercial space missions, there is a need for clear and comprehensive regulations to ensure safety, security, and sustainability in outer space. Jurisdiction in outer space is also a major issue for space lawyers. Since space is considered a global common, there is no clear legal framework for settling disputes between nations or private entities. This calls for collaboration among spacefaring nations to establish a dispute resolution mechanism for space-related issues. Another pressing concern for space lawyers is the growing problem of space debris. The increasing number of satellites and space missions poses a significant risk of collisions and the creation of more debris in orbit. Space lawyers must address this issue and work towards developing regulations to mitigate the risk of space debris and ensure the sustainable use of outer space.

As commercial space exploration expands, new legal challenges arise, including property rights, liability for accidents, and space mining regulations. Innovative legal frameworks are needed to ensure fair and responsible commercial activities. Case laws play a vital role in shaping the legal framework for space exploration and activities. As new technologies emerge, it is essential to remain vigilant, adaptive, and proactive in addressing these issues to foster a sustainable and harmonious future for space exploration.

Case laws play a crucial role in shaping outer space legal issues by providing guidance, resolving disputes, and establishing frameworks for various aspects of space activities. They also

impact national jurisdiction, defining the rights and responsibilities of states in relation to space activities. Case laws like the "Space Shuttle Challenger Disaster" and "Satellite Collision Case" have established legal principles for liability in space accidents and damage claims.

Case laws are crucial in defining and safeguarding intellectual property rights in space technology and exploration. They provide guidance in patent and copyright infringement cases, ensuring innovators and creators are protected. As space exploration and operations become increasingly important, a comprehensive legal framework is critical to govern actions and resolve conflicts. Understanding the role of case laws in shaping the legal landscape of space is essential for ensuring a peaceful and sustainable exploration of the final frontier.

## **Conclusion:**

One of the main responsibilities of space lawyers is to advise and assist their clients in obtaining the necessary licenses and permits for space activities. This can include licenses for launching spacecraft, conducting experiments, or operating satellites. They also help their clients navigate the legal requirements of different countries, as each nation has its own laws and regulations regarding space activities.

Space lawyers also play a crucial role in negotiating and drafting agreements between different parties involved in space activities. This could include partnerships between government agencies and private companies, or agreements between different countries for joint space missions. These agreements must comply with international laws and regulations, and space lawyers ensure that all parties involved are aware of their rights and responsibilities.

Another important role of space lawyers is to stay updated with the constantly evolving space laws and regulations. With the rapid advancements in technology and the increasing number of nations and private companies involved in space activities, the legal landscape is constantly changing. Space lawyers must stay informed and adapt to these changes to ensure that their clients are compliant with the latest laws and regulations.

Furthermore, the involvement of space lawyers is essential in promoting ethical and conscientious behavior in activities related to outer space. As the interest in space mining and commercial space tourism increases, there are valid concerns about the potential exploitation of space resources and its impact on the environment. To address these concerns, space lawyers advocate for the responsible utilization of space and work towards implementing guidelines and regulations to ensure the sustainable and ethical development of outer space.

Space lawyers play a pivotal role in guiding individuals and organizations through the complex legal framework surrounding space activities. They provide valuable assistance in obtaining necessary licenses, drafting agreements, resolving disputes, and promoting responsible conduct in outer space. As the field of space exploration progresses, the role of space lawyers will continue to be critical in promoting the peaceful and sustainable use of outer space.

International space law practice presents numerous complex challenges. The lack of a unified legal framework, issues of jurisdiction, rapid technological advancements, and the global nature of space activities all contribute to the difficulties in enforcing and practicing international space law. With the continuous growth and evolution of the space industry, it is imperative for international cooperation and collaboration to address these challenges and ensure the responsible and sustainable use of outer space.

International space lawyers play a crucial role in ensuring the safety and peaceful use of outer space through the development and implementation of laws and regulations. As technology advances, it is important for these laws and treaties to be continuously reviewed and updated. Space lawyers also advocate for new laws to address the challenges of the evolving space industry. Their role will only become more critical as we continue to explore and use outer space.

The role of a space lawyer in private space exploration and commercialization is multifaceted and vital. With the increasing involvement of private companies in space activities, the need for legal expertise has become more apparent. A space lawyer not only ensures compliance with international laws and regulations but also helps companies navigate through the legal complexities of this emerging



sector. As space continues to become a commercial frontier, the role of a space lawyer will only become more critical in shaping the future of private space exploration and commercialization.

In current times, a strong, predictable and credible international space legal order is needed to deliver international peace and international security. It is a fact that in developing countries and less developed countries, international lawyers are still underutilized and those who choose a particular field face various problem, because for international lawyers, if there is a relevant type of court, international lawyers can work perfectly in the field. Procedures for that, otherwise it will be a failed department. Indeed, the position of students who choose to study international law at postgraduate level is indeed a pitiful one.

Few can succeed in the field of international law but not everyone who chooses that field can succeed in this field. Even books on international law are lacking in various places, something that should be emphasized especially in law colleges, but not so much because it is still considered a hidden point of jurisprudence. Students have to study international law without proper understanding and guidance. Not only that but the future career path for them is not really useful. It is widely said that there are more career opportunities abroad than in India, but such opportunities will actually create opportunities through the creation of international space law firms.

Lawyers specializing in international space law are critical to ensuring the safety, security and proper management of space activities. They interpret and implement the international legal framework, address emerging challenges and encourage joint efforts among countries. As we continue to explore and use space, the role of lawyers in international space law becomes more important. By striving for responsible and sustainable exploration, we can unlock the full potential of space while preserving its integrity for future generations. The challenges faced by international lawyers in countries like India are significant and should not be ignored. Lack of proper infrastructure, resources and career opportunities hinders the growth and success of international lawyers.

However, prioritizing the development of a strong and credible international space law, providing comprehensive education and resources, and fostering career opportunities within India can create a more conducive environment for the practice of international space law. It is necessary to recognize the importance of international law and take necessary steps to address the challenges faced by those who wish to pursue a career in this field. Case laws are vital in defining and safeguarding intellectual property rights in space technology and exploration, providing guidance in patent and copyright infringement cases, and ensuring a comprehensive legal framework for peaceful and sustainable exploration.