**Educational Administration: Theory and Practice**
2024, 30(1), 741-748
ISSN: 2148-2403
https://kuey.net/

**Research Article**

# The Relationship Between Outer Space Activities And Intellectual Property Laws

Poujiabthai Gangmeih[1*], Dr. Ravi Kant Mishra[2]

[1*]Ph.D. Research Scholar at the Department of Law, Northeastern Hill University, Shillong
[2]Associate Professor at Department of Law, Northeastern Hill University, Shillong

**Citation:** Poujiabthai Gangmeih, (2024), The Relationship Between Outer Space Activities And Intellectual Property Laws, *Educational Administration: Theory and Practice*, *30*(1), 741-748
Doi: 10.53555/kuey.v30i1.5456

**ARTICLE INFO**
Received: 16-01- 2024
Accepted: 01-02- 2024

**ABSTRACT**

Up until 1957, space travel was largely unknown to humans. Before then, it was beyond their grasp. By launching Sputnik-I, an uncrewed spacecraft, into space in October 1957, the USSR became the first nation to explore space. Next year, the US adopted a similar strategy to the USSR. When it launched the first manned satellite into Earth's orbit in 1961, it made history. Space technology has developed significantly since then. The admission of several governmental and non-governmental organizations into space exploration has propelled advancements in space activities and created a fantastic opportunity for understanding, discovering, and inventing. It has changed drastically during the last couple of decades or so. It is important to note that the processes of privatization and commercialization have followed and changed the very direction of these endeavours. As a result, recent developments have made it possible for the operations that call for the developers' intellectual property rights to be protected. International law has generally held that no State may exploit space for its purposes; space research and exploration must serve the interests of humanity rather than the self-serving interests of the State, and it is founded on the idea of "res communis."
However, the primary focus of international intellectual property law is territoriality. Problems may arise if national law is applied to actions taken in regions covered by international law but where no one has sovereign powers or authority. This essay will provide a broad overview of the international legal frameworks about intellectual property and space operations.

**Keywords:** Relationships, Outer Space Activities, Intellectual Property Laws

## Introduction

Space law and intellectual property law have different aims and purposes. Owners of property produced by human brain and inventiveness are granted rights known as intellectual property rights by intellectual property law. The owner of an intellectual property right, or IPR, has the temporary ability to forbid others from utilising it. Throughout the duration of the exclusivity term, the IPR holder might profit from the value bestowed upon the IPR. It is seen as payment or encouragement for the inventor's effort in creating the intellectual property. Consequently, the intellectual property rights (IPRs) confer onto their holders a provisional monopoly.[1] Even so, space law is still a relatively new and developing field of international law,[2] having been developed from member states' treaties, conventions, agreements, etc. International law states that no State may use space for its own gain; space exploration and research must advance humankind's interests rather than the State's self-serving goals. It is based on the concept of "res communis." Conversely, territoriality serves as the foundation for international intellectual property laws, which protect innovative human creations that are primarily protected by national legal frameworks.
Humans can now explore space regions for economic purposes thanks to the rapid advancement of scientific technology and inventiveness. The commercialization and privatisation of space activities have increased recently, raising concerns about intellectual property rights (IPRs) in space.[3] Discussing the connection between intellectual property law and space operations is pertinent nowadays, given the nature of space development and the classification of extraterrestrial or extraterritorial zones. In the past, government agencies handled the majority of space activities, and intellectual property rights were not protected. However, the problems with intellectual property rights (IPRs) arose when private companies began to engage in commercial

space activities. IPRs bring up a number of important legal issues pertaining to space operations. These issues, which the workable international legal framework must handle, include intellectual property ownership, intellectual property rights violation, sharing, data protection, and transfer.

Intellectual property law and space law, on the other hand, present a prima facie challenge to each other. While the latter grants monopolies to creators, the former describes space as the "province of all mankind." Under intellectual property law, the state typically defends the creator's interest by granting him ownership rights to his creations or inventions. However, the international conventions adopt guiding principles while.

Upholding the principles of international understanding and collaboration for the benefit of all is the aim of Space Law. Space became a hot topic in international law after certain states deployed both human and unmanned satellites into space and other celestial bodies. The United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) was established in the 1960s, and it had significant success in establishing pertinent space regulations. With the conquering came the notion of defending the duties and rights arising from the several States' acts in space. It led to the United Nations passing laws and establishing rules for this part of the universe.[5] Consequently, the Office of Outer Space Affairs (OOSA) of the UN Secretariat provided manpower support for UN space programmes after it was founded in 1992.[6]

The rapid advancement of technology has been met by space law, which has secured a legal framework that promotes and fosters the advancement of commercial and scientific endeavours. Space activities were not commercial and were conducted under government supervision during the start of the Space Age. Nonetheless, private and commercial businesses are now involved in space exploration and utilisation in addition to governmental ones. Virgin Galactic Company was the first private company to provide space travellers with suborbital spaceflights, to mention a few. The first crewed commercial spaceship has been declared to be this one. The image of intellectual property law has also been introduced into space-related activity.

The concepts underlying the application of intellectual property law protection to extraterrestrial operations, considering inventions made outside national borders, cannot be refuted by the creator's right to assert ownership rights. "Outer space activities are characterised, in particular, by the utilisation of sophisticated technology in respect of which protection of intellectual property plays an important role," according to a statement made by the WIPO in consideration of the matter. "National law, in principle, only applies to the territory (including air space of a country and not to outer space," the statement further reads.[7] It is now essential to establish a cordial relationship between the two distinct legal domains due to the increasing number of space enterprises by various states, like the US, Russia, EU, China, India, etc.

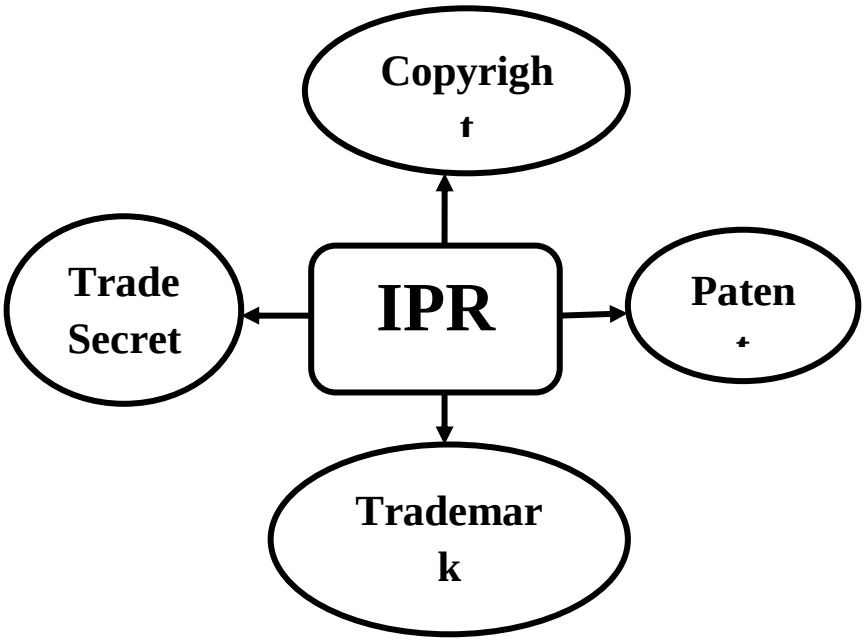
## Development of Intellectual Property Law

Europe is where the rules and regulations pertaining to intellectual property originated. The fourteenth century saw the beginning of the patent-granting trend.[8] The idea of worldwide intellectual property rights protection surfaced among legislative bodies during the nineteenth century. The Paris Convention, which was quickly followed by the Berne Convention of 1886, brought international jurisdictions together and clarified the protection of industrial work for the first time. It was called in order to safeguard artistic and literary creations. Prior to now, the idea of intellectual property rights protection was limited to an individual's earthly creations. Even yet, it has drawn attention away from earthly creative endeavours, even in the absence of an appropriate international legal framework at this time. The primary international legal frameworks listed below are essential for protecting intellectual property rights.

1. **The Industrial Property Protection Convention of Paris (1883):** This convention is the cornerstone international accord in the sphere of industrial property, despite not particularly addressing the problem of invention in space. Nonetheless, it does have clauses that every Member State must follow. The national treatment principal [9], and these provisions establish the right of priority number [10], and standard norms, which include specific measures for the defence of intellectual property rights.
2. Copyright-related issues were addressed by the Berne Convention for the Protection of Literary and Artistic Works (1886).
3. The 1970 Patent Cooperation Treaty (PCT) aims to safeguard inventions by allowing simultaneous filing of "international" patent applications in several nations. Anyone who is a citizen of a PCT contracting state or resides there may submit such an application.
4. **The WIPO Copyright Treaty (WCT) from 1996:** The WCT safeguards, among other things: (i) computer programmes, in any form; and (ii) databases, which are compilations of data that may qualify as intellectual works of art based on their arrangement or selection of contents.
5. **Intellectual property rights and trade, namely the World Trade Organisation (WTO) and TRIPS agreements:** It attempts to reconcile various intellectual property rights legal systems with national patent laws.

By addressing intellectual property protection issues in outer space, the rapidly advancing scientific technology and increasing commercialization of space exploration have created a new environment in which to reevaluate the current legal framework for intellectual property and outer space. Intellectual property law and space law are two distinct legal fields. The US became the only country to incorporate patent law into space activities when it passed a statute that contains provisions for patents for inventions made in space in an effort to keep

up with current developments. Similarly, their activities in the International Space Station were accorded quasi-territoriality status in the European Union Intergovernmental Agreement, 1998, allowing member states to enjoy uniform protection.

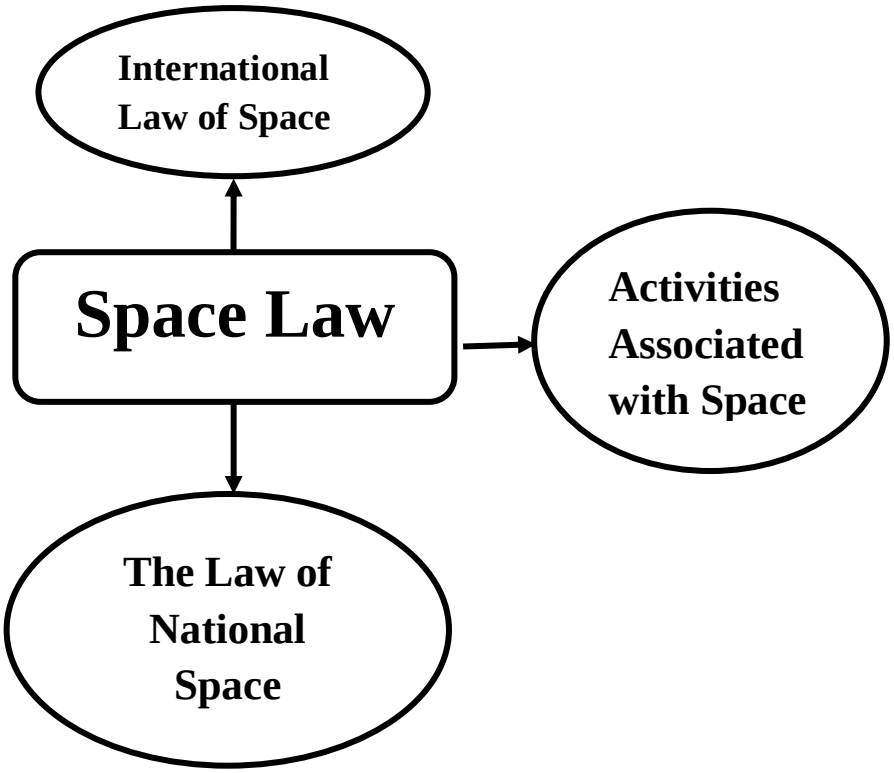



**pace Law and Space Activities**

In contrast, space law is a recently developed area of international law that resulted from space exploration by humans. The rights to space access, exploration, and rocket passage over other nations' territories without prior consent were established by the Soviet Union's 1957 launch of the first artificial object into space, as well as by the USA and the USSR's subsequent launches. These created a state custom that served as the foundation for the customary legal system..[11]The area above all international airspace is known as outer space. Some acknowledge that space is just approximately 100 kilometres (62.1 statute miles)[12] from Earth to the upper atmosphere. Nevertheless, the UN still needs to define the boundary of outer space.[13]

The UNGA unanimously adopted a Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space in 1963, making it the first and most important of the pertinent UN-produced instruments.[14] COPUOS went on to develop five accords that put the declaration into practice. Throughout the 1960s and 1970s, this COPUOS endeavour persisted, yielding the following results:

1. The 1967 convention on the principles guiding states' use of space, including the moon and other celestial bodies, and their exploration of it.[15]
2. 1968 Agreement for the Return of Launched Objects into Outer Space, the Recovery of Astronauts, and Their Return.[16]
3. International Liability Convention on Space Object Damage, 1972 [17]
4. The Convention on Registration of Objects Launched into Outer Space, 1976[18]. The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1984[19].




**About outer space, the UN approved five (five) principles. They are listed in the following order:**

1. Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, 1963.
2. Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, 1982.
3. Principles Relating to Remote Sensing of the Earth from Outer Space, 1986.
4. Principles Relevant to the Use of Nuclear Power Sources in Outer Space, 1992.
5. In 1996, a declaration was made about international cooperation in the exploration and use of outer space for the benefit and in the interest of all states, with special attention to the needs of developing nations.

The freedom to explore space and other celestial bodies, non-appropriation of space, demilitarisation of space, maintenance of sovereign rights over launched spacecraft, and liability for space activities are just a few of the themes covered by the treaty. Nonetheless, the issues pertaining to intellectual property protection must be brought up. Since the state handles the majority of operations, space activities were initially of minimal economic significance. However, this has since changed. Due to the quick advancement of technology, private organisations are investing huge quantities of money in high-end equipment and technologies to pique their interest in space exploration. Adequate legal provisions are necessary to safeguard these activities and their respective interests. Unquestionably, a state's sovereign authority plays a major role in the protection and enforcement of intellectual property rights. This raises concerns when considering intellectual property rights in space, where sovereign claims are impractical.[20]

**The Outer Space Treaty 1967 [21] stipulates in Articles I and II ::**

Regardless of the degree of economic or scientific growth, all people must have the right to take part in the exploration and use of space, including the Moon and other celestial bodies, for the benefit of all people and in the best interests of all nations.

States must support and promote worldwide collaboration in space research, encompassing studies of the Moon and other celestial bodies, while ensuring the autonomy of such inquiries.No country has the right to claim sovereignty over any portion of space, including the Moon and other celestial bodies, by usage, occupation, or any other means. It states that all nations must benefit from space exploration, irrespective of their level of economic or technological advancement.

Each party that launches an object into space is required under Article VIII of the treaty to have power and control over the people on board as well as to designate a territory or facility for the object. Private firms like "Virgin Galactic," "Blue Origin," and "Space X" that are involved in space missions do not now have a recognised international legal framework. The treaty's Article VI mandates that the States Parties to the treaty bear responsibility for any national activity conducted on the Moon and other celestial bodies as well as in outer space. Both governmental and non-governmental organisations are subject to this obligation, and it is their duty to make sure that these actions adhere to the terms of the treaty. It's uncertain whether the actions of

private organisations or astronauts are regarded as "national activities" and if the nation that registered the spacecraft is accountable for them, even when it appears that "non-governmental entities" are involved.Furthermore, the 1976 Registration Convention mandates that nations involving space activities notify the UN Secretary-General.
The convention delineates the responsibility of the launching state for events transpiring within the spacecraft. Parallel to this, the "launching state" is responsible for ensuring that a private space participant complies with the Outer Space Treaty. Every space station represents the country that launched it. US courts have declined to enforce US patent rules and to exercise jurisdiction over ships and aircraft on US territory or over US airspace, despite the fact that they are the only country with legislation that specifically defines inventions in space. The US passed the Patent in Space Act in 1990, which is also known as Section 105 of the Patent Code. The Act states that any innovation developed, used, or sold on a space object or component within US jurisdiction is considered to have originated, operated, or been sold domestically. As a result, US patent law now protects inventions made on US-registered space objects. This suggests that every idea created within the spacecraft will receive the same priority as inventions created outside of the United States.[22] Space activities may infringe upon a US patent.[23] The idea of quasi-territoriality, as defined by the conditions of the 1998 ISS Intergovernmental Agreement, refers to a particular territory that was intended to be preserved in relation to activities carried out by the European Union on the International Space Station.[24]

## IP Law's relationship to space activities

A state's sovereign jurisdiction is necessary to protect and uphold intellectual property rights. As a result, there are issues with intellectual property related to space activities. There are two categories for IP protection:

1. Activities that can be carried out in space, such as those that are detailed above for the Moon and other celestial bodies.
2. Activities that can be carried out in space, either in a spacecraft or on its own.
3. Space-related activities, or rather space-related activities that are carried out inside a state's territorial jurisdictional boundaries.[25] Activities related to space that are carried out within a state's territorial jurisdictional limits may be governed by the domestic intellectual property law framework of that state or by a multilateral treaty framework that complies with current treaty law.

With private entities becoming more involved in space activities in the twenty-first century, there is an increasing need for a consistent international legal framework for such activities that may be carried out outside a state's borders.
Intellectual property law grants intellectual property rights to the owner,, including patents, copyrights, trademarks, trade secrets, designs, etc. These bundles of rights are conferred for the exclusive period by the domestic law, which can be extended beyond the national boundary through cooperation. The issues of patents, copyrights, trade secrets, trademarks, etc., cannot be excluded of space activities. Let us see the relationship between IP law and space activities.

## Patent

An applicant who is an inventor, a group of inventors, or a representative of an inventor who invented an innovation may be granted a patent, which is a property right, for a predetermined period of time by the national government.[26] Patent rights are exclusive to the territory in which they were awarded. First-to-file and first-to-invent are the two filing processes for patents. Under a first-to-file patent system, the invention's location and date are unimportant. The system that most nations adhere to is the first-to-file method. The US, Canada, and the Philippines were among the only nations to adopt the first-to-invent method.
Patents relating to space operations may run into problems with the patentability requirements of novelty, non-obviousness, and utility or functionality to "space inventions". Some technologies or inventions may only work in microgravity, in which case it may be difficult to verify or demonstrate their innovation, originality, or usefulness on Earth.[27] When assessing the challenges posed by patent law and the need for harmonisation, the most crucial element to consider is the collision between the domains of intellectual property law and space law. The latter is protected by international law and allows any Member State to actively engage in space exploration without undue obstacles. The former, however, is exclusive and grants the originator or inventor a monopoly. The United States of America is the only country to have officially approved legislation under Section 105 of 35 U.S.C. that establishes a relationship between the three key components inventions, jurisdiction, and territory and extends extraterritorial reach. Consequently, in 1998, the central space powers proposed that an international agreement concerning collaboration on the International Space Station should incorporate national patent jurisdiction; this agreement was subsequently dubbed the International Agreement (I.G.A.).[28] Any activity that may be patented is under the authority of the nation where the inventive activity occurred and the I.G.A. module is registered, according to the I.G.A.
The domestic patent legislation that India has enacted is the Patent Act of 1970. Any E.U. member may claim patent jurisdiction over operations conducted in European Space Agency-owned space station modules. The United States, Japan, and Russia might all have sole control over patentable activities performed in their space station modules. Other than this, most countries do not have a specific legislative provision that ensures patent protection for space-related activity. Regarding India's stance, it currently does not have a legislative structure

that deals with issues related to intellectual property in space. However, to complete an application for the issuance of a patent in India, a foreign entity may accede to any of the two treaties, as India has ratified both the Paris Convention of 1883 and the Patent Cooperation Treaty (P.C.T.) of 1970.

### Copyrights

The Berne Convention of 1886 established the rules governing copyright protection. Copyrights give writers and creators of original works the only authority to use, copy, or replicate their creations. The WIPO Copyright Treaty (WCT), 1996, was established in accordance with the Convention. Computer programs and data compilations or other material databases in any form that comprise intellectual creations are two of the topics included in the treaty that are covered by copyrights. But the pact also makes no mention of military space operations. Remote Sensing Data are copyrights that are drawn to space-related operations the first principle (a) of the principles pertaining to Earth remote sensing from space. In order to enhance land use, natural resource management, and environmental protection, the phrase "remote sensing" was defined in 1986 to refer to the process of sensing the Earth's surface from space by utilising the characteristics of electromagnetic waves produced, reflected, or diffracted by the detected objects.[29] However, even though this concept defines "raw data" and "process data," it does not address the issue of intellectual property protection. One method for studying the Earth is through remote sensing. It makes use of technology and satellites to gather data over great distances. Legal systems typically use copyright law to protect databases that are creative compilations.[30] The European Directive protects remote sensing data that has been compiled into an original database.[31] The level of originality needed to be eligible for copyright protection varies depending on the copyright rules of the majority of nations. This would mean that while a specific type of spatial database would be eligible for copyright protection in some nations, comparable data might be outside of other nations. The Copyrights Act of 1957 governs copyright-related activities in India, with the exception of space-related activity. National conventions such as the WIPO copyright treaty from 1996 and the Bern convention from 1886 have been approved by India. These are a few real-world challenges in creating consistent copyright-based intellectual property protection for data.

### Trade Secret

Trade secrets are proprietary details about a creative idea that have a marketable worth. Its goal is to prevent unauthorised commercial use by third parties of technological and commercial knowledge that is not commonly known in the trade. Considering the amount of work and money required, any private company firm involved in large investments and new space technology inventions would like to keep their secrets to themselves. As of right now, trade secret protection in space is not specifically covered by any laws.

### Trademark

A trade mark is an identifier or symbol that sets one manufacturer's goods and services apart from another. Trademark IP legislation has yet to gain any traction in space. However, trade operations, including trademarks, may be subject to trademark law for any infringements once space tourism is practical.

### The Function of Intellectual Property in Space-related Activities

It is only in recent years that intellectual property protection in relation to space activities has drawn more attention, despite the fact that space technology has always been one of the most advanced technical fields and that space activities are, in fact, the result of intellectual creations. One of the causes is the growing trend of state-owned space activities giving way to private and commercial ones. These include direct broadcasting, research and manufacturing in microgravity conditions, and remote sensing from space. Not only is the business sector becoming more involved, but companies are becoming more private, as seen with Inmarsat and Intelsat. These non-governmental organisations are generally more aware of their "property," both material and immaterial.

Furthermore, many state-owned space organisations today are accustomed to working with the private sector due to the financial and technological resources needed to realise space programmes. Governmental space agencies, governmental agencies, private corporations, and private companies themselves all enter into licencing agreements. The idea that the R&D expenditure may be recouped in the future must drive such private finance. Thus, the acquisition and defence of intellectual property rights would benefit the private sector's involvement in space exploration endeavours as well as the advancement of space technology in general.

### Problems Concerning IPR in Outer Space

These problems still have an element of the "exotic" about them right now. This is due to the fact that, in contrast to other space applications, such as satellite remote sensing and satellite telecommunications, microgravity activities, which take place in the nearly zero gravity of space, have yet to mature and create a commercial dimension. Moreover, organisations in the business sector engaged in space activities may not be enthusiastic about microgravity research at this time.

Microgravity activities may be of interest to the pharmaceutical and biotechnical industries, but this is far different from a market for (commercial) production in space. In addition to the financial and technological

obstacles, the microgravity research community also needs a clear regulatory framework to promote private sector involvement.
Currently, the main industries affected by the IPR issue in space are telecommunication and remote sensing. Patentability of space-related inventions, or, to put it another way, who is entitled to patent protection and whose rights are controlled by the patent? Here, the disparities between the first-to-file and first-to-invent patent systems the two primary patent systems in use worldwide highlight the necessity of harmonisation. In actuality, there are differences in every criterion used to decide who owns the invention, the significance of the location where it was created, and the assessment of uniqueness vs prior art.

### The Indian Space Industry's Future

The space industry in India has become a significant force on the world stage due to its remarkable technological progress and inventiveness in the last few years. With projects like Chandrayaan and Mangalyaan, it has advanced significantly and accomplished amazing accomplishments in space exploration. But as the sector develops, issues with innovation, technology, and intellectual property (IP) are becoming more pressing.
It is difficult to strike a balance between the need to protect intellectual property rights and private technologies while still promoting international collaboration and the sharing of scientific knowledge. For India's space industry to grow further and address the justifiable worries about technology transfer and intellectual property, a suitable balance must be struck.

## Conclusion

A new perspective on safeguarding the rights holders of both territorial and space-related inventions has been provided by the way intellectual property law is developing. With the use of cutting-edge technology, space operations have advanced significantly in the current century. It inspired us to go on space missions, which piqued their interest even more. Since interests and activities in the area designated as the "Province of all mankind" are sought to be legally protected, there are, in theory, competing natures between IP law and space. The protection of works of human intellect that are solely within a state's sovereign jurisdiction is addressed by the current intellectual property legislation. Space and other extraterrestrial realms are not covered by it. As a result, domestic law governs the operation of the international legal system of intellectual property rights, which is constrained in scope, duration, and geographic range. This leaves any actions conducted in space without legal protection.
Under the United Nations' auspices, a number of space-related treaties, conventions, agreements, etc., have been ratified to address current space-related challenges. It must still take intellectual property issues into account, though. Certain states recognise the opposing positions like patent protections for space inventions in accordance with their national laws and agreements, while other states do not. The same is true for copyrights pertaining to databases used for remote sensing, which have drawn conflicting reactions. Meanwhile, trade secrets and trademarks continue to be unresolved under the current regimes. Therefore, creating a workable legal framework is imperative in order to strike a balance between intellectual property rights and socioeconomic justice with regard to international space activities.

## REFERENCES

1. Organisation for Economic Co-operation and Development, “Licensing of IP rights and competition law – Note by India”, Directorate for Financial and Enterprise Affairs Competition Committee, 10 May, 2019. Available at: <https://one.oecd.org/document/DAF/COMP/WD(2019)4/en/pdf>, Accessed on 2 April, 2022.
2. Dr. G.S. Sachdeva, *Outer Space: Law, Policy and Governance* 1 (KW Publisher, New Delhi, 2014).
3. Rahul Jairam Nikam, *Space Activities and IPR Protection: A Need for New Legal Regime* 13 (Asia Law House, Hyderabad, 2013).
4. G.S. Sachdeva, *Outer Space Law, Policy and Governance,*15 (KW Publisher, New Delhi, 2014),
5. H.O. Agarwal, *International Law and Human Rights,* 167 (Central Law Publication, Allahabad, 2013).
6. Mark J. Sundahl, V. Gopalakrishnan, (Eds.), *New Perspectives on Space Law* 16 (The International Institute of Space Law Paris, 2011).
7. International Bureau of WIPO: Issue Paper, “Intellectual Property and Space Activities”, 18 (2004), available at: <https://www.wipo.int/export/sites/www/patent-law/en/developments/pdf/ip_space.pdf>
8. Chandra Nath Saha, Sanjib Bhattacharya, “IPR Overview and implications in pharma industry” *Journal of Advanced Pharmaceutical Technology & Research Vol 2 Issue 2 (2011)*
9. Article 2.
10. Article 4.
11. K. R. Sridhara Murthi, V. Gopalakrishnan, *et al*, “Legal environment for space activities”, *Current Science*, Vol. 93, No. 12 1823 (25 December 2007).
12. Thomas Gangale, *How High the Sky? The Definition and Delimitation of Outer Space and Territorial Airspace in International Law,* 8 (Brill Nijhoff, Leiden, 2018).

13. Rahul Jairam Nikam, *Space Activities and IPR Protection: A Need for New Legal Regime* 14 (Asia Law House, Hyderabad, 2013).
14. *Supra* 6 at 16
15. General Assembly Resolution 2222 (XXI), adopted on 19 December 1966, opened for signature on
27 January 1967, entered into force on 10 October 1967.\
16. General Assembly Resolution 2345 (XXII), adopted on 19 December 1967, opened for signature on 22 April 1968, entered into force on 3 December 1968.
17. General Assembly Resolution 2777 (XXVI), adopted on 29 November 1971, opened for signature on 29 March 1972, entered into force on 1 September 1972.
18. General Assembly Resolution 2222 (XXI), adopted on 19 December 1966, opened for signature on 27 January 1967, entered into force on 10 October 1967.
19. General Assembly Resolution 34/68, adopted on 5 December 1979, opened for signature on 18 December 1979, entered into force on 11 July 1984.
20. Ritesh Mehra, "Intellectual Property Protection in Outer Space – An Overview" 144 *ILI Law Review Vol. II* (2009).
21. Refer to Outer Space Treaty of the year 1967, *available at*: http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html
22. 35 U.S.C. Section 104, (1982).
23. 35 U.S.C. Section 271(a), (1982).
24. F.G. von der Dunk and M.M.T.A. Brus (Eds), *The International Space Station: Commercial Utilisation from a European Legal Perspective,* 65 (Martinus Nijhoff Publisher, Leiden, 2006).
25. *Supra* note 18 at 148.
26. *Supra* Note 13 at 151,152
27. Catherine Doldirina, "Intellectual property rights in the context of space activities", in Frans Von der Dunk and Fabio Tronchetti (eds.), *Handbook of Space Law* 980 (Edward Elgar, UK, 2015).
28. *Supra* Note 22 at 2
29. Principle I (a), Principles Relating to Remote Sensing of the Earth from Outer Space <https://www.unoosa.org/oosa/en/ourwork/spacelaw/principles/remote-sensing-principles.html> last visited on 20 March, 2022
30. ESA-Copyrightanddatabases,31.<https://www.esa.int/About_Us/Law_at_ESA/Intellectual_Property_Rights/Copyright_and_databases> last visited on 14 March, 2022.
31. Remotesensingdata, <https://www.esa.int/About_Us/Law_at_ESA/Intellectual_Property_Rights/Remote_sensing_data#:~:text=Remote%20sensing%20uses%20the%20properties,and%20to%20protect%20the%20environment.> last visited on 17 March, 2022.