E- Journal of Academic Innovation and Research in Intellectual Property Assets (E-JAIRIPA)

Vol. 3 (Issue-I), Jan- June, 2022, Pg.97-109

LEGAL REGIME OF PATENT PROTECTION TO OUTER SPACE ACTIVITIES IN INDIA ANDUSA: A COMPARATIVE STUDY

Aranya Nath[1] *& Srishti Roy Barman*[2]

ABSTRACT

The above doctrinal research examined whether intellectual property combines with the two significant international norms in outer space treaties and how intellectual property protection operates in space. The paper divides into four sections. The initial section of the article discusses international space law regulations about outer space, including the Moon and other celestial bodies. It compares them with the territorial character of intellectual property protection regimes. The second part of the paper delves into the use of patent protection with linkages in outer space as establishing a practical framework for the protection of the phenomenon described as "outer space patenting," patent protection in outer space is guaranteed. Such an international framework expects to accelerate space activities and, in particular, fulfil the demand for patent protection by governments and private firms. Space activities are subject to national and international binding laws and regulations like any other human activity. The third section compares patent protection in the United States with India's outer space. Finally, proposals for increasing patent protection in space as Intellectual property rights (IPRs) continually present several key legal challenges for space operations, including intellectual owning property and IPR infringement, among others. The importance of intellectual property rights in space activities is rapidly increasing as private enterprise is recognized as a component in further space growth and as space applications become increasingly embedded in daily life on earth. In general, patent legislation requires issuing a patent since it promotes the creation of fresh ideas for the benefit of the general public. Throughout the future, there still are possibilities for the same set of rights to cite as a paradigm for intellectual property protection in space.

Keywords: Patent, Outer space, United States, Celestial Bodies, Satellite System.

[1] Ph.D. Scholar, Damodaram Sanjivayya National Law University Nyayaprastha, Sabbavaram, Andhra Pradesh
[2] Advocate

INTRODUCTION

1. Space Activities and Intellectual Property

Explorations conducted by scientists in space not only helped people understand the scientific and geographical territory of space but also helped in understanding the other sectors too, like aerospace and various other space technologies which are useful for humanity; therefore, it should be encouraged for a higher perspective. Space technologies perform the process of space exploration by collecting information from space debris, which is the process by which space exploration is conducted physically by sending spacecraft. Many reasons for space explorations are significant for the whole of the earth. So, such benefits are a boon for humanity. IP Law relates to protection for the creation of the human intellect. The role of IP in space is necessary so that the state is willing and equipped to protect creations inside their conventional geographical borders. Whenever their technology is used for economic purposes in space, the creators have the option of suing. Until now, one of the main struggles with IP law's protection of space innovations lies in the reality that they were formed during the Soviet Union. In contrast, space had been an issue of contention for states instead of private entities within that nation. So far, intellectual property laws aim to safeguard inventors' rights. An inherent conflict arises between the principles of space Law and Intellectual Property Laws. Irrespective of this fact, space technology is advancing more in today's technological arena. The activities carried out in outer space are, in fact, the fruitful results of the human intellect, which possesses a wider range over R&D. Overall, Intellectual Property gains incentive for facilitating innovation either by itself or by third parties.

2. Commercialization of Space Activities

The term "commercialization" is widely used to cover the private venture related to space activities with new private enterprises comprising four types.

- Privatization: - Here, the private sector controls all the government-owned spacecraft.
- Marketing of privately owned technology: Private companies have the upper hand in marketing goods and services owned by the government.
- Private companies of government companies: - Government agencies have funded private spacecraft companies for better development.
- Private development of new products without government help: - In this area, private companies involved in space products develop their products according to their category.

- While private enterprise involvement in space technology is becoming more obvious presently, the ideals mentioned above of international collaboration and collaborative progress stay viable. "While also considering the role of the intellectual property again for investigations of outer space and the progression of science and technology, concerns have been voiced about if the safeguarding and regulation of intellectual property might very well disagreement with fundamental values established in the Outer Space Treaty,"[3] the underlying values of the Outer Space Treaty being, along with there's more to "investigation and utilization of outer space, which included the Lunar surface and all other celestial bodies." On only one hand, one might also argue that taking away commercial firms' return on investment or violating existing Intellectual Property rights under compulsory licensing could have a detrimental influence on the advancement of space-related technology. On the other hand, remotely sensed data and geodesy technologies, as well as internet connections, have become practically indispensable to the socio-economic advancement of developing countries. Some academics claim that patent regulations have kept out of the grasp of developing countries not solely the outer space technology and resources that might also assist geographical advancement but additionally the technology that may provide states the accessibility to outer space.

3. Background

- *Outer Space Activities are providing fruitful results for human intellect*

Using technological advances to investigate and explore the universe requires much time and money to invest in research and development (R&D).[4] Every domain is teeming with numerous intellectual achievements that will benefit humanity. To accelerate economic growth, non-governmental commercial enterprises are taking a proactive approach to this topic, a divergence from state-owned entities. Such entities' interests encompass but are not limited to, space-based remote sensing, direct broadcasting, and research and production in microgravity conditions. Given the significant expenditure needed for such operations and the substantial privatization of such organizations, the organizations are always concerned about their material and intangible property. Over here, mergers carried out between commercial and state-owned companies are witnesses because developing such technologies requires significant expenditure. Their contract clearly states technologies present will retrieve without misappropriation or wrongdoing in the future. Such safeguard motivates corporations to invest more in the evolution of space technology. With globalization's emergence and

[3] Outer Space Treaty, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html (lastvisited Mar 22, 2023).
[4] Intellectual Property and Space Activities.pdf, https://www.wipo.int/export/sites/www/patent-law/en/developments/pdf/ip_space.pdf (last visited Mar 22, 2023).

communications technology improvements, existing companies want to collaborate in the outer space domain by sharing their knowledge and technology. When a disagreement emerges over protecting their property under this circumstance, no worldwide rules and institutions can address such conflicts. Also, the contractual duties are placed on the parties, not third-party players. As a result, a worldwide regulatory framework is necessary to handle global issues with ownership and rights of use, dissemination, privacy, and so on. Another argument for the necessity for IPR in outer space would be to encourage innovators, researchers, and scientists to create long-term commercial potential in space technological progress. If their intellectual property protects under adequate IP regulations, it will motivate more individuals to work in the field. For example, protection research provides a blueprint for a sustainably liveable habitat on Mars.

Summarizing all of these points, the following are the reasons that highlight the importance of having an International IPR system to deal with outer-space issues:

- The enormous time and financial investment in R&D in sophisticated space technology without intellectual property protection inhibit state and non-state organizations from engaging in such operations.
- Partnerships involving state and non-state enterprises in producing advanced space technology or undertaking studies in this area need the parties to exchange relevant information and technology. With regulatory frameworks, it is possible to guarantee proper protection for information and technology shared by a party or a third party.
- In this age of globalization, when information connects the entire world, numerous organizations collaborate internationally to develop outer-space technologies or undertake experiments. With a global regulatory system, participants' information and technology would be more secure, and legal provisions will be ineffectual in resolving conflicts worldwide.
- Suppose there is a thorough establishment of legislation. In that case, researchers, scientists, and entities have trust that the intellectual property generated will get protection, and they are motivated to spend more to advance the growth of this subject.

- *The current legal system of international space law and international intellectual property rights must be clarified about protecting intellectual property for outer space activities.*

  The TRIPS Agreement provides a comprehensive international intellectual property rights framework, including copyright, trademark, patent, and trade secret. It widened the application of international treaties by including trade secrets and extended copyright protection to computer

programs and data compilations. So far, the absence of any reference to intellectual property acquired in outer space within the TRIPS Agreement shows that there is no worldwiderequirement that it incorporate or exclude such rights from national intellectual property laws of broad jurisdiction. With no international legislation governing intellectual property rights obtained from space, each government can decide whether to recognize legal rights in such data. Possession of intangible property in an expression or embodiment of geographical data does not violate the space law principles of collaboration & fair and equitable access. Even if one party claims exclusive data rights, the same data remains available for collection by others. The fears about the functioning of underdeveloped countries are justified. Thus, if developing countries need more technical capabilities to obtain data, non-discriminatory access to space isquite vexing.

- *Inadequate intellectual property protection for space activities and its consequence on domestic space market expansion and implementation in India*

It has been argued, just at risk of redundancy, that given the territorial character of Intellectual property right legislation, a state's sovereignty competence is a sine qua non in guaranteeing and executing IP rights; as a result, we confront with difficulties regarding IP in respect to space activities. For intellectual property protection, a distinction is carried out between:

- Outer space operations can occur throughout outer space, including the Moon and other celestial bodies.
- Outer space activities can be executed in a vehicle or object.
- Outer space activities and activities of outer space are capable of being conducted together within the state's regional regulatory limit values.

Outer space activities under the remit of the extremely concerned government's domestic intellectual property law methodology or through the multilateral treaty framework, depending on the need for a conventional or centralized global legal framework, mostly as much for outer space operations occurring beyond a state's jurisdictional bounds.[5] Although no state has the competence under international Law to repeal laws that could harm the interests of another state or its populations, regardless of the boundaries of the real issues, a state may exert influence and authority outside its boundaries in individual situations. Further, the concept of ship quasi-territoriality asserts that now the ship's board is a judicial nexus of its understanding and is subject to the sovereignty of the flag.[6] Domestic intellectual property legislation could

[5] 12927-Multilateral-Space-Space-Station-1.29.1998.pdf, https://www.state.gov/wp-content/uploads/2019/02/12927-Multilateral-Space-Space-Station-1.29.1998.pdf (last visited Mar 22, 2023).
[6] Larry M Eig, Statutory Interpretation: General Principles and Recent Trends

apply to space objects registered in a state. Article 8 of the 1967[7] Outer Space Treaty[8] states that a Pact State Administration's main registration is a spacecraft launched into space that retains control and power over a certain thing and any personnel. The existence of items in outer space or within a celestial object does not affect outer space or solar bodies. On the other hand, quasi-territoriality generalizes beyond space objects and the state of registrations.[9]

4. Research Methodology

The Research is purely doctrinal, analytical and exploratory in nature. In this study, the researcher is trying to evaluate the various technologies that are linked with Spacecraft and linked with Patent Law. Over here, the researcher uses the doctrinal method of research where the authors collected all the information related to the first chapter from various articles, journals, e-books, and other secondary sources. Following the next, the researcher uses an analytical method to analyse the linkage of Space Law and Patent Law with spacecraft. Whether the Indian Patent Law is adequate in providing protection or not.

Lastly the researchers explore the comparative study of USA Patent Laws and Indian Patent Laws in space industries for safeguarding the inventions.

5. Objective of Study

The ultimate aim behind performing this research is to

- To get a vivid understanding of Patent Laws in Aerospace industries.
- To identify the lacunae of the legislation protecting the patentability of inventions in space industries.
- To comprehend the linkage between Space Laws and Indian Patent Laws under Intellectual Property protection in space industries.

Lastly the researcher constitutes the relation between US Patent and space Laws with Indian Patent and space Laws.

[7] Convention Establishing the World Intellectual Property Organization, https://www.wipo.int/treaties/en/convention/ (last visited Mar 22, 2023).
[8] Space Treaty on Principles Governing the Activities of States in the Exploration and use of Outer Including the Moon and Other Celestial Bodies, 1967
[9] Harry m. Markowitz, the law of intellectual property in outer space, 17 ptc j. res. & ed. 88 (1975).

2. Space Law And Patent Law Linkages

1. Overview of Space Law and Patent Linkages

Patents are international, meaning they must file in each country where they will be protected. Human spacecraft raises serious challenges to patent law.[10] The Commercial Space Launch Act simplifies the process by which international firms can acquire commercial spacecraft incentives. Government-developed spacecraft enacts to encourage individual businesses to engage in the economic space of space. Laws regulating the use of space have a greater influence on society today than ever before. The role of the Patents in the "Space Act of 2001" enhances businesses' confidence that US patent laws extend to activities in outer space. It raised the authority of the United States to cover all celestial bodies possessed by the US, including satellites, and encompassed private sector involvement in space. It facilitates the promotion of research into new space-related industries, including space research output and the usage of government-owned companies. In addition, the Act established a Space Industry Transportation Agency within the Department of Transportation to monitor all corporate space launches.

2. Inadequate Outer Space Patent Enforcement

The patentability criteria of outer spacecrafts can be difficult to show or demonstrate. Determining jurisdiction and who is entitled to patent protection can be problematic if a patent grant is in outer space.[11] Prudence suggests that regulations and agreements, such as the International Space Station Agreement Reached, be developed before embarking on these collaborations. Patent prosecution becomes extremely challenging because of the geographic nature of patents and the concept that outer space is the domain of all individuals. Therefore, resistive to state appropriation by the claim of sovereignty. The concept of the temporary present is significant for space activities since it allows countries to obtain and execute patent rights regarding protecting intellectual property within their country's legal system. Given the extremely limited number of missile sites, many governments or businesses need to transfer the spacecraft to and past the borders of other countries to have it launched into space.[12] Businesses engaged in space operations that may result in patentable innovations may form contractual agreements and decide where protection is sought, resulting in issues due to 'forum

[10] Elizabeth I. Winston, Patent Boundaries, SSRN JOURNAL (2014), http://www.ssrn.com/abstract=2411142(last visited Mar 22, 2023).
[11] Emily Michiko Morris, Res or Rules - Patents and the (Uncertain) Rules of the Game, 18.
[12] Timothy R Holbrook, Extraterritoriality in U.S. Patent Law.

shopping' or 'flags of concession' tactics. A comprehensive and international legal mechanism for further assurance of patentability in space innovation must be there for R&D.

3. Patent Rights of Outer Space – Comparative Analysis Between The U.S.A And India

1. Overview of Legal issues on Patent in Space technology

International lawyers have yet to define what outer space is and how to determine the jurisdiction in outer space.[13] Who will have jurisdiction over patent infringement claims considering patents in outer space? Who is responsible for patent infringement actions relating to patents in outer space? Municipal laws can still regulate space activities conducted within the territory. However, there is a need for a uniform law for outer space activities beyond the state's territorial boundaries. Under International Law, no state is allowed to enact laws that can affect the rights of another state. However, exceptions can be like the Law of the flag principle[14] in *"Article 5 of High seas convention, 1958".*[15] *Similar exceptions can be for domestic IP laws on space objects registered in the state. "Article 5ter of the Paris Convention, 1883"*[16] provides for the fortification of a business property which would limit the exclusive rights given by patent in the interests of the society for the freedom of transport called the Doctrine of Temporary presence. The language of the article does not protect the doctrine from spacing objects.[17]

Despite significant investments in spacecraft & research annually, we can all concur that the intellectual property value of space technology is enormous, and ownership belongs to the developer. It is challenging to determine the ownership & place of registration of patents jointly owned. In a first-to-file system, where too many applications claim the same thing, the patent's priority is determined by who filed the first application. The United States employs the first-to-invent system, which differs from the first-to-patent technique, in which the place of the invention is significant. Another important criterion for a patent is the non-obvious nature of the invention, which is difficult to determine in space. The invention of a spacecraft shields the public. It creates a restriction on the right of any individual or agency to know and inform about inventions in space.

---

[13] Anne Uruegi Agi, AN EXPOSITION OF THE CONCEPT OF INTELLECTUAL PROPERTY PROTECTION IN OUTER SPACE, 1 LAW AND SOCIAL JUSTICE REVIEW (2022), https://www.nigerianjournalsonline.com/index.php/LASJURE/article/view/2553 (last visited Mar 22, 2023).

[14] Ritesh Mehra, INTELLECTUAL PROPERTY PROTECTION IN OUTER SPACE – AN OVERVIEW (2019).

[15] Arnold Pronto, Convention on the High Seas.

[16] Margaret Dowie-Whybrow, Paris Convention for the Protection of Industrial Property, in CORE STATUTESON INTELLECTUAL PROPERTY 516 (2013), http://link.springer.com/10.1007/978-1-137-35471-6_5 (last visited Mar 22, 2023).

[17] Id.

2. A sneak peek into the historical development of US policy on Space activities

Experiments in outer space are undertaken only with the Sputnik spacecraft being launched. During the cold war against the United States, the Soviet Union successfully launched Sputnik, the first satellite into space. This launch was not for peaceful purposes but a cutthroat military and foreign policy competition between the superpowers. The US responded with the "National Aeronautics and Space Act, 1958,"[18] federal legislation to deal with space operations. Furthermore, it constituted NASA, a governmental organization that funds and supervises the United States'[19] outer space research & expeditions. For example, the United States led the General Assembly UN to establish a permanent commission on the peaceful uses of outer space in 1958. Previously to international legislation of the space treaty, the United States decided to establish a national policy on space activities dedicated to peaceful purposes only to benefit humanity. Furthermore, Congress declared that the government must encourage the highest economic use of spacecraft for the social purpose of the United States. The United States initially proposed to conduct space research solely through the government service via NASA. In 1984, Congress passed "the Commercial Space Launch Act,"[20] authorizing the commercial sector to launch spacecraft. By 2010, the US administration had expanded commercialization to space products,[21] activities, and activities by private firms,' making every launch a binding agreement. Annually, the launch services company flourished. Since technological companies want to secure their future investments, inventors opt for a patent. The holder of a US patent[22] can get legal protection within the US, and a patent has to be filed in every other country separately to enjoy protection. Therefore, this jurisdictional barrier is one of the many problems for protecting inventions in the space industry.

3. United States Patent law in the Space industry

In the USA, the patent is granted for 20 years from the date of the application. For a patent, an invention must be new, non-obvious, useful, and not an invention that is known to the public. Patent law is territorial; therefore, US patent law limits the country's borders. However, innovative technologies are appearing on the international market, posing the issue of whether IP Law can be

[18] Liz Malmen, EXPLOITATION OF SPACE AND PATENT LAW: HOW THE CURRENT LEGAL SYSTEM INEFFECTIVELY PROTECTS PRIVATE COMPANIES IN THE COMMERCIAL SPACE INDUSTRY (2021).
[19] Id.
[20] 51 U.S. Code § 50901 - Findings and purposes, LII / LEGAL INFORMATION INSTITUTE, https://www.law.cornell.edu/uscode/text/51/50901 (last visited Mar 22, 2023).
[21] Anthony Farnesi, "The Intellectual Space Race: Applying Terrestrial Patent laws to Private Outer Space Activity" (2019) 28 S. CAL. INTERDISC.L.J. 713 at 716.
[22] Dowie-Whybrow, *Supra* note 17.

applied beyond borders. An applicant to get a patent in multiple jurisdictions can apply for the Patent Cooperation treaty. Even though WIPO has made several attempts to unify international patent laws, enforcing international patents is a financial burden.

In 1990, Congress enacted the patents in Space Act,[23] which extends the US patent law to all registered spacecraft. The Act states, *"Any invention made, used or sold in outer space on a space object or a component within the jurisdiction or control of US will consider being done within the US and for US patent laws subject to a few exceptions."*[24] The Space Act established precise, obvious, and understandable standards for deciding how the US patent law will apply to space. The Space Act supports private investment and commercial entities in space. There are a few exceptions under "§ 105 of the Space Act", which says that the jurisdiction will not be applied to space objects specifically identified by an international treaty or agreement to which the US is a party. The treaty on Intellectual property laws in outer space is called the ISS agreement. Article 21 of the ISS agreement can effectively regulate IP rights by deeming fiction that has extended the use of the doctrine of quasi-territoriality. Following the treaty, the countries of registration of the space station modules where the action takes place have patent jurisdiction.

The technical method for getting raw data from outer space using a remote sensing satellite has been granted a patent. Every remote-sensing satellite will employ a unique technology worthy of a patent. The primary issue is when can we consider an invention infringed or used? The major deciding point is the ownership and the fact that it occurs beyond territorial borders. Who would be made accountable, and to what extent? In the US, courts have primarily focused on the Act of use or use for extra-territorial reach. "It was decided in *Decca Limited v. United States*[25] the determining factors on whether the use of the patented system[26] would occur in the US depends on whether control of a system would occur on US territory and whether a US entity owns the system, and whether there is beneficial use within the US." Later, in "*NTP Inc v. Research in Motion Ltd*,[27] the court observed that using the procedure under the Law of the patent would be where the system as a whole has put to service." Under the extra-territorial issue, it clarifies that as long as space-based technology is concerned about the product on

[23] Malmen, *Supra* note 21.
[24] 35 U.S.C. § 105 (a).
[25] Decca, Ltd. v. United States | LexisNexis Case Opinion, https://www.lexisnexis.com/community/case-Opinion/b/case/posts/decca-ltd-v-united-states (last visited Mar 22, 2023).
[26] Id.
[27] NTP, Inc. v. Research In Motion, Ltd. | Case Brief for Law School | LexisNexis, https://www.lexisnexis.com/community/casebrief/p/casebrief-ntp-inc-v-research-in-motion-ltd (last visited Mar22, 2023).

which the customer would exercise control and obtain the beneficial use of that product in the US to establish patent infringement cases in the USA.

However, "35 U.S.C. §105" has questioned the extra-territoriality principle. At present, only the control from the US territory decides a factor leaving the ownership and beneficial use factors. In such a scenario where the space object is not registered in the Registration convention and not controlled from the US can still be considered the space object is under "US jurisdiction as per § 105." Therefore, it concludes that private companies can apply extra-territorial reach under § 105. Applying the national patent law to registered space objects can limit the protection ability of space technologies. A country can own an infringing space object and yet avoid liability through registration in other countries. The outer space treaty has also created the flag of a convenience problem. Another exception of § 105 is that of the space object or the component carried on the foreign state registry by the registration convention. The registration agreement specifies the state of the registry as the launch state on whose registry a space object has been carried. According to the concept, a US court can still have authority across infringement space object that a US company controls if the launching occurs on the boundaries of another country.

From the public policy perspective, the ineffective patent system would harm the R &D of the space industry. It will reduce the incentive to innovate and develop more technologies. If Patent infringement avoids, many companies can avoid infringement claims and get a competitive advantage. It could culminate through registering celestial objects under utility flags, endangering personal protection, and inflicting damage to the ecosystem.

4. Indian Space Industry and Patents

Under the Atomic Energy Department (DEA), India launched its space industry in the 1950s. In 1963, India launched its first rocket. India built the Thumba satellite investigation & innovation center in 1965, and ISRO was constituted in 1969. In 1972, the Department of Space was founded. ISRO was established as a government body in 1975, and India launched its firstsatellites, Bhaskara-1 and 2, in 1975. The Indian Remotely Sensed Space Network was established in 1988, and The *Antrix Corp limited* is a business approach of the department engaged in space product marketing.[28] India is a signatory to four UN space conventions. India, too has committed to the norms which regulate operations and utilization of space. Those laws start regulating the use of artificial satellites, remote sensing of the earth from outer space,

[28] Raju - ISSUES IN PROTECTION OF INTELLECTUAL PROPERTY CREA.pdf, http://www.commonlii.org/in/journals/NLUDLRS/2012/37.pdf (last visited Mar 22, 2023).

how to utilize nuclear weapons in outer space, international collaboration in research, and using outer space for such advantage of states. Even though India has been part of the space industry for almost 75 years, we do not have a space law to fix liability and regulate the rapid growth of space and research. Unlike the US, where we have seen legislation to govern space operations since 1958 and judgements on this aspect, India has yet to establish a precedent or Law to deal with activities in outer space.[29] The modern Patent legislation in India was passed in 1970 under Justice Rajagopala Ayyangar Committee to support the commitments in Uruguay round and the TRIPS agreement. The Indian Patent Act complied with Article 27(1) of the TRIPS[30] agreement and adopted the same factors to decide the patentability of inventions. "Section 2(1)(j) of the Patents Act 1970[31] defines an 'invention' and lays down the factors of patentability: new invention, inventive step, capable of industrial application."[32]"Section 2(1)(l) defines a 'new invention' as an invention not anticipated by publication in anydocument or anywhere in the world. The patentability of a newly discovered substance in outer space has been a constitutional issue." "Section 2(1)(ja) provides the inventive step as a feature with technical advances compared to existing knowledge. India's patent law cannot protect even the discoveries made in space,[33] even if it's known, since the Act does not mention patents in outer space inventions." Therefore, India requires an exclusive space regime to deal with space activities and protection of the inventions made by astronauts in the future.

Conclusion and Suggestions

Space activities have become a tool for socio-economic development, and an Intellectual property regime is crucial for better research in the space industry. The intellectual property utilizes international principles and the TRIPS agreement, where the exploration of outer space is done for the benefit of all humanity. Since the sovereignty of a state is crucial for protecting intellectual property, subsequently, the doctrine of quasi-territoriality needs enforcement. Therefore, the ISS agreement is a good initiative for cooperative space activities and intellectual property. Patent law cannot provide IP protection on subject matters of outer space. The patentability criteria have posed hurdles in patent protection on space technologies. Even

[29] Decoding the Legal Regime Governing Sub-Orbital Flights, INTERNATIONAL JOURNAL OF LEGAL SCIENCE AND INNOVATION, https://www.ijlsi.com/paper/decoding-the-legal-regime-governing-sub-orbital-flights/ (last visited Mar 22, 2023).
[30] Aboli Nimbalkar, TRIPS Agreement: India's Position over the years, 2 8 (2022).
[31] Patents Act, 1970, §2, No. 39, Acts of Parliament, 1970 (India).
[32] Sajal Sharma & Shashank Pathak, "Patenting of outer space inventions: In the crossroads of territorial and outer space law" 1 DNLU L. Rev 176 at 178.
[33] KD Raju, ISSUES IN PROTECTION OF INTELLECTUAL PROPERTY CREATED IN OUTER SPACE: AN INDIAN OUTLOOK.

the quasi-territoriality doctrine has ambiguities in its application. It suggests states adopt an International Patent regime for space activities and principles, considering innovation, exploitation, utilization, private and state interests, and socio-economic development. A coherent system to regulate IPR administration for outer space is needed and must consider space technology's moral and ethical use. Some good principles that can adopt are the doctrine of quasi-territoriality, dilution of the secrecy provisions and the eligibility criteria for patents in outer space inventions, and exception to the doctrine of temporary presence. It is necessary to provide incentives for future investments in Space research, allow private enterprises to collaborate in space activities, and give provisions for the fair and equitable sharing of remote sensing data and space technology products amongst countries. The patent regimes at a domestic level may sound similar, but when we apply patent regimes in space, there need to be more uniform principles. The question of jurisdiction, the liability of states on patent infringement, responsibility of the launch state remains a grey area. The substantial Law must solve jurisdiction issues to avoid forum shopping. Over here, the fundamental concepts of Proper Law Theory could be applied to resolve the problem. The spacecraft's owner's launching state could be considered a legitimate jurisdiction in IP infringement claims. However, the choice of law doctrine in international Humanitarian law might compel states to submit to jurisdictions in which they do not wish to be. It recommends that uniform jurisdiction be formed by WTO, which can work with other organizations. Harmonization with domestic legislation is mandatory to exercise proprietary rights in outer space. India must develop space activity provisions under the present IPR regime, avoid overlapping jurisdiction, and cover all aspects of space activities. It must consider the importance of IP protection for future investments in space research.

****