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**The Contemporary Evolution and Variance in Air and Space Law: A Legal
Conspectus**

Rahil Setia and Ajay Pal Singh

INTRODUCTION

“Exploration is wired into our brains. If we can see the horizon, we want to know what's beyond.”

-Buzz Aldrin¹

Humans have been always fascinated and perturbed by the upper horizons of the skies. However, throughout much of humanity's history, it neither possessed the knowledge nor the resources to reach and control these 'realms.' Thus, the question of existence and development of specific laws governing Air and Space did not arise. Presently, the scientific developments in the last one hundred years have led to the dawn of the age of Air and Space exploration. Inevitably, a conflict has erupted over the usage of these “Resources”, which has required new regulatory mechanisms and legislations. This has resulted in development of complementary branches of Air and Space Law. Thus, these disciplines of International Law are of recent origin² and involve a study of the legal frameworks dealing with the Civil, Commercial, Administrative and Criminal aspects of various activities in Air and Space.³ While the dynamic in the nature of the subject has at one level contributed to its continuous evolution, resulting in new developments such as Enactment of International Conventions, Technological Developments in Aviation Industry, Aviation Security and Product Liability, Freedoms of the Air, Open Sky Agreements, Territorial Sovereignty, Jurisdiction, Property Rights, Commercialization and Militarisation of the Outer Space⁴, at the same time this nature has contributed to variances of law in different jurisdictions. In this context, the essay attempts at presenting a general summation of various international and domestic developments which have contributed towards the evolution of Air and Space Law.

1. CORPUS JURIS CAELI ⁵

¹ Notable Quotes, 'Buzz Aldrin Quotes' (*Notable Quotes*) <www.notable-quotes.com/a/aldrin_buzz.html> accessed 12 October 2019

² Peace Palace Library, 'Air and Space Law' (*Peace Palace Library*) <www.peacepalacelibrary.nl/100years/airandspacelaw/> accessed 12 October 2019

³ Kluwer Law Online, 'Air & Space Law' (*Kluwer Law Online*) <www.kluwerlawonline.com/toc.php?pubcode=AIIA> accessed 12 October 2019

⁴ Prof. (Dr.) Ranbir Singh and others, 'Preface' [2012] NLU DLJ Current Developments in Air and Space Law iii

⁵ Latin for “Body of Air Law”

The subject of Air Law is mainly concerned with Civil Aviation.⁶ It primarily exists in the form of multiple international conventions and agreements supplemented by customary rules of International Law, leaving the subject in a fragmented state.⁷ Accordingly, research into the developments in Air Law involves understanding the aforementioned Conventions. For instance, the Convention Relating to Regulation of Aerial Navigation 1919 or the Paris Convention was the first international instrument that dealt with sovereignty over Airspace.⁸ Further, The Convention for Unification of Certain Rules Relating to International Carriage by Air, commonly known as the Warsaw Convention was originally signed in 1929. It regulates liability for international carriage of persons, luggage, or goods performed by aircraft for reward.⁹ The Chicago Convention on International Civil Aviation 1944 has played a highly significant role in the development of Air Law. Article 1 of the Convention confirmed the principle of “complete and exclusive sovereignty” of every State over “the Airspace above its territory” which was laid down earlier in the Paris Convention of 1919.¹⁰ The Chicago conference led to two other agreements, namely the International Air Transport Agreement and the International Air Services Transit Agreement.¹¹ The Convention also led to the establishment of the International Civil Aviation Organisation (hereafter referred to as ICAO) as a Specialized Agency of the United Nations.¹² In its Decision in *India v. Pakistan*¹³, the International Court of Justice held that the ICAO Council was competent to deal with the cases of Breach of the 1944 Convention.¹⁴ In 1970, the Hague Hijacking Convention (formally the Convention for the Suppression of Unlawful Seizure of Aircraft) was formulated to prohibit and punish aircraft hijacking of civilian aircrafts. The convention incorporates the principle of *aut dedere aut judicare*¹⁵ which means that a State Party must prosecute an Aircraft Hijacker if no other State requests extradition of the Hijacker for the prosecution of the same crime.¹⁶ Finally, in 1999, the

⁶ Dr. HO. Aggarwal, *State Territory International Law and Human Rights* (21st edn, Central Law Publications 2017) 124

⁷ *ibid*

⁸ Convention Relating to the Regulation of Aerial Navigation, 1 J. Air L. & Com. 94 (1930)

<<https://scholar.smu.edu/cgi/viewcontent.cgi?article=3588&context=jalc>> accessed 15 October 2019

⁹ Law Teacher, ‘Warsaw Convention Summary’ (*Law Teacher*) <www.lawteacher.net/free-law-essays/commercial-law/the-warsaw-convention-summary-commercial-law-essay.php> accessed 14 October 2019

¹⁰ Aggarwal (n 6) 125

¹¹ Aggarwal (n 6) 126

¹² Karen Mingst, ‘International Civil Aviation Organisation’ (*Encyclopedia Britannica*)

<www.britannica.com/topic/International-Civil-Aviation-Organization> accessed 14 October 2019

¹³ *India v Pakistan* [1972] ICGJ 148 (ICJ).

¹⁴ International Court of Justice, ‘Appeal Relating to the Jurisdiction of the ICAO Council’ (*International Court of Justice*)

<www.icj-cij.org/en/case/54> accessed 15 October 2019

¹⁵ Latin for "Either Extradite or Prosecute"

¹⁶ Wikipedia, ‘Hague Hijacking Convention’ (*Wikipedia*)

<https://en.wikipedia.org/wiki/Hague_Hijacking_Convention> accessed 16 October 2019

ICAO member States adopted The Montreal Convention (formally, the Convention for the Unification of Certain Rules for International Carriage by Air) which establishes the liability of an Airline in the case of death or injury to passengers, as well as in cases of delay, damage or loss of baggage and cargo.¹⁷ Presently the absence of an established comprehensive International Law and the nascent stage of Air Law has contributed to new developments in this field. A few of them have been discussed here.

Aviation Safety Improvements

Article 37 of the Chicago Convention 1944, directs the ICAO to develop international standards and recommended practices relating to matters such as Communication Systems, Airports, Air Traffic Control, Operating Personnel Licensing, Air Worthiness of Aircraft, Exchange of Meteorological Information, Investigation of Accidents, and Aircrafts in Distress. Further the ICAO amends these standards at required intervals. Presently the ICAO has laid down standards and practices to meet new challenges from emerging security risks such as Aircraft Hijacking, Sabotage and the use of Aircrafts as weapons of destruction.¹⁸ Further it has formulated provisions for the dealing with potential hazards at Airports, Carriage of Unauthorized weapons, Ensuring presence of Security equipment's, secure control of Luggage, Pre-flight checks and Safety of onboard passengers.¹⁹ Article 54 of the Convention directs that all instances of violations and failures to implement the Standards and Recommendations of the ICAO Council shall be reported to the States which are Parties to the Convention.²⁰ In addition to the ICAO, the International Air Transport Association which is the official trade organization for Global Airlines plays a key role in formulating industrial policy and international standards for Services and Business practices amongst member airlines.²¹

Freedoms of the Air and Open Sky Agreements

¹⁷ International Air Transport Association, 'The Montreal Convention 1999 (MC 99)' (*International Air Transport Association*) <www.iata.org/policy/smarter-regulation/Pages/mc99.aspx> accessed 16 October 2019

¹⁸ Shazia Siddiqui and Nishant Awana, 'Second International Conference on Current Developments in Air and Space Law Aviation Safety: International Standards and India' [2012] NLUJLJ Current Developments in Air and Space Law 80

¹⁹ International Civil Aviation Organisation, 'The Convention on International Civil Aviation' (*International Civil Aviation Organisation*) <www.icao.int/safety/airnavigation/nationalitymarks/annexes_booklet_en.pdf> accessed 16 October 2019

²⁰ Siddiqui and Awana (n 18)

²¹ International Air Transport Association, 'About us' (*International Air Transport Association*) <www.iata.org/about/pages/index.aspx> accessed 16 October 2019

Freedoms of the Air are a set of nine commercial aviation rights which mainly grant one State's Airlines the privilege to enter and land in another State's Airspace.²² The first five freedoms are officially enumerated by International Air Transport Agreement 1944²³ while the concept has been expanded by gradual addition of four other freedoms. Most of them are not officially recognised under broadly applicable international treaties, but many have been agreed to by a number of States through Bilateral Agreements. The first two freedoms concern the passage of Commercial aircraft through foreign Airspace and Airports, while the other freedoms are about the international carriage of Passengers, Mail and Cargo. The lower-numbered freedoms are relatively universal while the higher-numbered ones are contentious.²⁴ Due to a lack of universal acceptance of these Freedoms, States often enter into Open Sky agreements.²⁵ These are the agreements between States which allow any number of airlines to fly from either of their Airspaces without any restriction on number of seats, price and so on. They thus often represent the least restrictive form of Air Service agreements. However, in actual State practice, some restrictions are imposed in these agreements as well.²⁶

Aviation and Airport Security

While the Aviation Sector has seen both qualitative and quantitative growth, there has been a parallel rise in security concerns as well; causing the emergence of the field of Aviation and Airport Security. The primary objective of the same is to prevent Criminal activities such as Aircraft Hijacking, Sabotage, and Use of aircrafts as Weapons of Destruction and Presence of unauthorized weaponry at the Airports.²⁷ A number of international conventions have been formulated in this regard. For instance the Tokyo Convention 1963 recognises the inviolability of a hijacked aircraft and its passengers, irrespective of wherever the aircraft may be forced to land and The Hague Convention 1970 directs every signatory State to either extradite or prosecute a Hijacker in case that Person is found there. The Montreal Convention of 1971 provides for application of the principles of The

²² ICAO Uniting Aviation: A United Nations Specialized Agency, 'Freedoms of the Air' (*ICAO Uniting Aviation: A United Nations Specialized Agency*) <www.icao.int/Pages/freedomsAir.aspx> accessed 16 October 2019

²³ University of Oslo: The Faculty of Law, 'International Air Transport Agreement' (*University of Oslo: The Faculty of Law*) <www.jus.uio.no/english/services/library/treaties/07/7-01/international-air-transport-agreement.xml> accessed 16 October 2019

²⁴ Wikipedia, 'Freedoms of the Air' (*Wikipedia*) <https://en.wikipedia.org/wiki/Freedoms_of_the_air> accessed 16 October 2019

²⁵ Uniting Aviation, 'Creating Opportunities through Open Skies Agreements' (*Uniting Aviation*) <www.unitingaviation.com/strategic-objective/economic-development/creating-opportunities-through-open-skies-agreements/> accessed 16 October 2019

²⁶ GK Today, 'Open Sky Policy' (*GK Today*) <www.gktoday.in/gk/open-sky-policy/> accessed 16 October 2019

²⁷ Shreya Rastogi and Swarnali Chanda, 'Need of Reforming the Aviation Security and Airport Security Measures in India—A Comparative Analysis' [2012] NLUDELJ Current Developments in Air and Space Law 89

Hague Convention to all the crimes committed on board a Commercial Aircraft and directs the States to undertake measures to prevent crimes such as violence against Individuals aboard an Aircraft, Damage to or Destruction of an Aircraft, placing Devices or Substances on an Aircraft which could damage or destroy the it, and all other crimes. The ICAO lays down the relevant security standards and requires member states to establish their own Civil Aviation Security Programs. Based on these initiatives various legislations have been passed in different countries.²⁸ In the United States laws such as the Anti-Hijacking Act 1974, Air Transportation Security Act 1974, Aircraft Sabotage Act 1984²⁹ and the Aviation and Transportation Security Act 2001³⁰ have been enacted. In India such laws include the Anti-Hijacking Act 1982, Suppression of Unlawful Acts against Security of Civil Aviation Act 1982, Airports Authority of India Act 1994.³¹ Further in 2005, the Government of India brought about a new Anti-Hijack Policy.³² In conclusion, while there are sufficient laws present in India, but their improper implementation means that the Indian Civil Aviation is vulnerable to several security risks. At the same time the highest priority should be given to Airport Security, which will ensure that the array of complex security laws would be only needed in exceptional circumstances.³³

International Perspective on Anti-Hijacking Policies and India's 2005 Anti Hijack Policy

The term Aircraft Hijacking means an unlawful seizure of an aircraft. Such hijacking has been a long-standing threat to the security of the individuals involved in Aviation. The instances of this crime increased significantly in the 1960's and 1970's which made the need to have a specific convention to address this issue an important necessity.³⁴ In 1970, The Hague Hijacking Convention was formulated to prohibit and punish hijacking of Civilian Aircrafts.³⁵ In 1984 the Chicago Convention 1944 was sought to be amended further, by addition of a new Article 3bis. This new addition to the convention in 1998 emphasized that the State parties recognise that they must refrain

²⁸ Rastogi and Chanda (n 27) 91

²⁹ *ibid*

³⁰ Rastogi and Chanda (n 27) 92

³¹ Rastogi and Chanda (n 27) 96

³² PTI, 'Government Adopts Anti-Hijack Policy' *The Times of India* (India 14 August 2005)

<<https://timesofindia.indiatimes.com/india/Govt-adopts-anti-hijack-policy/articleshow/1200572.cms>> accessed 16 October 2019

³³ Rastogi and Chanda (n 27) 99

³⁴ Hardeep Singh, 'Constitutionality Of India's Anti Hijack Policy' [2012] NLUDLJ Current Developments in Air and Space Law 69

³⁵ Aggarwal (n 6) 697

from resorting to the use of weapons against a Civil Aircraft in flight and that, in case of interception, the lives of persons on board and the safety of aircraft must not be endangered.³⁶ In the past the principle of ‘Elementary Considerations of Humanity’ which was recognised as a General Principle of International Law by the International Court of Justice in case of *United Kingdom v. Albania (Corfu Chanel case)*³⁷ has been invoked to denounce the disproportionate use of force against intruding civil aircrafts. Thus, Article 3bis is ‘not a new rule of law’, but the recognition of the existence of a prior rule binding all parties which prohibits the use of weapons against civil aircrafts in flight. Thus, while India is not a State party to Article 3bis of the Chicago Convention and is not directly bound by its principle of non-usage of force³⁸ yet the State Practice in matters of dealing with the Intrusions in Civil Aircraft had already developed prior to the adoption of the said Article.³⁹ The country adopted a new Anti-Hijack Policy in 2005. The policy among other things states No foreign hijacked aircraft shall be allowed to land in the territory of India, but efforts shall be made to ensure that any hijacked Indian aircraft, shall be forced to land in the Country. Further once a hijacked aircraft has landed in India, all efforts shall be made to stop it from taking off again. In case of any suspicious activity by the aircraft, the Anti-Terrorism Squad Watch Supervisory Officer, shall inform the Joint Control and Analysis Centre manned by Indian Air Force officials. If the Aircraft does not respond to the communication with the ground controller then it shall be designated as a ‘Rogue’ aircraft, and in case it aligns itself to a strategic target like the *Rashtrapati Bhawan*, or the Parliament the Aircraft shall be designated as a ‘Threat’ and once declared so, a decision can be taken to shoot down the same. This Policy bears a strong effect of the developments post the 9/11 attacks.⁴⁰ Thus the anxiety of the state regarding combating such attacks in the future has led to this policy which is prima facie “strong” in nature.⁴¹ However, Some Legal experts have expressed concerns on the ground of the Policy being inconsistent with the provisions of both the Indian Constitution and the Chicago Convention.⁴²

Product Liability in Aviation

³⁶ Hardeep Singh (n 34) 72

³⁷ *United Kingdom of Great Britain and Northern Ireland v People's Republic of Albania* [1949] ICJ 199 (ICJ).

³⁸ *ibid*

³⁹ Dr. Jiefang Huang, *Aviation Safety through the Rule of Law: ICAO's Mechanisms and Practice* (Kluwer Law International 2009) 89

⁴⁰ Hardeep Singh (n 34) 70

⁴¹ Hardeep Singh (n 34) 71

⁴² Hardeep Singh (n 34) 73

It is difficult to precisely define the term Product Liability. A general understanding of the same revolves around the liability resulting from the damage caused by defective products.⁴³ Robert. D. Hursh defines Product Liability as ‘the liability of a manufacturer, processor or non-manufacturing seller for injury to the person or property of a buyer or third party caused by a product which has been sold’⁴⁴. An example of the application of such liability in aviation sector is the 1973 case of *Maynard v. Stinson Aircraft*⁴⁵ in which a passenger was awarded damages for injuries suffered by her after the Aircraft she was travelling in, caught fire.⁴⁶ The Warsaw Convention 1929 provides for rules relating to enforcement of liabilities arising from international carriage by air. Article 28 of the Convention states the Courts which have jurisdiction for enforcement of such liability. These include the Court where carrier is ordinarily resident, the court having jurisdiction at the principal place of business of the carrier or the place where the carrier maintains an establishment through which the contract has been made or the court having jurisdiction at the place of destination.⁴⁷ There has been a gradual evolution in the Practice of enforcing Product Liability. For instance, Courts in certain jurisdictions such as the United States have recognised the principle of Strict Liability in cases of Product Liability. But there is lack of unanimity, over this subject, as many experts argue that enforcement of Product Liability should be based on statutory standards and not on a case by case basis. There is no Specific International Convention which has been adopted by the International Community on this subject matter. For Instance, the 1973 Hague Convention on the Law Applicable to Maintenance Obligations doesn’t apply in the instances where there is a direct acquisition of products and services by the injured person.⁴⁸

Air Passenger Compensation

The Liability of an Air Carrier towards the victims of an air accident has become an important issue in litigation matters in relation to the Aviation Sector. At present the Montreal Convention of 1999 contains provisions which deal with the issue of passenger compensation in the event of an Accident during international carriage.⁴⁹ Article 17 of the Convention provides that it deals only

⁴³ Pratik Chandra and Sonakshi Verma, ‘Product Liability in Aviation’ [2012] NLUJLJ Current Developments in Air and Space Law 127

⁴⁴ R.D. Hursh and others, *American Law of Products Liability 3d* (Lawyers Co-operative Publishing Company 1987) 2-3

⁴⁵ *Maynard v Stinson Aircraft* [1940] US AvR 71 (CC Wayne County, MI).

⁴⁶ Chandra and Verma (n 43) 128

⁴⁷ Chandra and Verma (n 43) 129

⁴⁸ Chandra and Verma (n 43) 137

⁴⁹ Medhavi Singh, ‘The Legal Regime Governing Air Passenger Compensation in India: Evolution and Conditions of Applicability’ [2012] NLUJLJ Current Developments in Air and Space Law 170

with cases of death or bodily injury which are directly 'caused' by the accident. Thus, for the applicability of Article 17 there must be a direct relation between the death or injury, and the operation of the aircraft. At the same time several States have their own Municipal laws dealing with the issue.⁵⁰ In India, the Carriage by Air Act, 1972 governs the passenger compensation in the event of air accidents in the international carriage. Following India's accession to the Montreal Convention in 2009, the Law has been amended to provide for greater liability and increased compensation by the Air Carriers.⁵¹

International Conventions and Rules with Respect to Code Sharing Agreements

Code Sharing is a strategy in aviation sector that mainly involves one Airline (known as the Marketing or Contracting Carrier) advertising and selling the services of another Airline as its own. Consequentially transportation of passengers and cargo is undertaken by an airline (Operating Carrier) which is different from the one shown in Travel-related documents. While these agreements allow airlines to increase their Traffic, Profits and Service frequency, they have complicated the legal liabilities of Airlines.⁵² Thus, the Guadalajara Convention 1961 was enacted which contains rules to identify the proper Defendant in case of a claim for non-performance of contract arising from the use of a Code-Shared Flight. Further the Convention introduced a distinction between a Contractual and an Actual Carrier.⁵³

Civil Aviation and Environmental Protection

The future development of aviation infrastructure is critically linked with prevention and control of environmental pollution mainly because of the fact that aviation has a wide impact on Environment. Noise Pollution remains the most pressing issue for aviation, and it remains high on the agenda of public concern particularly for those residents who live in the vicinity of Airports.⁵⁴ There are certain concerns relating to air quality as studies reveal that the presence of Emissions of Nitrogen Oxide, Carbon Dioxide, Un-burnt hydrocarbons, Sulphur Dioxide and Fine Particulate Matter in areas

⁵⁰ Singh (n 49) 172

⁵¹ Singh (n 49) 176

⁵² Vikrant Pachnanda, 'Anti-Trust Issues with respect to Code-Sharing Agreements That Persist In The Aviation Industry: The Indian Context' [2012] NLU DLJ Current Developments in Air and Space Law 142

⁵³ *ibid*

⁵⁴ Dr. K. Malathi, 'Aviation Pollution–Impact on Environment' [2012] NLU DLJ Current Developments in Air and Space Law 59

around Airports.⁵⁵ Many reports show that Airports contribute towards water pollution by dumping toxic chemicals such as Glycol.⁵⁶ Thus, for a sustainable global environment, it is incumbent to devise environmentally sound international and domestic policies on Civil Aviation. For instance, the Airport Noise and Capacity Act 1990 required that certain classes of Aircrafts in the United States should be retrofitted to reduce noise levels.⁵⁷ In the Indian context, there is no specific legislation for the control of Aviation Pollution. Nonetheless, the general laws such as the Environment Protection Act 1986 are broad enough to provide limited scope for the control and abatement of this specific category of pollution.⁵⁸

2. CORPUS JURIS SPATIALIS⁵⁹

Modern Space law is chiefly concerned with the regulation of relations amongst States and International Organisations in the sphere of Outer Space, Celestial Bodies, and the Moon.⁶⁰ Similar to Air Law, the absence of a single convention has meant that the development of this branch of Law has taken place largely through multiple International Conventions and Instruments.⁶¹ Nonetheless certain principles of this branch of law, such as the utilization of Outer Space in bona fide manner for peaceful purposes and as a “Common Heritage of Mankind” have sufficiently crystallized, in order to form the bedrock of the Outer Space Regime.⁶² As stated earlier, Outer Space remains an international issue, and thus the United Nations, especially its Committee on the Peaceful Uses of Outer Space (COPUOS) has played a vital role in shaping the International Conventions regulating Outer Space.⁶³ These include the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the "Outer Space Treaty") which forms the basis of international Outer Space Law

⁵⁵ Malathi (n 54) 61

⁵⁶ Malathi (n 54) 63

⁵⁷ Malathi (n 54) 65

⁵⁸ Malathi (n 54) 66

⁵⁹ Latin for “ Body of Space Law”

⁶⁰ Aggarwal (n 6) 168

⁶¹ United Nations Office For Outer Space Affairs, ‘International Space Law; United Nations Instruments’ (*United Nations Office For Outer Space Affairs*) <www.unoosa.org/res/oosadoc/data/documents/2017/stspace/stspace61rev_2_0_html/V1605998-ENGLISH.pdf> accessed 17 October 2019

⁶² Carol R. Buxton, Property in Outer Space: The Common Heritage of Mankind Principle v the First in Time, First in Right, Rule of Property, 69 J. Air L. & Com. 689 (2004) <<https://scholar.smu.edu/cgi/viewcontent.cgi?referer=https://www.google.co.in/&httpsredir=1&article=1712&context=jalc>> accessed 17 October 2019

⁶³ United Nations Office For Outer Space Affairs, ‘Committee On The Peaceful Uses Of Outer Space’ (*United Nations Office For Outer Space Affairs*) <www.unoosa.org/oosa/en/ourwork/copuos/index.html> accessed 17 October 2019

by providing that Outer Space shall be free for the use and exploration by all the States.⁶⁴ Similarly the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement") requires that the signatory States shall provide all possible assistance to recover space objects and Astronauts which have entered the territory under their jurisdiction. The 1971 Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention") sets out the principle that States bear responsibility for the objects launched into Space from their territory.⁶⁵ Further, the 1975 Convention on Registration of Objects Launched into Outer Space (the "Registration Convention") requires States to register information about the Orbit, and the general function of every object put into Space.⁶⁶ Finally, the Agreement governing activities of the States on the Moon and Other Celestial Bodies (the "Moon Treaty 1979") states that the Moon and other celestial bodies are not subject to national appropriation and that the International Community exercises jurisdiction over them.⁶⁷ In conclusion, these five Conventions constitute the nucleus of the Space Law.⁶⁸ Accordingly, this paper attempts to study certain important developments in this field:

Territorial Sovereignty, Jurisdiction and Property Rights in Outer Space

The legal doctrine of territorial sovereignty is an integral aspect of traditional Statehood. It allows the States a right to exercise exclusive jurisdiction over all persons and objects in their territory without any interference by the other States.⁶⁹ However, the absence of the division of territory in Outer Space means, that the concept is not applicable in the traditional sense, resulting in relative clarity on the issue under the International Law. Presently, the two legal maxims namely *Res Nullius*⁷⁰

⁶⁴ United Nations Office For Outer Space Affairs, 'Resolution Adopted By The General Assembly: 2222 (XXI) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies' (*United Nations Office For Outer Space Affairs*)
<www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html> accessed 17 October 2019

⁶⁵ Aggarwal (n 6) 171

⁶⁶ United Nations Office For Outer Space Affairs, 'Convention on International Liability For Damage Caused By Space Objects' (*United Nations Office For Outer Space Affairs*)
<www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html> accessed on 17 October 2019

⁶⁷ United Nations Office For Outer Space Affairs, 'Agreement Governing The activities of the States on the Moon and Other Celestial Bodies' (*United Nations Office For Outer Space Affairs*)
<www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoon-agreement.html> accessed 17 October 2019

⁶⁸ Yun Zhao, 'Planetary Science' (*Oxford Research Encyclopedias*)
<<https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-42>> accessed 18 October 2019

⁶⁹ Dr. Hemlata Sharma and Pooja Singh, 'Territorial Sovereignty In The Outer Space: Spatial Issues' [2012] NLU DLJ Current Developments in Air and Space Law 272

⁷⁰ Latin for "Nobody's thing or Property that has no Owner"

and *Res Communis*⁷¹ are of great significance in determining the question of sovereignty in Outer Space.⁷² Further the Outer Space Treaty under Clauses (2) and (3) of Article I provides all States with the right to free access, exploration, and use of the Outer Space, and declares that it is not subject to national appropriation through occupation, use of force, and claims of sovereignty.⁷³ Still, the desire of certain States which are keen to utilize Outer Space's untapped resources has led to a dispute as to whether the domain is *terra nullius* (land owned by no one) or *terra communis* (land owned collectively by humanity).⁷⁴ Similarly, the question of exercising jurisdiction in Outer Space is one which is full of inherent complications. Two main factors are responsible for this.⁷⁵ The first being the fact, that the legal concept of jurisdiction has always been based on the pre-existence of the principles of Sovereign Equality, Territory and Non-Interference, which are non-applicable to Outer Space. The laws' dealing with these matters exists in form of different Conventions. Article VIII of the Outer Space Treaty, allows a State to retain jurisdiction over an object which is launched in Outer Space, but at the same time imposes certain limitations to prevent them from extending their jurisdiction in a manner which would "infringe the sovereignty and independence" of another State. Secondly, multiple laws such as the Outer Space Treaty continue to govern outer space conduct primarily between Sovereign States and don't take into account the potential human interactions, in an era where individuals may be private actors and thus, not necessarily the representatives of their respective States.⁷⁶ Consequentially, Outer Space today exists as an Extra-Jurisdictional International territory where no particular strait-jacket formula can be applied.⁷⁷ Thus, in absence of definitive laws, a simple territorial criminal legislation may create a situation where an act might be a crime on Earth, but not so in the Outer Space, as such a law would not meet the requirements for application in an Outer Space Jurisdiction.⁷⁸ The provisions of International and Space Law dealing with property rights in Outer Space and Celestial Bodies have been questioned over its supposed

⁷¹ Latin for "an Area beyond, and not subject to incorporation into state territory"

⁷² Louis de Gouyon Matignon, 'The Res Communis Concept in Space Law' (*Space Legal Issues*, 28 February 2019) <www.spacelegalissues.com/space-law-the-res-communis-concept-in-space-law/> accessed 18 October 2019

⁷³ Sharma and Singh (n 69) 277

⁷⁴ Christy Collis, 'Territories beyond Possession? Antarctica and Outer Space' (*Taylor & Francis Online*) <www.tandfonline.com/doi/abs/10.1080/2154896X.2017.1373912?scroll=top&needAccess=true&journalCode=rpol20> accessed 19 October 2019

⁷⁵ Jyotima Nagvanshi and Aishwarya Sharma, 'Jurisdiction In Outer Space: Challenges of Private Individuals In Space' [2012] NLUDIJ Current Developments in Air and Space Law 324

⁷⁶ *ibid*

⁷⁷ Prof. Sergio Marchisio, 'National Jurisdiction For Regulating Space Activities of Governmental And Non-Governmental Entities' (*United Nations Office For Outer Space Affairs*) <www.unoosa.org/pdf/pres/2010/SLW2010/02-02.pdf> accessed 20 October 2019

⁷⁸ Nagvanshi and Sharma (n 75) 328

impracticality.⁷⁹ As a general principle, these provisions regard Outer Space, as a “Province of all the Mankind”, which to be used equitably for humanity’s common enjoyment, and for research/exploration and not as something to be appropriated by a State or an Entity for its own control.⁸⁰ However the pressing need for the utilization of scarce resources in the future and the and the fact that once the developed States obtain them, they are unlikely to agree for an “equitable” distribution of these resources,⁸¹ has prompted many legal experts to call for establishment of a property rights regime in Outer Space by taking into consideration, the interests of all the States.⁸² They have further proposed to establish an International Organisation for the purpose of administrating any property beyond the Earth, as a representative of the entire humanity.⁸³

Commercialization and Militarisation of Space

Commercialization of Outer Space is a relatively recent phenomenon. It has brought about several benefits including provision of services such as Television, Telecommunication, Satellite Navigation, Satellite Imagery, Asteroid Mining, Satellite launches, Outer Space Exploration and Space Tourism.⁸⁴ While it is quite clear that there is an abundant scope for Commercialization of Space, but unfortunately the present International Law is incompatible to regulate an Outer Space which is private and commercial.⁸⁵ Further the conflict between the developed and developing States owing to differences in the matters of “National Interest” has limited the role of International Community in ensuring international cooperation in Outer Space Management.⁸⁶ A few States have enacted Municipal Laws for dealing with issue of Commercialization.⁸⁷ However, there is no specific

⁷⁹ Ketan Mukhija, ‘Property Rights In Outer Space: Perspectives And Insights’ [2012] NLUJLJ Current Developments in Air and Space Law 213

⁸⁰ Mukhija (n 79) 214

⁸¹ Mukhija (n 79) 217

⁸² Mukhija (n 79)

⁸³ Mukhija (n 79) 220

⁸⁴ Wikipedia, ‘Commercial Use of Space’ (*Wikipedia*) <https://en.wikipedia.org/wiki/Commercial_use_of_space> accessed 20 October 2019

⁸⁵ Ginger Christ, ‘The Commercialization of Space: Selling the Final Frontier’ (*Industry Week*, 31 October 2014) <www.industryweek.com/transportation/commercialization-space-selling-final-frontier> accessed 21 October 2019

⁸⁶ Prof. Arun Kumar Sharma and Dr. Sonia Jain, ‘Commercial Space Activities—Space for a Space Law’[2012] NLUJLJ Current Developments in Air and Space Law 432

⁸⁷ Jeff Foust, ‘Houses Passes Commercial Space Bill’ *Space News* (United States of America 16 November 2015) <<https://spacenews.com/house-passes-commercial-space-bill/>> accessed 21 October 2019

legislation dealing with Outer Space and related activities in India,⁸⁸ even though the Space Activities Bill 2017 is still pending. A Municipal law is essential for maintaining the country's international position as an emerging space power.⁸⁹ Meanwhile the process of Militarisation of Outer Space has continued parallel to the process of Commercialization, since the beginning of Cold War.⁹⁰ Consequentially, there has been deployment of weaponry and military technology such as Ballistic Missiles, Military Spacecraft, Imaging and Communications satellites etc. in Outer Space.⁹¹ At the same time, the International Community has made continuous efforts at the United Nations to ensure that Outer Space is maintained for peaceful purposes. The Outer Space Treaty contains express provisions for prevention of deployment and stationing of both Nuclear Weapons and Weapons of Mass Destruction (WMD's) in the Outer Space and on Celestial Bodies.⁹² However, since the Outer Space Treaty, doesn't absolutely prohibit the placement of all types of weapons⁹³ several unsuccessful international proposals have been made which would prevent placement of any and all categories of Weapons in Outer Space. But, in absence of such a Convention there is a serious risk of Militarisation of Outer Space.⁹⁴

Remote Sensing Satellites

The emergence of the Remote Sensing Satellites is one of the most significant developments in the field of space technology. Remote Sensing has been defined as "the collection of data which can be processed in imagery of surface features of the earth from a satellite."⁹⁵ These satellites have played a key role in providing people new technological facilities in the modern world.⁹⁶ However in the era of growing commercialization of Outer Space, there is a serious potential of the misuse of this

⁸⁸ Aswathi Pacha, 'The Hindu Explains: What is the Space Activities Bill, 2017?' *The Hindu* (India 23 November 2017) <www.thehindu.com/sci-tech/science/the-hindu-explains-what-is-the-space-activities-bill-2017/article20680984.ece> accessed 21 October 2019

⁸⁹ Department of Space, Government of India, 'Draft Space Activities Bill, 2017' (*PRS Legislative Research*) <www.prsindia.org/billtrack/draft-space-activities-bill-2017> accessed 21 October 2019

⁹⁰ Soumya Shekhar and Purushottam Anand, 'India and Militarisation of Outer Space' [2012] *NLU DLJ Current Developments in Air and Space Law* 399

⁹¹ Wikipedia, 'Militarisation of Space' (*Wikipedia*) <https://en.wikipedia.org/wiki/Militarisation_of_space> accessed 22 October 2019

⁹² Shekhar and Anand (n 90) 401

⁹³ Anup Shah, 'Militarization and Weaponization of Outer Space' (*Global Issues: Social, Political, Economic and Environmental Issues That Affect Us All*, 21 January 2007) <www.globalissues.org/article/69/militarization-and-weaponization-of-outer-space> accessed 22 October 2019

⁹⁴ United Nations Office For Disarmament Affairs, 'Outer Space' (*United Nations Office For Disarmament Affairs*) <www.un.org/disarmament/topics/outerspace/> accessed 23 October 2019

⁹⁵ The Land Remote Sensing Policy Act 1992, s 5602(5).

⁹⁶ Animesh Sinha, 'Remote Sensing Satellites: Legal Issues In Emerging Technology' [2012] *NLU DLJ Current Developments in Air and Space Law* 247

technology. For instance the future capabilities of such satellites might lead to real time surveillance capabilities in the hands of both the Government and Private corporations which would be detrimental to human freedom and privacy.⁹⁷ Thus, there is an urgent need to develop new mechanisms to regulate this technology, especially given the fact that the existing law on the matter is generic in nature and leaves a number of key questions unanswered. Presently Article IV of the Outer Space Treaty fixes responsibility for all acts of Governmental and Commercial remote sensing industry on the States. At the same time, the Registration Convention 1975 mainly provides for registration of Government satellites with the launching State, there is a doubt regarding the efficacy of this Convention in an era where Private and Commercial entities are likely to emerge as one of the main players in this industry.⁹⁸ Unfortunately, even the sole international instrument namely the 1986 United Nations General Assembly Resolution 41/65 which specifically deals with the Remote Sensing Satellites is non-binding in nature, and thus there is a need for formulation of a new universal convention.⁹⁹

Outer Space Debris

The vast dimensions of Outer Space make it very difficult to contemplate the problem of any form of pollution which is to likely affect this huge region; but Space Debris exactly poses this challenge.¹⁰⁰ According to the Scientific and Technical Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, the term Space Debris means “all man-made objects, including their fragments and parts, whether their owners can be identified or not, in Earth orbit or re-entering the dense layers of the atmosphere that are non-functional with no reasonable expectation of their being able to assume or resume their intended functions or any other functions for which they are or can be authorised”.¹⁰¹ While, Space Debris has the potential of seriously jeopardizing future human activities in Outer Space, it is unrealistic in this age of space exploration to absolutely prevent such pollution; but nonetheless there is an obligation upon the International Community to mitigate and control the same.¹⁰² At present, there is no specific International Law,

⁹⁷ Sinha (n 96) 248

⁹⁸ Sinha (n 96) 252

⁹⁹ Sinha (n 96) 253

¹⁰⁰ Amrendra Kumar Ajit, ‘Outer Space Debris: An International Obligation To Mitigate And Control’ [2012] NLUDLJ Current Developments in Air and Space Law 351

¹⁰¹ National Aeronautics and Space Administration-United Nations Committee on the Peaceful uses of Outer Space, ‘Technical Report on Space Debris’ (*National Aeronautics and Space Administration-United Nations Committee on the Peaceful uses of Outer Space*) <www.orbitaldebris.jsc.nasa.gov/library/un_report_on_space_debris99.pdf> accessed 23 October 2019

¹⁰² Ajit (n 100) 355

which deals with this issue. The Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines are voluntary in Nature.¹⁰³ It is impossible to regulate Outer Space Debris under the Registration Convention since it merely requires Registration of a Rocket or Space Equipment launched by a State or Corporation, and doesn't prescribe any quantitative restrictions regarding such launches.¹⁰⁴ Therefore, an effective solution for the management of Outer Space Debris requires the formulation of such a specific International Law which would contain provisions for the protection of affected Outer Space regions and lays down binding mitigation standards.¹⁰⁵

Outer Space Colonization and Outer Space Tourism

Scientific development and exhaustion of Earth's limited resources are the twin factors which will be responsible for Outer Space colonization, thereby resulting in human habitation in Outer Space colonies.¹⁰⁶ Although Article II of the Outer Space treaty states that Outer space, including the Moon and other celestial bodies, are not subject to national appropriation by claims of sovereignty, by means of use or occupation, yet claims for Extra Terrestrial Real Estate¹⁰⁷ have been made by reiterating that certain aspects of International Law such as Article VIII of the said treaty confer 'Limited Property Rights' on the private entities.¹⁰⁸ It is needless to say that these claims are merely speculative in nature, since humanity is years away from sustainable Outer Space colonization. On the other hand, it is expected that in the future, Outer Space tourism will become a booming industry. Presently while the Outer Space Treaty does contain limited provisions for the regulation of different uses of the Outer Space, still there will be a need to evolve new laws, for governing complex legal and scientific issues associated with Governmental and Commercial Outer Space tourism.¹⁰⁹

Conclusion

¹⁰³ United Space in Europe, 'Mitigating Space Debris Generation' (*United Space in Europe*) <www.esa.int/Safety_Security/Space_Debris/Mitigating_space_debris_generation> accessed 24 October 2019

¹⁰⁴ Ajit (n 100) 359

¹⁰⁵ Ajit (n 100) 360

¹⁰⁶ Dr. Shobalata Udupudi and Ms. Soma Battacharjya, 'Outer Space Colonisation: Outer Space Tourism' [2012] NLU DLJ Current Developments in Air and Space Law 243

¹⁰⁷ Louis de Gouyon Matignon, 'The Lawfulness of Extra-Terrestrial Real Estate' (*Space Legal Issues*, 25 June 2019) <www.spacelegalissues.com/the-lawfulness-of-extraterrestrial-real-estate/> accessed 24 October 2019

¹⁰⁸ Udupudi and Battacharjya (n 106) 244

¹⁰⁹ Udupudi and Battacharjya (n 106) 245

Although humanity's historical desire of reaching Air and Space: two realms beyond its traditional reach has been finally satisfied, the challenge of enforcing earthly laws and legislations, as well resolving conflicts has continued. Further, the international character of Air and Space Law has meant that International Law and organisations such as United Nations have been trailblazers in development of this field. However, due to the traditional inefficiency of such laws vis-à-vis Municipal Laws and the non-existence of a uniform convention on the subject has meant that its study has become difficult and fragmented. At the same time there have been several developments in Air and Space Law such as rise of Aviation Security Standards, Freedoms of the Air, Open Sky Agreements, Product Liability, issues relating to Jurisdiction and Ownership of Property in Outer Space, Outer Space Tourism, Space Debris, Militarisation and Commercialization of Outer Space and Remote Sensing Technology etc. which have brought about an evolution in the subject during the contemporary Time. The multiplicity of laws has led to variances at the international, regional and bilateral levels, and there is still a considerable "Grey Area" in these unexplored realms. In such a scenario the role of municipal law becomes highly important. The passage of comprehensive and precise laws will only aid the International Community further, in its quest of comprehending the developments in Air and Space Law, which will ensure human survival and human excellence.