JURISDICTION IN OUTER SPACE: CHALLENGES OF PRIVATE INDIVIDUALS IN SPACE

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Introduction

Man in his quest to explore the realms that exist in this universe has been hindered at various stages by factors, such as lack of knowledge, lack of technical skills, geo-political considerations, etc. Currently, space is one of the realms that are the least explored by mankind, while taking into consideration the giant leaps humans have made in all the other spheres. Since the technical skills and cost of engaging in exploration is exceptionally high, space exploration is limited to a select few nations. The very fact that exploration is done only by a select few countries and the concern that exploitation of resources available in space would be dominated by the select club of "space-faring" nations, led to formation of treaties stating that no nation may appropriate any portion of space or celestial bodies by claim of sovereignty through use, occupancy or by any other means. At the beginning of Space Age, space activities were predominantly public activities or governmental space programs mainly devoted to exploratory and experimental as well as military space operations, but they were not commercial. However, in the last decade until now, the character of space activities have fundamentally changed from public purposes to world commercial ones. The global policy for the free goods and service trade as well as fair competition have expanded and thus, create new patterns of relative investment (especially) in space activities. They range from government-government, government-private sector, to business enterprises themselves. This lies in the areas of exploration, usage and commercial exploitation of outer space.[1]

Space activities are, like all human beings' activities, subject to international and national laws and regulations. The space activities for profitable commercial ventures bring about the motives for international cooperation and competition which create new legal problems, emerging from other activities e.g. space communications, space industries, and launching of the services, etc. Nevertheless, for space activities themselves, a number of regulations can be mentioned which are applicable to space activities but depending on the nature of such activity. For instance, satellite telecommunications activities are subject to public international law, international space law, international telecommunications law, as well as their own national law.[2]

At the beginning of Space Age in 1957, discussions began in the State community, within the UN, precisely on the legal status of this new issue. Several legal concepts of traditional public international law could be applied to

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a newly 'discovered' area. At final, the approach, which was chosen by the State community, was quite different from but comparable with the regime established for the high sea, where no State sovereignty is accepted. An outer Space was declared as a *res communis* which is not subject to the sovereignty of any State, and where States are bound to refrain themselves from any acts that can adversely affect the use of an outer space by the other states. The Outer Space Treaty was a landmark in an establishment and a progressive development on the rules of international space law. The principles of international space law constitute the most general rules of behaviour for states in their space activities.[3]

The 1967 Outer Space Treaty specifically states that appropriation of property is not permitted by sovereign nations and the Moon Treaty declares moon and celestial bodies to be the common heritage of all mankind. It is a common notion that the concept of private property is non-existent in view of the existing treaties.There is a growing opinion that recognition of property rights is essential in space activities. It is advocated that for the maximum utilization of the resources in space, which may include both commercial and non-commercial activities, private participation is essential.[4]

Assuming that an alternative clean fuel is discovered on the moon, which can replace the current fuel, mining of such fuel, can be done by a private enterprise, subject to the broad objectives of the moon treaty. In other words, the State may delegate certain functions to private bodies, relating to exploration and use of space.

"The Earth is the cradle of mankind, but one cannot stay in the cradle forever."

—Konstantin Tsiolkovsky

CORPUS JURIS SPATIALIS: AN EVOLVING

Jurisprudence

The existing Corpus Juris Spatialis is indistinct, consisting mainly of treaties enacted under the auspices of the U.N. It gives an obfuscated view characterised by pedantry, as regards the issue of establishing a concrete regime of property rights on moon and other celestial bodies or parts thereof. The power struggle between the United States and the former Soviet Union, the two nations involved in the race to space, along with the paranoia and suspicion resulting from the Cold War, fuelled the avoidance of a "race to own" any part of space. The former Soviet Union emerged as the pioneering leader when it launched the first satellite (Sputnik) into orbit in 1957 and landed the Luna IX on the moon in 1966, sending waves of alarm through the United States, which feared that the Soviets would stake a property claim in the moon. This prompted the United States to initiate treaties limiting activities in outer space to peaceful purposes and preventing any state from exercising ownership. Other nations feared that the two rising superpowers would dominate space and claim it for themselves. The space race

cooled greatly throughout the 1970s and 1980s. The two superpowers shifted their focus from exploring the Moon to developing and employing space stations. Today, the international community is witnessing an immense interest in space exploration. Many new developments have shaped the focus of space law in the 21st century.[5]

The Past: What went before?

Currently there are several treaties in effect that were created to address space exploration. Most of these treaties were drafted during the Cold War, when outer space was seen as the next battlefield and the moon as a potential military outpost. These fears were fuelled by the "space race" between the United States and the Soviet Union, which gained predominance after the later launched 'Sputnik', with each country trying to best the other. In 1959, the United Nations General Assembly established the standing Committee on the Peaceful Uses of Outer Space (COPUOS) to respond to this need. Thus the first seeds of materialization of these efforts came in 1967, when the United Nations drafted the first comprehensive instrument in this regard which came to be commonly known as the Outer Space Treaty, which has 98 States parties, and is said to be the *magna carta of Corpus Juris Spatialis*. The provisions were inspired by the principle of freedom of seas and the Antarctic treaty. It was enacted with the objective that "the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." It was followed up by the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement") and had 88 States parties, which stipulates that astronauts are to be regarded as envoys of mankind in outer space, and are to be rendered all possible assistance. This agreement has more elaborate assistance provisions than the outer space treaty.[6] The 1972 Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention") had 82 States, which basically supplements the liability rules stipulated by the outer space treaty, in this convention the principles of the Outer Space treaty are elaborated in order to meet a variety of possible situations, including launchings by international organizations. The 1975 Convention on Registration of Objects Launched into Outer Space (the "Registration Convention") had 44 States parties and has 22 articles providing in considerable and important detail for the machinery of registration; however the articles fail to make clear a time by which the registration has to be made, seemingly a major pitfall.[7]

Finally in 1979, the United Nations adopted the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the "Moon Agreement"), which had 10 States parties and governs the activities of states on the Moon and other Celestial bodies. The substantive provisions of the treaty have two principal objects; to prevent certain military uses of the moon and other celestial bodies, and to establish a juridical regime for the exploration and exploitation of celestial bodies and of their

resources. The Outer Space Treaty and the Moon Treaty[8] is considered by many as the primary body of international law relating to the utilization of space resources.

The problem of Judicial Jurisdiction in Space

In the midst of the space race that began in the 1950s, jurists began defining what legal rules would apply in outer space. The United Nations formed the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) which drafted the so called Outer Space Treaty (OST). This treaty (and the four other general treaties on space that followed) set out rules that governed the interactions between States in outer space. These treaties as a whole, though, tend to ignore the gamut of possible interactions between individuals in space. Because there are "no detailed rules... in the treaty on Outer Space governing the exercise of State Jurisdiction in outer space," there are nebulous jurisdictional areas in space. The state parties did agree that space would be the "province of all mankind," creating an extra-jurisdictional international territory. At the time this did not present a real problem because "the great cost of space exploration meant that it was a matter for government appropriations." In recent decades the climate of space exploration has changed dramatically. The private sector has become more instrumental in the exploration and exploitation of space. This means that there will soon be new types of relationships occurring between individuals in space who are not necessarily representatives of a state entity and that the treaty regimes have not anticipated.[9]

Since the "notion of jurisdiction finds its origins in the concept of territory, the principle of sovereign equality, and non-interference with the domestic affairs of states," nations will have to use new and innovative legal regimes in order to exert legal controls over people in space.[10]

The space visa will seek to treat spaceports as border regions, much as airports are treated today. Through the auspices of the space visa, a state will grant permission to leave the territory and enter space. In exchange for the permission, the space traveller will subjugate himself to the personal jurisdiction and laws of that state. The result will be a regime in which every individual in space will be subject to at least one state's jurisdiction at all times, and that states will be better equipped to fulfil their duty to supervise non-governmental entities in space.[11]

Legislative Jurisdiction

Another related problem is that of legislative jurisdiction. States may not, due to the constraints of the OST, extend their jurisdiction over outer space. This includes legislative jurisdiction, which "refers to the supremacy of the constitutionally recognized organs of the state to make binding laws within its territory." This does not inhibit states from extending legislative jurisdiction over its nationals abroad. For instance, a state could make it illegal to for its citizens to chew gum in space. The state cannot, however, abuse the right to legislate, especially in such a way that would "infringe the sovereignty and independence" of another state. Complications arise when a state attempts to extend legislation

over foreigners. It is not entirely clear whether a state, using passive personality, has violated the OST if it passes a law that makes it a crime for anyone to assault one of its citizens in space. Crimes are usually legislated on a territorial basis, thus a law such as this could be seen as an extension of a states jurisdiction into space. This legislative problem obviously creates a loop hole in which some acts could be crimes on Earth, and not in space (if a state has not properly extended its criminal statutes). This creates a good argument for an international space code; but, like an international enforcement body, will be long in the making and is unlikely in the near future.[12]

New ways for humans to interact in space

1. Space Tourism-Emerging challenges to air and space law

Early market forecasts of the space tourism industry place its worth at more than USD $1 billion by 2021. Many companies, alert to the vast economic potential of space tourism, have made ambitious plans for commercial orbital and sub-orbital flights, the earliest of which are scheduled for launch in 2009. This is in addition to the already well-known flights of certain individuals aboard the International Space Station (ISS). These breathtaking events in space economics throw the gauntlet at the feet of international space law. Emerging challenges include the issues of the applicability of air law and space law, registration and jurisdiction, authorisation, and liability.[13]

One of the newest developments in relation to outer space is the idea of space tourism. On April 30, 2001 Dennis Tito became the first space tourist when he visited the International Space Station (ISS) as a guest of the Russian Government. Space tourism of the future will most likely be more closely modelled on the terrestrial tourist industry in which private companies provide the service of facilitating space travel. This model is exhibited in ventures such as Virgin Galactic, which is scheduled for its first flight into space with space tourists on board in 2008. It could also serve to create the biggest challenges for the legal regime in space since the initial rush of treaties that followed the moon landing. Those treaties, which created a legal regime amongst state actors in space, could prove vastly insufficient when addressing the new ways in which private citizens could be interacting with each other in frontiers of space. Tourists could be an especially volatile development, since they are not military-esque state actors that have generally been sent to space as the "envoys of mankind," nor would they even feel constrained by the rules and regulations of a private company with operations in space as an employee of that company might. Their interactions would most closely resemble interactions of the average citizen on earth where crime and other conflicts regularly occur.[14]

2. Renewed interest in Moon exploration

The renewed interest in exploration and possible commercial exploitation of the moon and its resources is another development that enhances the need for

clarification of jurisdictional rules. The United States, Great Britain, China, and Japan. Have all expressed renewed interest in lunar exploration. Exploration of the moon as an economic resource could be big business for those involved. These nations' interest is rooted in "industrial competitiveness that could lead to securing rights to acquire resources in outer space in the future." For example, China's space policy is based around its desire to "develop its economy and continuously push forward its modernization drive." Attenborough's principle on space tourism can be applied to the interest in exploiting the resources on the moon: if it is commercially feasible, the private sector will get involved.[15] This investment could lead to large numbers of private individuals interacting on the moon. These private individuals are cause for concern. The companies they will work for are currently well regulated under national laws, however the discrete individual is left to guess at what law applies and where.

Common Heritage of mankind

There is a widespread debate as to whether the "common heritage concept" is indeed part of customary international law, with strong views expressed on both sides. However it is felt that, the common heritage concept is not in tune with the development in today's world. In the age of private and commercial wealth, asserting ownership in outer space seems no longer unimaginable. According to the common heritage of mankind principle, nations manage, rather than own certain designated international zones. No national sovereignty over these spaces exists, and international law (i.e., treaties, international custom) governs. The common heritage of mankind principle deals with international management of resources within a territory, rather than the territory itself. Developed nations interpret the principle as meaning that "anyone can exploit these natural resources so long as no single nation claims exclusive jurisdiction" over the area from which they are recovered. Simply stated, every nation enjoys access and each nation must make the most of that access. The heritage lies in the access to the resources, not the technology or funding to exploit them. The Common Heritage concept, formulated during the cold war era, though well intentioned, does not serve any useful purpose in the current scenario – the free market economy. The freedom granted to the states for exploration and use cannot be mired. In this regard, it is pertinent to note that the earlier Environmental Law provisions, starting with the Stockholm declaration, 1972 did not specifically address the development agenda, in the line of commercial use. However later on the international community had to give in to the development concerns and draft the subsequent provisions accordingly as amply illustrated form the Rio Declaration, 1992. Besides as discussed earlier, by virtue of the Outer Space treaty and Moon treaty, the states have the freedom to 'explore' and 'use' the outer space, which including using them for commercial purpose. It is our view that the space faring nations, with their advanced technology should not be prevented form utilizing the resources of the space. What has to be done in such a case is to ensure that, it does not adversely affect outer space and its

resources than to have a blanket ban on such activities. The Common Heritage Concept binds nations and firms to make the most of what their access grants them. Thus, if a nation or firm is unable to properly exploit a resource found in international territories, then that resource should be left to a nation or firm that is able. This view is aligned with the "*first in time, first in right*" view of ownership. Industrialized nations promote this view because, unlike the limited access view of the developing world, unlimited access promotes and rewards private investment. Therefore it is clear that possessionary rights do exist in space, even going by the treaties. Thus as a naturally following corollary, the states may grant property rights, in this regard to the private individuals, in compliance with International Law.[16]

The Law Applicable In Outer Space

While space law itself is not a "coherent or self-contained body of law," its main source is international law. Article 3 of the OST states that state parties will act "in accordance with international law, including the Charter of the United Nations." Outside the five space treaties, general international law is the governing law in space. The sources of international law are stated in the Statute of the International Court of Justice, which is "widely recognised as the most authoritative statement as to the sources of international law." The Statute states that the court in deciding disputes shall apply:

(a) International conventions, whether general or particular, establishing rules expressly recognized by the contesting States;

(b) International custom, as evidence of a general practice accepted as law;

(c) The general principles of law recognized by civilised nations;

(d) Subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as a subsidiary means for the determination of the rules of law.

Of the four sources recognized by the Statute only three are binding on the court, and these are the ones that can be seen as substantive international law. The other items, judicial decisions and the teachings of scholars are only persuasive. This paper will deal primarily with law made through international conventions and international custom. The general principles of law as a source of international law have a "fairly limited scope" in determining actual principles of international law. These principles usually represent very broad and indefinite determination; this is especially true when it comes to things such as jurisdiction and criminal acts. For example it can be assumed that murder is illegal in all legal systems, but the constituent elements of murder may differ dramatically from one system to the next, leaving no concrete international definition for the term. Procedure is one of the "most fertile fields" for development of international principles from general principles of law. This would include jurisdictional determinations, but these also vary drastically across practice of the states.

Therefore, jurisdictional bases must be examined from perspective of those customarily accepted within the international framework. It should also be noted, that municipal law from the individual states is an active legal force in the arena of outer space and "its relative importance is likely to increase." Most importantly, while jurisdictional bases are accepted through custom and state practice, for a court to exercise that jurisdiction domestically it must be a valid basis in the domestic law of the particular state. Municipal law, while exceedingly important to space law, can result in a patchwork of norms that are not uniform in outer space.[17]

State's responsibility for and supervision of private activities

Air law and space law is often juxtaposed due to the proximity of these two regimes in their physical location. Interestingly these two regimes of international law are very far removed from each other. Air law emphasises State sovereignty and exclusive territorial jurisdiction, and is bolstered by the large corpus of international and national legislation typical of a well-established field of the law. Conversely, space law highlights non-appropriation, jurisdiction on the basis of registration and launching, and State liability for damage caused. It is also one of the youngest fields of international law, and correspondingly, one of the fields without a comprehensive legal framework.[18]

The State is responsible for the activities of its private sector entities in an outer space congruent with Article VI of Outer Space Treaty. In order to assure compliance with the Treaty, the State must authorize and continuingly supervise non-governmental activities in an outer space use.

Treaty Law

- **Outer Space Treaty**

Article II of the Outer Space Treaty, which states that "Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means" stands as the major hindrance as regards the recognition of property rights. There is disagreement about whether this treaty restricts the ability of individuals to hold property rights or whether it simply restricts the rights of sovereign nations to claim portions of celestial bodies.[19] There is a view that the restrictions placed on sovereign nations would naturally extend to individuals through their citizenship, and therefore property rights in outer space is outside the parlance of individuals and individual companies Another point of discussion is, with reference to the prohibition of appropriation. Some argue that the appropriation clause simply bars ownership of the land, not the resources found within the land, which can be extracted and removed as private property. Others argue that the resources are part and parcel of the land and cannot be treated separately from it (Art 11, paras (3), (7) (a), Moon Treaty, 1979). In addition, critics also argue that this provision is a result of the socialist ideals that were prevalent at the time but it is outdated and at

loggerheads with today's prevailing free market economy. Nevertheless, there is actually a wide variety of space activities involving clearly delineated ownership recognized by national legal bodies throughout the world. Anything that is launched into space is deemed to be owned by the launching party or state, including the launch vehicle, all of its associated stages and parts, and the payload that is placed into space (Art. VIII, Outer Space Treaty, 1967). Not only do property rights attach to these objects, but the owners can be held singularly and jointly liable for damage caused by these objects (Art., IV, Liability Convention, 1972). Thus, sovereignty in some form exists for satellites and aboard space stations. Similarly, ownership of permanent structures that might be constructed on celestial bodies, including the moon, will vest in the company or state building the structure, at least to the extent it is placed "on a celestial body." Anything taken from space and returned to the earth becomes the property of the person, company, or government that performs the action, given the absence of United Nations treaty provisions prohibiting such ownership.[20] Thus we can see that as the treaties stand today, on accepted interpretations of the provisions of the treaties, ownership and possession rights are not entirely divorced from the sphere of Corpus Juris Spatialis.[21]

- ***Moon Treaty***

The Moon Treaty was signed in 1979 as the expanding US space program led to the possibility of actually using lunar resources. The moon treaty however, has not been able to command the same popularity as the Outer Space Treaty, 1967 moreover this Treaty was not accepted far and wide. Besides no major space power has signed it, presumably because it further restricts ownership and prohibits any property rights until an international body is created and the requirement of "equitable sharing" is met consequently.[22] The Moon Treaty does allow "States Parties in the course of scientific investigations to use mineral and other substances of the moon in quantities appropriate for the support of their missions" and it permits individual states to construct space stations on the moon and retain jurisdiction and control over these stations (Art. VI). While the Common Heritage doctrine as developed in the Moon Treaty is arguably beneficial for the developing states, the space powers see it as a hindrance to the development of space due to the restriction it places on property rights and ownership of resources. The developed nations fear that adoption of the common heritage principle in space exploration would tantamount to transfer of wealth, political power, and technology from the space-faring nations to the Third World countries. Some scholars consider the Moon Treaty to have little practical value, while others consider it already obsolete. On further analysis of the treaty, the language prohibiting a claim to property rights of "natural resources in place" ostensibly permits, by negative inference, the removal of natural resources not in place or removed from their natural setting. In addition Article XI's language which states that "neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property." would run

contrary to this view. However, when compared with the specific activities associated with property rights, the Moon Treaty does envision substantive property rights.[23]

- ***The Liability Convention***

The 1972 Convention on International Liability for Damage Caused by Space Objects (hereinafter referred to as the "Liability Convention") provides greater specifics on the subject of liability than do the corresponding provisions of the Outer Space Treaty. What is more, unlike the Outer Space Treaty, the Liability Convention establishes a claims settlement procedure. Despite this advantage of specificity, the scope of the Liability Convention appears limited to cases involving damage caused by space objects themselves, whereas other damage incidental to the use of such objects appears to fall outside its scope. Thus, a television satellite crashing to the surface of the Earth would be a likely candidate for application of the Liability Convention, whereas damage to reputational interests caused by a broadcast from the same satellite would not.[24]

Challenges

In addressing private property rights one must necessarily address the challenges arising in the event that property rights are granted. These vary from environmental concerns to use of such rights to defraud people. In the project I have felt a need to address the core concerns related with property rights in space.

Degradation of Celestial Bodies

One of the primary concerns is the degradation of celestial bodies in exercise of property rights granted to persons. The International community fears whether degradation of celestial bodies would have a negative impact on the environment of the Earth. Man seems to have an inherent trait to alter the ecology of his habitat sometimes knowingly, sometimes unknowingly.[25] Space is one of the very few realms that mankind has not been able to effectively pollute, but even that challenge is being overcome. The issue of space debris is one of such concern. Even in the absence of private players, space debris is now assuming alarming proportions, especially since mankind's contribution to the increase in space debris is substantial. In the event that there exists a possibility that, the climate of earth maybe negatively affected, a thorough study must be undertaken to swot up the possible repercussions of such degradation. And if property rights are indeed deemed to be fit to be incorporated into space law, the issue of pollution of space environment will need to be addressed on "*war footing*". Another classical example is the offer of the company TransOrbital. It is a private company that, through its "TrailBlazer lunar orbiter," is offering the "first delivery service to the moon". TransOrbital claims it is "the only private company to be authorized by the [U.S.] State Department and [the National Oceanic and Atmospheric Administration] for commercial flights to the Moon". The company's delivery system will take capsules that contain items of the customer's choice, including business cards,

jewellery, art, and cremated remains, to the Moon. While, it maybe argued that such action is detrimental to the ecology of the moon, it cannot be said to be the first of its kind. Although the various Space treaties explicitly prohibit the conducting of nuclear tests in space, space tourism will cause its fair share of problems including despoilment of the moon surface.[26]

Res Nullius, Res communis, & principle of sovereignty

The second major challenge is choosing between the concepts of *res communis, Res Nullius, common heritage of mankind and principle of sovereignty*. Under Roman law, the idea of *res communis* meant community property incapable of being appropriated by any person. In the final version of the 1967 Space Treaty, *res communis* principle was explicitly articulated in the Preamble and Articles I and II and implicitly expressed in Articles III and IV. For any principle to be accepted by the international community, primarily, it must be clear and well defined so that the international community may integrate the concept into international law. Next, nations must abide by the principle and widely agree on its authority in international law. Finally, customary recognition of the concept must be manifested by States or, at a minimum, be supported worldwide to verify its broad acceptance. It is the argument of the authors that *res communis* is a recent principle and furthermore is limited to merely the signatories to the treaty. The fact that *res communis* concept is not a binding principle of international law may already be implied within Article XVI of the 1967 Space Treaty, which allows parties to withdraw from the Treaty after they give one year's written notice. Consequently, nations can easily withdraw from the 1967 Space Treaty and disregard the *res communis* classification of outer space once their nation's colonization of space becomes a reality. The Concept of *Res Nullius* again is of Roman origin and states that a property does not belong to any person till a person claims ownership rights. Unlike *res communis* the property is capable of being appropriated by a sovereign. This is a corollary to the sovereign principle in international law.[27] However, the application of *Res Nullius* is incapable in Corpus Juris Spatialis consequential to the existence of Article II in the Outer Space Treaty which specifically prohibits the national appropriation of parts of moon or other celestial bodies If one were to discard the *Res Nullius* principle on the basis of Article II then one must necessarily discard the sovereign principle on the same ground.[28] As stated earlier the *Res Nullius* restriction does not apply to countries that are not parties to the treaty. Therefore, it maybe argued that non-members to the treaty may discard the provisions of the treaty especially in light of Article IX and Article XVI of the treaty. Having considered all of the above principles, it is the opinion of the authors that the principle of '*res communis*' is the most apt to the concept of space law. Though '*Res communis*' prohibits appropriation of property by a person, it does not, however prohibit occupation or use of such property.[29]

The legal challenges of human space travel

"Law must precede man into space."

—Andrew G. Haley

The laws of the early days of space exploration were sufficient to precede states into space, but now new laws must be developed in order to precede the growing private sector into space. This will be a daunting task since there has not been a new space treaty since the Moon Agreement which entered into force in 1984 and has not been widely ratified.

There are pressing legal issues associated with the regulation of space transportation of passengers on a commercial basis, seen in the light of Article 1 of the Outer Space Treaty of 1967, which states that the 'exploration and use of outer space […] shall be carried out for the benefit and in the interests of all countries […] and shall be the province of all mankind'. An appropriate balance must be found between the commercial and technological opportunities that will arise and the principles upon which the development of international space law have thus far been based.[30]

Proposed Model for Property Rights

The proposed model for property rights is based on the doctrine of first possession along with the principles of *res communis* and *res nullius* to a limited extent. The *principle of sovereignty* cannot be applied since all the treaties relating to the exploration and use of outer space are unanimous in their opposition to sovereigns claiming sovereignty over portions of outer space including moon and other celestial bodies.

Principle

The doctrine of first possession is the pre-eminent system for establishing initial property rights in land or a resource, as it accords claimants with legitimate property rights over territory and resources before other prospective claimants can do the same. First possession rules are a basic component of and exist extensively in common law statutes and judicial decisions, civil law, traditional Islamic and African legal systems, and informal custom-made law. The proposed model for property is based on the *res comminus* and the *doctrine of first possession*. The primary concern of any person seeking to invest in space is protection of resources invested and reaping benefits from the resources so invested. Thus, to encourage investment in space, property rights in some form must be granted. In The Outer Space Treaty, 1967 the concept of *res communis* was accepted to serve as a defence against sovereign appropriation of property. The proposed model along with its implementation mechanism seeks to address the concerns of both the under-developed and the developed nations. In the proposed model the first pre-requisite is actual possession coupled with carrying on a space activity considered acceptable under international law. Mere possession of property without the conduct of any work will not grant the possessor any rights that he may enforce against third persons. As long as actual possession can be proven rights of the possessing party in exploiting the area under its control would be protected. The preliminary concern with regard to determining the permissible activities in Space may be addressed by the international organization envisaged under the proposed

model, which maybe established under the aegis of United Nations in conjunction with Committee on Peaceful use of Outer Space.[31]

Property rights would not accrue merely by reason of possession. In all instances where either actual possession of the property is lost or, the space activity, which was undertaken, ceases, property rights of the possessor cease to exist. An excellent suggestion forwarded by many is the maintenance of a registry of claims. A registry of claims maybe maintained of property claims along with a description of purported activities that are sought to be carried out in such area. Space activities that may be considered to be acceptable maybe decided on the basis of treaties which should have at least all the space exploring nations as signatories. The first difficulty that may be encountered can be in the following form. What if X reaches asteroid Y first and Z reaches later. But, Z is able to commence operations before X. In such a case who maybe called as the possessor? Here, the proposed model would operate in the favour of Z. This is primarily to ensure that a no fruitful claim does not arise. Another recommendation forwarded to ensure only genuinely interested parties make a claim is by attaching a small fee for application, which is non-refundable. *The second difficulty is transferability of rights to other persons. As regards sale, since ownership rights cannot accrue there can be no sale of extra-terrestrial property* (vide art. II; Outer Space Treaty, 1967, art. XI; Moon Treaty, 1979). *With regard to rights to lease, it can be stated that such rights maybe permissible to a limited extent. In such cases, an amount that maybe considered as adequate maybe fixed by the International Space Resource Management Organization. Where there is transfer of right an amount maybe fixed by the International Space Resources Management Organization to be paid to it over and above the consideration for the transaction. Furthermore, in all cases of transferability of rights approval of the International Space Resources Management Organization must be obtained as a condition precedent. The purpose of imposition of payment for transaction is two-fold. Primarily, it will operate as a check upon unnecessary transfer of rights and secondarily, it will help the body function independently since it's funding would be sufficient to carry out its responsibilities fairly and with due regard to all the relevant factors.*[32]

Recent Developments

In January 2004, the US President George W. Bush announced his vision for the future of space exploration and the development of space resources and infrastructure and created the Commission on Implementation of United States Exploration Policy which recommends that Congress increase the potential for commercial opportunities related to the national space exploration vision by:

(1) providing incentives for entrepreneurial investment in space;

(2) creating significant monetary prizes for the accomplishment of space missions and/or technology developments; and

(3) assuring appropriate property rights for those who seek to develop space resources and infrastructure.

The report also recommends protecting and securing the property rights of private industry in space and recognizes that the issue of private property rights in space is a complex one involving national and international issues.[33]

A general view in this regard is that the implementation of this vision requires an overhaul of the current treaties and laws that govern property rights in space in order to develop better and more workable models that will stimulate commercial enterprise on the moon, asteroids, and Mars. The expansion of a commercial space sector to include activities on celestial bodies requires the establishment of a regulatory regime designed to enable, not inhibit, new space activity. The development of specific laws, which are consistently applied, will create a reliable legal system for entrepreneurs, companies, and investors. The establishment of a reliable property rights regime will remove impediments to business activities on these bodies and inspire the commercial confidence necessary to attract the enormous investments needed for tourism, settlement, construction, and business development, and for the extraction and utilization of resources. The working of the International Space Station ("ISS") and the International Telecommunications Union ("ITU") is showcased as the steps to be emulated in order to achieve a workable framework, so as to recognize some form of property rights in space. The Antarctica Treaty model (Antarctica Treaty System, 1959) is also another approach that is said to be adaptable with regard to space laws.[34]

All these developments showcase a growing need to address the concept of property rights in space law. In addition, space exploration is no more limited to nations alone, and neither confined to realm of science fantasy only. Commercial activities in space are gaining momentum, and more and more participation of private individuals is the need of the hour, for which an explicit recognition of property rights is a necessity.[35]

Conclusion

"One of the great things about working in this field is the realization that the future – the future that imagination has taken us to so often before – is closer now in a real way than it has ever been. Private Citizens will fly in space on private vehicles."

—Patricia Smith

A related issue to jurisdiction is the actual enforcement of the rule of law in space. While in the future there may be ample opportunity for a plethora of peoples to be able to gain access to outer space, it will most likely remain that only a very few governments will have extensive space programs in the initial years of the new space boom, creating two significant implications. First, the burden of enforcement of rules of law will fall upon the governments that have the resources to enforce them. Secondly, and following from the first, this could mean that there is a selective enforcement of laws in space, which will be biased in favour of the enforcing government. Another, problem that might arise is that

the government that is functioning as the enforcer in space could feasibly attempt to assert jurisdiction over crimes based on the fact that it enforced the law i.e. that the only link between the state and the alleged criminal act is that the state enforced.[36]

The realm of outer space is an uncertain area; however, exploration of it will be fostered by certainty of the law that applies. A space visa helps to cure this ill, by providing a primary body of law that the holder can depend on - not only to punish him, but also to protect him. Additionally, the space visa would lend more certainty to civil law jurisdiction by creating a situation where there is at least one definite forum with a connection to a space defendant. Finally, the space visa would create a uniform, yet flexible, state of law, able adapt itself to the ever changing situations in outer space that comes with mankind's increasing presence there. Law has preceded the nations into space.[37]

Space tourism gives rise to many normative and practical challenges, the effects of which will be felt for some time in the air and space law community. The issues of the applicability of the law, registration and jurisdiction, authorisation, and liability all lead back to the source questions of international law: those of compliance, enforcement, and the rule of law. Commentary on the challenges posed by space tourism reflects the economic, political and technological advances in the field of space activities; reactions to the ambient developments in the field will determine whether air law and space law will continue to remain relevant in the next evolution of aerospace activities.[38]

The legitimacy, cogency, applicability and urgency necessary in addressing these issues become readily evident in the recent developments in the field. The tide of space tourism waits for no law – but the rule of law must prevail in the exploration and use of outer space. It is left to the international legal community to ensure that air and space law are not swept away by the relentless tide of change.

It is time that the immense resources of space are made use for the betterment of mankind. Recognizing some kind of property rights and paving way for private players to animatedly participate in space activities would in effect be a calculated stride towards the achievement of this objective.

However it would not be practicable to disregard the entire jurisprudence in this regard which has the backing of the majority of the international community and is under the auspices of the United Nations.

Therefore an astute way out would be the creation of a workable format under the current species of legislation, which is in tune with the current developments and is adequate to hold ground for the considerable future as well. Thus the granting of Possessionary rights to private parties by virtue of transfer of such rights from the states would be in tandem with this purpose. And the creation of an independent international authority, for the monitoring of such activities involving the developing nations would ensure that there is at least some kind of transfer of technology in addition to the safeguarding of various

common interests along with the outer space environment as well. Finally, Article I of the Outer Space Treaty declares that, "*the exploration and use of outer space…… shall be the province of all mankind*". Thus, the recognition of property rights in outer space, which goes on to facilitate the application of this principle, is to be considered and effectively put to application in order to make the best use of the colossal resources that outer space has to offer.

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