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"International Space Law and the Current Exploitation of the Astronomical Bodies due to Public and Private Space Activities"

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Introduction:

"The First law of sustainability is that, population growth and the growth of consumption rate cannot be sustained" says physicist Albert Allen Bartlett. The consumption of natural resources has been rapidly increasing every year with the increase in population and industrialization. The scientist, to fulfill the need in the earth, are trying to explore the outer space to find resources that are apt for survival of humans in the earth. Usually, the states and sovereigns under their authority organize missions to bring samples from outer astronomical bodies and conduct researches. Filled with high technical difficulties and heavy expenses, extraterrestrial exploration and mining of astronomical bodies has been seen through the lines of its commercial value by the private entities. Private companies like SpaceX, a space exploration company, remains top rated in the share market even with their delays and failure of projects. Few countries, such as USA work along with private companies by delegating the exploration to the later part. These types of partnership show that even countries plan in making space exploration and extraterrestrial mining commercial. Such explorations undertaken by different countries and private companies has now become a race between them turning exploration of astronomical bodies into exploitation.

Are these exploitations done by both the private companies and the states legal? Are there any restrictions to it? The international law is all about consent and parties that do not consent to any treaty or law need not follow them. The important sources of international law are treaties, customary laws, general principles and opinion of jurists. [1]There are five treaties that were drafted by the Committee On the Peaceful Uses of Outer Space (COPUOS) that govern the activities of space exploitation namely, 1) Outer Space treaty, 2) The rescue Agreement, 3) Liability Convention, 4) Registration Convention and 5) The Moon Treaty. The outer space treaty and the moon treaty are the the important treaties that cover the space exploitation. The outer space treaty was signed by 104 countries making it the most followed treaty under space law. However, the moon treaty is considered to be a collapse as there were only 17 members, out of which only 7 ratified it and the rest acceded it, and 4 signatories, out of which India is one. This paper will assess these two treaties in the light of the restrictions made by them in space exploitation and will also enter clarify whether such restrictions apply for private companies. The second part of this paper will deal with the customary laws under space exploitation and the position of restrictions under

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[1] U.N. Charter, Article 38(1)

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it by comparing it with the restrictions made in the treaties. Examples of independent laws of different countries will also be used to identify the intention of the country under space exploitation and to compare them with the international law mainly the treaties signed by those countries.

A. **Restriction under treaties**:

This section deals with the discussion of two important treaties namely the Outer space treaty and the Moon treaty due to their effectivity gap. The gap is of almost 17 years and this was the period where space exploration was at its peak involving many countries. Great developments such as, landing on the moon by the US, projected the need for a new law. During this period there was a high level competition between countries in space exploitation. Slowly private companies started to explore and enter into the competition. The involvement of the private company initiated the idea of making space exploitation and extra-terrestrial mining commercial. This difference could be understood by comparing the number of signatories in both the treaties. The countries which accepted the restrictions in the outer space treaty were very high when compared to the moon treaty due to the change in development in the upcoming years. This shows lots of countries, few even after being a member of the outer space treaty, find space exploration attractive and are ready to go an extra mile without having any restrictions. Hence a clear intention of gaining sovereignty and commerciality can be seen by such deviations by the countries in these 14 years. This part talks about the restrictions under the treaties and their complexity along with the change in the development in space exploitation.

A.1. The Outer Space Treaty:

The Outer Space Treaty[2] is the most widely accepted law amongst countries. This treaty does not explicitly prohibit the extraction of substances from astronomical body. It says, outer space is "not subject to national appreciation by claim of sovereignty, by means of use or occupation or by any other means"[3]. The word to be taken to consideration is 'appropriation'. Appropriation in literal translation is taking possession of something. Applying this to the context, national appropriation can be interpreted as states or nations taking possession and gaining sovereignty over the astronomical bodies is prohibited by this treaty. To understand further, the term sovereignty must be considered. Sovereignty, according the International Court of Justice, means, independence which' in relation to a portion of the globe is the right to exercise therein, to the exclusion of any other state, the function of a state'[4]. This definition can also be connected to exercise of sovereignty under article II of the treaty for the purposes of outer space. Adding this to the definition of appropriation, any claim of independence by a nation and the right to exercise functions only by that nation, either wholly or partly is banned by the outer space treaty. A claim of independence cannot be the lone purpose of appropriation. The article also includes usage and occupation that will also amount to appropriation. The term 'any other means' clearly

[2] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 1967.

[3] The Outer Space Treaty, Article II.

[4] Island of Palmas case (Netherlands, USA), 4 April 1928, VOLUME II pp. 829-871

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signifies the importance of this article to prevent appropriation. Therefore, the concept of preventing other nations and private explorers from exploiting the astronomical bodies would also amount to appropriation under article II of the treaty. The subject to which the principle of appropriation applies is the outer space including the moon and other celestial bodies.

The United States of America, being a party to this treaty, passed an act in 2015 governing the space exploration activities. The space resource exploration and utilization act Aims to regulate the exploitation made by its citizens. Under this act, the citizens of the united states active in the areas of space exploration and extraterrestrial mining are provided with right to own, transport, use and sell any resource obtained from asteroids and other astronomical bodies. This seemed to go against the principles of the outer space treaty and objections were raised in the 55th session of UNCOPUOS held in Vienna, 2016. They claimed, such rights given to explorers would amount to claiming sovereignty and hence break the principle of ban of national appropriation under the outer space treaty. The US claimed, the act was made to regulate the non-government and private companies that are active in space exploration and it did not violate the principles of the treaty. The first question that arises out of these claims is, Whether the United States was persistent with the appropriation principle under the treaty. This will predominantly depend on the way the the legislation was implemented because the act does not specify the purpose of exploration. If the manner of implementation is preventing others from exploitation, then it would amount to violation of article II of the Outer Space Treaty.

The second debatable question can be whether the principle of appropriation under article II of the outer space treaty applies only to nations or does it include private companies. There are different views on this aspect. The national appropriation under article II of the treaty, prima facie, does not include private companies. Under this view, the private entities or any other individual who is active in exploitation of the astronomical bodies is free to lawfully gain ownership and appropriate any substance he has acquired through his own exploration[5]. But the word 'national appropriation' does not seem to limit appropriation only to the nations. If that was the case, then the nations would join with private companies or create a private company of its own and gain sovereignty through exploitation of outer space bodies squashing the entire purpose of this article. Such instances have occurred, where NASA a government organization for space exploration in the US signed up with Deep Space Industries and Planetary Resources to enforce missions to land and mine asteroids for profitable resources[6] and Luxemburg has contracted with Deep Space Industries to develop a spacecraft to mine the asteroids[7].

It is necessary, at this point to bring in Article VI of the same treaty stating the states shall bear the responsibility for all the national activities which includes both government and non- government entities. Under this article, national activities done by non-government entities are read. Applying this intention to interpret article II, it is clearly perceivable that

[5] Stephen Gorove, Interpreting Article II of the Outer Space Treaty, 37 Fordham L. Rev. 349 (1969)

[6] R Ridderhof, 'Space Mining and (U.S.) Space Law' (19 November 2019) <http://www.peacepalacelibrary.nl/2015/12/space-mining-and-u-s-space-law/>.

[7] E Calandrelli, 'Deep Space Industries Partners with Luxembourg to Test Asteroid Mining Technologies' (5 December 2019) *TechCrunch* <https://techcrunch.com/2016/05/05/deep-space-industries-partners-with-luxembourg- to-test-asteroid-mining-technologies/>.

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private companies are included in the term national appropriation. Reasonable questioning could arise as to such interpretation would defeat the purpose of article II as it explicitly mentions the word 'national' and hence is limited only to government organizations. This argument can be defended because the concept of appropriation by the state parties and the appropriation by private companies carry the same consequences. The end result of both state and private appropriation is to obstruct the access to exploit. Article II when read with article VI shows that the intention was to cover both exploitation by the government organizations as well as the private companies. Hence, appropriation done by private organizations can be treated as appropriation done by the state to which the private company belongs. Such appropriation by state can therefore be made responsible for it as under article VI of the treaty. In conclusion, both private and government appropriation come under the term 'national appropriation' and is contraband by article II of the outer space treaty.

Therefore, the claims made by the United States will not stand strong as their legislation that permitted individuals to possess or mine the extra-terrestrial body, if it amounts to appropriation, it then is prohibited by the outer space treaty. To identify if it amounts appropriation, the manner in which the rights given to individuals and private companies are exercised is to be taken into consideration.

These are the restrictions under the outer space treaty. Though many aspects of the restrictions under this treaty were unclear and not followed properly due to its lack of clarity, it was one of the most accepted treaty in 1967, when the explorations of space were still a mystery to a lot of nations.

A.2. The Moon Treaty:

The Moon Treaty[8] is clear in its restrictions in the outer space unlike the outer space treaty. The subject on which restrictions and appropriation applies is clearly stated in the treaty. It explicitly recognizes the surface and the subsurface of the moon and other natural resources. It forbids the surfaces of moon and other astronomical bodies from becoming properties of any country, international intergovernmental organizations, international nongovernment organization, national organization nongovernment entity and even any natural person[9]. There is no confusion with respect to appropriation by the nation and private entities as it was in the outer space treaty. Appropriation done by any organization is prohibited by this treaty. Moreover, this treaty under article 11 brings in the benefit sharing mechanism, where if one country explores a valuable substance then such substance can also be available for the benefit of other countries for the purposes of experiments and scientific researches. This makes the future of space exploration peaceful and benefitting to every nation.

As compared with the Outer space treaty, the countries did not seem well enough to accept the moon treaty. These restrictions were burdening to lot of countries, including the members of outer space treaty. With the developments in technologies, making it easier and feasible for space exploration, the intention of countries travelled away from having a

[8] The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1984.

[9] Moon Agreement, Article 11(3).

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peaceful space exploitation amongst them to a competition. Because of this intention, the moon treaty was not accepted by many countries as they desired independence in space exploitation and extra- terrestrial mining in astronomical bodies hoping to gain sovereignty over these territories, commercialize them. This was the reason for the failure of the moon treaty and the growth rate of exploitation.

B. Customary Laws:

Customary law is important due its binding nature on the country practicing it. With respect to outer space, the idea of custom practices aroused when the united states raised their claims for their legislation that went against the principles of the outer space treaty. They stated that they collected moon rocks from the moon and preserved it and later gifted them to other countries. This shows that they were in possession of the moon rocks and hence had ownership status on them. By this argument the US tried to claim that as a matter of practice they had ownership of all the valuable substance that they brought from the outer space through mining astronomical bodies and hence customary law applies and the principles of their legislation allowing citizens to have ownership over extra-terrestrial objects, was not violative of international law instead part of customary laws.

The conflict between the outer space treaty and the customary law in this situation is addressed in the Nicaragua case[10]. According to the ICJ, if the principles of the treaty and the customary are similar to the subject manner then they exist side by side i.e. even if the customary principles are codified as a treaty, the customary principle exists equally with the treaty. In a case where both are conflicting, the provisions of the treaty will apply lex specialis to the members of the treaty. By this it states, the law on a particular subject will prevail over the general law. Hence the provisions of treaty will supersede the customary law in the same subject. Applying this principle, the united states' claim of customary law doesn't prevail.

To prevent over exploitation and appropriation by countries on the astronomical bodies, there must be strict laws enforced overriding the customary practice if it consists of having ownership on them. These laws can be international laws but unilateral laws will be more effective on the countries. The countries must independently comprehend it for the benefit of the entire globe.

Conclusion:

With the increase in the rate of exploitation, there must be new laws regulating the exploitation by the countries and there must be effective restrictions with respect to claiming of sovereignty, usage and other means of exploration. Something that is not part of the earth must be available to everyone on earth. Though international law tries to regulate the exploitations made by both the private and public organizations through these treaties, it cannot be always successful. International law is completely based on consent of countries. These countries have complete freedom to choose to accept and follow the law or not.

[10] Case Concerning Military And Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America), 1986.

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Under such situations, especially when concerning commercial extra-terrestrial mining activities, countries do not seem to accept the laws. The only reason for which the outer space treaty was effective and was signed by many countries in 1967 was, it was made to prevent a new form of competition of sovereignty in a period where the explorations into space just started. But when those explorations are compared with the current developments in the space sector and also the rate in which the developments are increasing, these laws are not sufficient. Moreover, even countries by itself aren't satisfied to sign treaties and treat itself as party to it since it has to follow those restrictions. This is the exact reason as to why the Moon treaty was a failure. With these instances, there is a clear intention that the countries especially The United States and Russia want to gain sovereignty over extra-terrestrial objects and to make outer space mining in astronomical bodies commercial. Public companies have also joined this race either individually or jointly with the government organizations to exploit the outer space.

When international law becomes a failure to prevent over exploitation and claiming of sovereignty there can be a break in peaceful relations within countries and could even lead to war like situation. The consequences are unknown but it's definitely better to prevent such huge consequences that would arise due to over exploitation of space. With the increasing rate in exploration and exploitation, this issue is of high importance must be looked into by all countries as soon as possible. There can be two ways to prevent such increase in exploitation. One being, all country's consent to all the international treaties and follow them or the they must recognize the growth rate of exploitation and make unilateral laws regulating, controlling the use of astronomical bodies. World peace has been the major aspect between countries since world war II. It is exceptional that the growth rate of exploration is increasing but counterproductive to see the exploration turning into a competition. Preserving the space and using it for exploration in a peaceful manner must be the aphorism of every country and individual making the earth a peaceful place to live.