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The Principle of Common Heritage of Mankind in the Law of Outer Space

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Abstract
Nomadic primitive men were in constant quest for food and water. With sparse population, they rarely encountered other humans. Chance meetings were greeted with confrontations over food and water, the basic essentials for survival. With the passage of time, life became easier when humans transited from hunting to farming. No longer in perpetual pursuit of food and water, civilization and property ownership commenced. Prior to the advent of international law, conquering land seemed simple: the fittest survived and won the land. The victor's flag flapped majestically in the air above the conquered territory as a symbol of acquisition. No rules existed to ensure fairness. Superior armies seized land or those skilled in the exploration declared new unoccupied areas for their kingdoms. For a millennium, homo sapiens followed this savagery and barbaric "first in time, first in right" rule of property ownership. Haven conquered the earth, the inordinate expansionist tendencies of man have shifted his attention to the outer space, an area devoid of the obnoxious "first in time, first in right rule". Rather, the order of the day in this sphere is the doctrine of "common heritage and province of mankind". What is it all about? What is the genesis of the doctrine? Is it absolute and sacrosanct? Or is it a case of all animals are equal, but some are more equal than others". All these will be unraveled as we explore the topic in this exercise.

Keywords: Law of Outer Space, International Law, Property Rights, Common Heritage and Province of Mankind

1. Introduction

In the beginning, soul that came to this world had to take on the embodiment of flesh in order to survive the coarse vibrations of the physical universe. He was a leaf eater and lived in terror of the killer beasts that stalked and trapped him. Soul had no place to live for he was prey to the brutality of the flesh eaters. He was not a creature with fangs, claws, and muscular strength. What strength he had was not enough to protect him from the prowling beasts. He could not venture into the waters for there the beasts awaited ready to tear him apart. In the jungles were the huge serpents and deadly insects; on the prairies were the wolves. There was no spot on earth for him to safely lay his head. He had only one place to live and that was in the trees.

So, it was in the high treetops of the jungle that he built his home to be safe from the prowling animals that killed him for food. He developed an amazing dexterity to swing through the higher branches. For ages, he was a treetop tenant, rarely venturing to the ground. He drank water from the foliage, and made his bed in a tree crotch.

He scorned the endless spectacle of slaughter which went on beneath him. But the day came when he descended to the soil of earth.

At first, he walked on four feet, and then learned to stand upright, and what was a creature now became a man because he could think, and by thinking he could protect himself. Thereupon, he found a persistent pattern of behaviour that set him free. Never again could his supremacy be threatened nor his foe be more than his slave, for they were the beasts of the forest, the birds of the air, and the creatures of the sea.

Human consciousness came into being, and man became the supreme creature upon the earth. He developed thought and the ability to use it for protection against the flesh killers and the environment. He found shelter in the caves and fashioned weapons out of sticks and stones. The female reproduced his species, and he lived in family groups. A headman or chief was selected to supervise the family and the tribe which gathered around him. Thus, civilization formed in a primitive manner.

Homo sapiens began canvassing the earth, spending their days as nomads, in constant quest for food and water. Due to sparse population at the time, over a vast land, humans rarely encountered other human groups. Chance meetings were greeted with confrontations over food and water, the basic essentials for survival. Nomads gave no heed to land as they hunted. Uppermost in their minds was survival.

Life became much easier when humans shifted from hunting to farming; they were no longer in perpetual pursuit of food; thus, began civilization. With the dawn of civilization came the idea of property ownership, and man became territorial. Communities drew together in war to defend their land from aggressors, and strike to conquer more land. With such expansionist tendencies, property ownership blossomed into a symbol of power and wealth, the age of empire mentality transpired.

Long before the advent of international law, conquering land seemed simple: the strongest army won the land, and the victor's hoisted flag flapped majestically in the breeze above the conquered territory as a symbol of acquisition. No rules existed to ensure fairness. Superior armies seized land, or those skilled in the exploration declared new unsettled grounds for their kingdoms. For thousands of years, *homo sapiens* followed this seemingly savage and barbaric "first in time, first in right" rule of property.

Man, in the ordinary state of nature is selfish, squabbling with his fellow beings over anything he wants to control, not unlike children fighting over toys. By the mid-twentieth century, however, the war-scarred comity of nations realized that an advisory council or forum needed to address international property issues before more conflicts erupted in the advanced global age. Laws needed to act as a moral baby-sitter to ensure that nations played the property game fairly and that no nation denied another's due right to areas not yet conquered or occupied. In the post modern era, even if prompted by apprehension and distrust, the international community exuded an ideal of equity. Unfortunately, nothing in this world seems fair.

From time immemorial, civilizations intelligent or fortunate to make use of resources within their reach excelled and dominated. Intuitively, man exploits natural resources and develops technology to better his existence. Human nature demonstrated this trait from the beginning – represented by innovations such as wheel, tools, and weapons, medicine, and the domestication of animals. Along the line, however, the cradle of civilization lost its foothold. Many civilizations, though globally dominant in centuries past, lag behind in the modern world of technological advancement; and some others never even got a fighting chance due to factors such as famine, disease, natural disaster, or lack of natural resources.

The international community in 1960s decided that the atrocious property principle of "first in time, first in right" should not be applied to the deep seabed, Antarctica, or the outer space, the only regions not controlled by any one sovereign (Jiru, 2000). This theory stemmed from the fact that the exploitation of valuable resources in these regions presented developing nations with an opportunity to share in the world's resources rather than remain economically marginalized, and because each of these areas presented a dilemma regarding habitation and defense (Brilmayer & Klein 2001). No nation occupied these territories and no nation desired a race to own

without a guarantee of who would emerge victorious. Because these areas harbor coveted natural resources, every nation craved a piece of the action without the hurry-scurry state of mind regardless of economic or technological stance. This exercise examines the effectiveness of the international community's novel approach to property law *vis-à-vis* the ambiguous language in outer space treaties.

With this brief introduction, we shall now proceed to examine the topic under the following rubrics:

a) the common heritage of mankind principle applicable in outer space;

b) analysis of the relevant space laws applicable to acquisition of natural resources in space, property rights in outer space and appropriation of satellite orbit slots; and

c) concludes with the recognition that due to man's inherent nature, space operators will resort to the age-long primitive "first in time, first in right" rule of property that the international community attempted to eschew.

2. The Common Heritage and Province of Mankind Principle

The United Nations Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) provides that the outer space shall be the common province of mankind.

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. Outer space including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation (Outer Space Treaty 1967)

The Treaty further provides that the "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.

On its part, the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the Moon Agreement), provides that; The Moon and its natural resources are the common heritage of mankind. The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means. Neither the surface nor the subsurface of the Moon, nor any part thereof, or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person. The placement of personnel, space vehicles, equipment, facilities, stations and installations on, or below the surface of the Moon, including structures connected with its surface, shall not create a right of ownership over the surface or subsurface of the Moon or any areas thereof (Moon Treaty, 1979)

The combined effect of the foregoing provisions clearly shows that the outer space including the Moon and other celestial bodies shall be a virtual place for research in science and technology for mankind and not subject to appropriation and ownership by any sovereign.

The comprehension of the extension of property laws to outer space and other celestial bodies requires proper understanding of the underlying common heritage ideal, the essence of man's attempt to civilize outer space. Under the common heritage of mankind principle, nations manage, rather than own, certain designated international zones (Rana, 1994). There is no national sovereignty over these spaces, what exists is the supremacy of international law. The principle of common heritage of mankind deals with international management of resources within the territory, rather than the territory itself (Joyner, 1999).

The principle renders the claim of title to designated international common heritage areas worthless and unrecognized, as such; the issue for countries becomes access (Rana, 1994). The common heritage principle therefore seems unconcerned with ownership of designated areas, but rather focuses on the uses of them for the

benefit of mankind, to serve the common interest of people everywhere. The distinction between access and ownership may however, appear difficult. In tandem with most international principles, a divergence between less-developed nations and developed nations over the interpretation of the common heritage emerged.

Less developed nations believe that international areas designated for the common heritage of mankind do not belong to any one sovereign, but instead to all nations (Schwind, 1986). Therefore, any resource or benefit derived from those resources, or the use of them, should serve all of mankind. Referring to it as a "common property" approach, less developed countries assert that there should be common management of such areas, with a singular group possessing exclusive rights to exploit natural resources and distribute those resources equitably to all nations, regardless of which nations actually funded the effort (either economically or by developing the technology, or both) (Mau, 1984).

Under this interpretation, a nation that did not contribute financially, nor had any involvement in developing the necessary technology, would reap the benefits of the exploitative activity. Not only does this seem inherently unfair, but also, this hardly provides an incentive for technologically advanced nations to conduct expeditions. Furthermore, this interpretation does not provide incentive for less-developed countries to develop technology or fund exploration. After all, why fund the research and development when the reward will be the same?

To the developed nations, the principle means that anyone can exploit these natural resources so long as no single nation claims exclusive jurisdiction over the area from which they are recovered. In a nutshell, 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. Developed nations may be prudent to interpret the principle in this manner because they possess the economic means and the technology to exploit natural resources (Mau, 1984). Developed nations contend that because they spend their time and money developing the technology that enables them to harvest resources, and they fund the expeditions that collect the resources, forcing them to share those benefits with countries that have contributed little or nothing to the effort would be unjust. Developed nations do not like the principle included in treaties, stating that severely reducing the economic incentives discourages the development of technology to exploit natural resources (Raclin, 1986) a viewpoint all too clear for capitalist societies.

3.1. The Common Heritage of Mankind Principle Applicable to Areas in Outer Space

The unhealthy power rivalry between the United States and Russia together with the paranoia and suspicion emanating from the Cold War exacerbated the avoidance of a race to own any part of outer space. The then Soviet Union blazed the trail as the pioneer when it launched the first satellite (Sputnik) into orbit in 1957 (NASA 2021) and landed the Luna IX on the moon in 1966 (NASA, 2021) 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 the outer space to peaceful purposes and preventing any state from exercising ownership (Lowder, 1999). Hence, the 1967 Outer space Treaty and the 1979 Moon Treaty emerged.

3.1.1. The 1967 Outer Space Treaty

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) is the bedrock of International Space Law (Twibell, 1997 and the first treaty drafted by the United Nations' Committee on Peaceful Uses of Outer Space (UNCOPUOS). Like the Antarctic Treaty, the Outer Space Treaty promotes freedom of access for research and scientific investigation. The treaty denies land ownership rights to any one sovereign, and instead, states that exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of economic or scientific development (Outer Space Treaty, 1967).

The treaty does not use the term "common heritage of mankind," rather, uses the term "province of mankind," stating 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 …and shall be the province of all mankind." The

word, 'province' seemingly, is associated with the idea of territory or the responsibility over a territory, thereby giving the notion of control rather than 'property and possible wealth.'

By its very nature, the common control of humanity over outer space and other celestial bodies does not deal with appropriation and property. It only means that the rules over outer space and other celestial bodies can only be made by humanity as a whole. No State therefore, rules on exploration and use of outer space, and other celestial bodies, or can exercise any territorial jurisdiction over it without the agreement of humanity (Kerrest, 2021).

Interestingly, the idea of heritage is directly linked with property and ownership. The Law of the Sea Convention declares that, the sea floor and its resources are the common heritage of mankind. Similarly, the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the Moon Agreement), provides that the Moon and its natural resources are the common heritage of mankind. The clear and unambiguous language of the provisions is that the property of these resources is recognized to belong to a legal person, and that personality is humanity. Unfortunately, the word 'humanity' seems vague. Who is humanity? Or who is entitled to speak for humanity? In a country with one man, one vote system, the majority usually consists of the less-developed nations due to their numerical strength. More often than not, the majority does not include space-faring nations.

3.1.2. The Moon Treaty 1979

The Agreement Governing the Activities of States on the Moon and Other celestial Bodies (the Moon Agreement or Treaty) was concluded on 18 December 1979, in New York, the United States of America. It came into force on 11 July 1984, after satisfying the condition requiring five ratifying States. As at 15 May 2020, only eighteen States are parties to the treaty, seven of which ratified the agreement, and the rest acceded (UN Treaty Collections 2020). A perusal of the Moon Treaty shows that it rehashes the Outer Space Treaty with some new provisions. As a result of the new provisions, many countries declined to sign the treaty contending that both the developed and less-developed nations disagreed on the issues relating to ownership and appropriation of resources derived from the Moon. The common heritage of mankind ideal materializes in the Outer Space Treaty, coated at times in the "province of mankind" language. The first appearance of which is in Article 4, which states, that the "exploration and use of the moon shall be the province of all mankind and shall be carried out for the benefit … of all countries." It has been noted, and rightly too, that the province of all mankind "is not the moon and celestial bodies, but the exploration and use." This interpretation is in tandem with the contention of the developed nations: the heritage lies in the access.

Article 11 of the Moon Treaty, states that the "moon and its natural resources are the common heritage of mankind …" and States may explore and use the moon without discrimination. The Article continues by requiring the future establishment of international regime to "govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible," reminiscent of the regime established to regulate the exploitation of the seabed. To date, no such regime exits: the Moon Treaty only provides that one shall exist in the future (Keefe, 1995)

The United States and some other nations declined to sign the treaty due to the common heritage of mankind ideal (US Congress, 2015) The action of the United States is reminiscent of its behavior with the International Seabed Authority and clearly indicates its future actions that it would enact its own laws governing the exploitation of celestial bodies. In 2015, the United States enacted its own law governing the exploitation of celestial bodies: the Space Resource Exploration and Utilization Act of 2015. The Act provides *inter alia* that "any asteroid resources obtained in outer space are the property of the entity that obtained such resources, which shall be entitled to all property rights thereto, consistent with applicable provisions of Federal law and existing international obligations." (US Congress 2015)

In April and May 2020, the United States signaled its determination to press ahead with two major space policy objectives: establishing a permanent U.S. presence on the moon and authorizing private companies to mine the

moon. An April mandate to authorize and encourage private lunar resources extraction, including through pursuing international agreements, was followed by a U.S. draft framework for bilateral moon exploration and mining agreements known as the "Artemis Accords." (The Guardian 2020). (The framework is apparently named the "Artemis Accords" for its relationship to the U. S. "Artemis Program" for lunar exploration). In May, the National Aeronautics and Space Administration (NASA) released draft principles intended to underpin the Artemis Accords (the NASA Principles). Potential partners for the envisaged agreements include Canada, Japan, the United Arab Emirates and members of the European Union. Nonetheless, the actions of the Trump administration indicated that it will take steps for the U. S. to return to the moon in 2024 with or without international cooperation or agreement.

The moon's surface contains a significant volume of hydrogen and oxygen used for rocket propellant which could facilitate onward travel to deeper space. This would, in turn, assist access to asteroids and other space objects that contain enormous amounts of minerals like nickel, iron, platinum and cobalt (Pandey & Baggs 2020). Proponents of the moon mining claim that these metals could be mined and extracted without many of the regulatory, environmental and human rights issues associated with terrestrial mining (Wong, 2018).

Both public and private actors are exhibiting increasing interest in space mining. So far, only Luxembourg and the U. S. have passed laws authorizing private ownership of space resources (Foust, 2017). but private companies in the United Kingdom (Carbonaro 2020) and Canada (Fatima & Morello, 2016), among others, are developing asteroid mining technologies. In 2019, Russia invited Luxembourg to collaborate on space mining (Soldatkin, 2019). On its part China has long expressed its intention to mine the moon. Recently, China launched a next generation spacecraft to increase its deep space exploration capacity (Berger, 2020).

On 6 April 2020, President Trump issued an "Executive Order on Encouraging International Support for the Recovery and Use of Space Resources." The Executive Order reaffirms the long- held U.S. position that the 1979 Moon Agreement, which the U.S. neither signed nor ratified, and which has eighteen member countries (UN Treaty Collections 2020) does not represent customary international law (Executive Order, 2020 The Moon Treaty provides that the moon and its resources are the "common heritage of mankind" and prohibits claims of ownership to those resources. By contrast, the Executive Order rejects the concept that outer space is a "global commons" akin to international waters and other shared resources. It further states that the United States shall "encourage international support for the public and private recovery and use of resources in outer space" and directs the State Department to pursue a strategy of bilateral and multilateral agreements (Executive Order, 2020). This statement goes further than the U.S. Commercial Space Launch Competitiveness Act, signed in 2015 (US Commercial Space Launch, 2015) which provided for private ownership of "any asteroid or space resource" but did not expressly contradict the Moon Agreement.

The Executive Order clarifies the U.S. position that it can lawfully support private extraction and use of resources on the moon, a position reaffirmed in the NASA Principles. The NASA Principles indicate that NASA will require foreign space agencies to execute bilateral Artemis Accord Agreements "grounded in the Outer Space Treaty of 1967", a treaty to which the U.S. has ratified to participate in the U.S. led Artemis Program for lunar exploration. The NASA Principles make it clear that exploitation of space resources "can and will be conducted under the auspices of the Outer Space Treaty. One of the core principles is that the extraction and use of Luna resources "will be critical to support safe and sustainable space exploration and development."

Despite these representations, the U.S. position may be in conflict not only with the Moon Agreement, but also with the Outer Space Treaty. The Outer Space Treaty prohibits "national appropriation" of the Moon and other celestial bodies" by "claim of sovereignty." (Outer Space Treaty, 1967). Scholars are not *consensus ad idem* on whether private ownership, use or sale of space resources would require a "claim of sovereignty." (Lintner, 2015). The NASA Principles reference to provisions of the Outer Space Treaty suggest that the U.S. may not view lunar mining as "national appropriation", and that all future mining by the private sector will have to be authorized and supervised by countries, who will ultimately bear any legal liability under international law.

Notably, statements by the U.S. do not assert sovereignty over moon resources. The NASA Principles further suggest a U.S. strategy for lunar exploration based on cooperation with like –minded countries rather than unilateral action. The NASA Principles call for full transparency between signatories, inter-operability of technology and full public disclosure of scientific data. The NASA Principles further propose creating exclusive "safety zones" around moon bases to safely spread out mining operations and the protection of common "heritage sites" for historically important areas, which could include the Apollo landing site. While this appears to be an effort to avoid allegations that the U.S. is claiming sovereignty over resources or historic lunar sites, privatization of moon resources will itself be contentious. For instance, Russia condemned attempts to privatize space resources and characterized U.S. lunar mining plans as an "invasion." (Bennetts, 2020). Recently, seven Canadian space law experts advised their government to treat space resources as a "global commons" rather than the U.S. approach (Chase, 2020).

The U.S. is poised to take several steps to advance its lunar exploration. On 30 April 2020, when announcing the award of Artemis Program Spacecraft contracts to three American companies, NASA administrator Jim Bridenstine stated that initial U.S. missions to the moon may not involve the previously multilateral "lunar gateway" project for establishing an international presence in lunar orbit (Chang 2020). On 6 May 2020, Bridenstine, said that the U.S. may premise participation in the Artemis Program on other countries adopting: certain "norms of behaviour" in space (Foust, 2020). Indeed, the recently released NASA Principles appear to be a U.S. led effort to codify these norms. NASA will hope that the public/private collaboration that resulted in SpaceX's Crew Dragon carrying NASA astronauts to the International Space Station at the end of May 2020 could also meet the U.S. lunar ambitions, and it has already contracted with SpaceX, Blue Origin and Dynetics to produce lunar Landers.

As the U.S. takes forward these initiatives, it may develop, test, and strain elements of the existing international legal regime. The U.S. position creates potential opportunities and risks for private entities. If it pushes ahead without international consensus on the relevant international legal framework, other countries may refuse to recognize some of the rights it grants to private entities. Without collaboration, different countries may award the same permission or rights to entities within their own jurisdiction. At the same time, the determination of the U.S. and other countries to push the multilateral discussion forward will not only speed up the potential for private involvement in space activities, but may also increase certainty by creating multilateral consensus on some of the more contentious issues and gaps in the current legal framework in a manner that is fit for purpose.

Thus, unbound by the Moon Treaty, and certain to develop the necessary technology sooner than other nations, the U.S. will continue to follow the archaic and barbaric "first in time, first in right" theory of property abhorred by less developed nations.

4. Property Ownership and Appropriation in Outer Space

In the age of private and commercial wealth, asserting ownership in outer space seems no longer unimaginable, but it may be against international law (Reinstein, 1999) stated previously, the Cold War between the U.S. and the former U.S.S.R. and the simultaneous race to space prompted paranoia that one country would gain "irreversible advantage by militarizing outer space." Referring to the "first in, first in right" property principle that dominated the earth for thousands of years, Arthur Goldberg, the U.S. Representative to the United Nations General Assembly stated, "as we stand on the threshold of the space age, our first responsibility as governments is clear: we must make sure that man's earthly conflicts will not be carried into outer space." Though this intention seems noble, reversing human behaviour spanning several thousand years may prove impossibility. Man intuitively, exploits resources within his reach to better himself, not necessarily his neighbour.

Adverting to the big picture, one can easily discern that space resources proximate to the earth are the easiest to exploit and appear limited. The universe may seem infinite in all directions. Without drastic technological advances man seems tethered to earth, incapable of travelling great distances in space. For unmanned missions, the issue becomes expense: exploitation activities proximate to earth are less expensive than distant expeditions. Therefore celestial bodies like the moon and near-earth asteroids exist as limited resources, not because of their

rarity, but because of their proximity to earth. Conversely, satellite orbit slots could become a finite resource, as an orbit slot can only accommodate a fixed number of satellites. Satellite resources become a finite resource due to the limitation on capacity. If the user utilizes the resource properly, the orbit slot remains infinitely renewable. Therefore, international law should govern the exploitation and use of such resources, as well as the appropriation of celestial territories. The resources include minerals mined from the moon or other celestial bodies, and territory appropriation encompasses not only celestial surfaces, but also satellite orbit slots as well.

4.1 Property Rights in Natural Resources in Outer Space

Article 6 of the Moon Treaty promotes "freedom of scientific investigation by allowing states to collect on and remove from the moon samples of its mineral and other substances", and Article 8 allows for the exploitation "on or bellow the moon's surface." The treaty also provides that "such samples shall remain at the disposal of those States Parties which caused them to be collected and may be used by them for scientific purposes." Collection of samples of minerals for research may be construed as effective exhibition of ownership over those samples. The "province of mankind" language weaved throughout the treaty is conspicuously absent here. Ideally, it would seem to accord with good reason to mandate that samples be shared, either equitably or equally, with all of mankind, or at best to interested parties.

Sample collection completely contradicts the language in Article 11 of the Moon Treaty which states that "neither the surface nor the subsurface of the moon, *nor any part thereof or natural resources in place,* shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person." A logical interpretation would require that "part of its natural resources" includes mineral samples from the moon. With such incompatible language within the body of the Moon Treaty, no mystery exists as to why developed nations' interpretation is at variance with that of the less-developed nations. Furthermore, with the absence of an international regime, as called for in Article 11, reconciliation of the conflicting provisions seems a mirage.

4.2 Property Rights on the Surface of the Moon

Article 8 of the Moon Treaty permits States to: (a) land their space objects on the Moon and launch them from the Moon; and (b) place their personnel, space vehicles, equipment, facilities, stations and installations anywhere on or below the surface of the Moon. Further, the personnel, space vehicles, equipment, facilities, stations and installations may move or be moved freely over or below the surface of the Moon, and such activities shall not interfere with the activities of other State Parties on the Moon. Article 9 of the Moon Treaty further clarifies this by declaring that States may establish manned and unmanned stations on the moon, but requiring that a station shall use only that area which is required for the needs of the station, and shall not impede the free access of other States.

Again, the phraseology of the treaty seems ambiguous. A party could place a semi-permanent station on the moon which both occupies the surface and, by its nature, blocks access to that specific area. Continued occupation means taking possession of that which at the moment is a no man's property, with a view of acquiring the property in it for oneself. Therefore, planting an unmanned space station on the surface of the moon, well within the allowances of the Moon Treaty, constitutes effective ownership but without the possessory label. States may engage in activities equivalent to ownership, provided no one calls it ownership. What will happen when two nations seek to plant unmanned stations in the same area? It can be surmised that nations will resort to the primitive "first in time, first in right" theory of property law. An irony exists in the probable occurrence of this happening, as the international community enacted the Moon Treaty specifically to avoid this behaviour.

4.3 Appropriation of Satellite Orbit Slots.

The Outer Space Treaty, which governs outer space, prevents national sovereignty claims, but does not expressly prohibit private appropriation of the moon and other celestial bodies (Copiz, 2002). In the past three decades, the

private-sector investment in telecommunications satellites has become a multi-billion-dollar industry, and the geo-stationary orbit, the orbital space above the Equator, likely exists as the most valuable of all space resources to date. Satellites in geo-stationary orbit travel at the same speed as the earth, making the satellites appear stationary over a fixed point on earth and casting large footprints over highly populated areas. In fact a satellite in geo-stationary orbit encompasses a field of view of 42% of the earth's land surface. Similar to that governing the use of seabed, the international community established an international regime to regulate and coordinate spectrum use.

The International Telegraph Union (ITU), supplemented by the International Telecommunications Convention (ITC), became the technical body that regulates international telecommunications (Cahill, 2001). The ITU utilizes two methods of orbit slot allocation: the *posteriori* system and the *a priori* system. Under the *posteriori* system, the ancient "first in time, first in right" property theory, the ITU assigns orbit slots as the need arises. Obviously, developed nations, who possess the necessary technology to exploit the space, favour this system. The *a priori* system, however allots a number of slots to each nation, regardless of whether use of the slots will ever occur. Because, less-developed nations fear that they will lose access to orbital slots due to their insufficient technology, they prefer the *a priori* system.

Entities can take advantage of the *a priori* system. A case in point is the small pacific island nation of Tonga registered for sixteen geo-stationary orbit allotments with the ITU. Tonga made the filings on behalf of Friendly Islands Communications from 1988 to 1990, when the ITU system allowed a country to register a position for up to nine years before a satellite was launched. Because Tonga lacked a genuine need for so many orbital allotments in the Pacific Rim portion of the Geosynchronous Orbit (GSO), the international community made its anger known. The outrage of the international community persuaded Tonga to withdraw its request for ten of the sixteen allotments. Tonga, however, leased one of the remaining allotments and auctioned off the other five allotments for $2 million per year for each orbit. This rental and auctioning of slots seems to support the perception in some quarters that property rights do exist with respect to individual orbits.

Sequel to the Tonga incident, the ITU now requires that the majority of the slots applied for must be used directly by the countries requesting the slots. Thus, the ITU wants to discourage the leasing and sale of geo-stationary orbits slots. However, an issue still exists with respect to the Outer Space Treaty and orbit slot regulation.
The ITU distributes orbit slots to those who provide the most efficient use of the resource, reasoning that distributing slots to those not capable of utilizing them would waste a finite resource. Therefore, by following an *a priori* system, the ITU would grant constructive national appropriation when allocating orbital slots to nations- an express prohibition under the Outer Space Treaty. Regardless of the prohibition, some nations attempted to claim the geo-stationary orbit.

In 1976, several less-developed nations located at the equator claimed territorial sovereignty over the geo-stationary orbit with the Bogota Declaration. The nations contended that the natural resources of each state necessarily include the geo-stationary orbit above that territory. Though the Declaration directly conflicted with the Outer Space Treaty which prohibits national appropriation of space, it became effective as a political device that brought attention to developing countries concerns over being prohibited access to the geo-stationary orbit by developed countries that already possessed the technological skills and resources necessary to utilize the resource. This resulted in the implementation of Article 33 of the ITU's Radio Regulations, which requires that the ITU consider the special needs of developing countries and the geographical situation of the particular countries.

The entire system conflicts directly with the Outer Space Treaty, if the ITU grants slots to nations because the Outer Space Treaty expressly prohibits national appropriation. The ITU seems to focus on the idea of access rather than ownership However, despite the label, when a satellite fills an orbit slot, the party occupies that space and effectively asserts sovereignty. This concept seems to be no different than an unmanned station on the moon; the space being used becomes inaccessible to others.

5. Conclusion

Despite the good intentions of the international community, full acceptance and implementation of the common heritage principle will come at a snail speed, if at all. Though evolution shapes life, such progression requires time to materialize. Life on earth shows that physical evolution results when the need arises. However, man's broad acceptance of the common heritage principle approach to land and its resources demands a psychological evolution rather than a physical flux mandated by his environment. Man seems incapable of such change; consequently, psychological evolution will require intense and enduring global effort.

It will be difficult for the international community to reverse millennia behaviour in one generation. Ancient nomadic man fought over land resources when permanent occupation of a definite area proved impossible due to the essential pursuit of food. Later, farming and agriculture replaced nomadic existence, man fought over the land as well as its resources. With technological advances, this pattern will continue into space and other previously unthinkable areas on earth.

Acceptance of the common heritage of mankind ideal (psychological evolution) will better only the existence of nations currently unable to fully exploit the resources. History illustrates that man evolves only to survive or better his existence. For instance, man became bipedal only when the grasslands gradually replaced the forests, thereby compelling man to stand upright to see the game over the grass. Similarly, skin pigmentation of native peoples, offering crucial protection against the sun's ultraviolet rays, varies depending on the proximity to the equator. Unfortunately, no such physical need exists here.

Technologically advanced nations do not feel compelled to harmonize their mindset with the common heritage principle. They will continue to exploit space resources, leaving the less-developed nations in their wake. Most likely, less-developed nations will also disregard the common heritage principle as they develop the necessary technology and rediscover the sheer advantage of the "first in time, first in right" theory of property. Only nations without hope of exploitation of the outer space urge equal distribution of the resources. Those who exploit space resources desire to keep the fruits of their labour to themselves. Throughout history, the more powerful man has innately and strangely kept his foot on the neck of the week. The quest for property in space will prove no different, and the inconsistency of international space law confirms man's lack of control over his true substance.

Man mirrors the cyclical nature of the universe, where everything follows a pattern. Each generation of mankind carries on as the one before it, resolving nothing, because the rhythmical essence of life remains unchanged (Hemmingway, 1926). Sometimes, only the name or the process changes, but the underlying theme remains eternal. Man like the universe follows a pattern, one of acquisitive need and selfish procurement. The ancient "first in time, first in right" property theory will come full circle. Ancient man first fought over earth's resources, and then the land itself when occupation became feasible. To the dismay of the less-developed nations, this cycle will continue in space, as man exploits celestial resources and later develops the ability to occupy celestial bodies.

The panacea: the international community could reach a *consensus ad idem* to abstain from exploitation for a period of time as was the case in the Antarctic Treaty (Naval Treaty, 2021) Such a moratorium obviously will leave the issue for the next generation to resolve; perhaps a subsequent one would embrace more fully the common heritage approach. At the moment, man simply seems unprepared for such a concept.

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