Lessons from John Locke: Envisioning a Multilateral Legal Regime for Property Rights over the Natural Resources in Outer Space, including the Moon and Other Celestial Bodies.

By

Iseoluwa Christopher Akintunde

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Abstract

From time immemorial, the question of property rights is always protracted whenever issues concerning the regulation of natural resources on Earth are being discussed. This is especially of the abundant natural resources in outer space, including the Moon and other celestial bodies. The international legal regime for the peaceful uses of outer space does not sufficiently cater for all the issues that could arise as a result of the growing commercial uses of outer space. Property rights over the natural resources in outer space are one of such issues. Property rights over these natural resources are fundamental in order to incentivise the participation of the States and the private sector in the exploitation of the natural (mineral) resources in space. Apart from the Moon Agreement, which provides for partial and limited rights over the natural resources on the Moon and other celestial bodies, international space law appears hostile towards property rights. Some arguments against property rights over these resources are anchored on the assertions that the concept of property rights is incompatible with the status of outer space as a commons. Using John Locke's theory of property rights, this thesis offers a repudiation of that argument. This thesis argues in favour of the compatibility of the concept of property rights with the doctrine of global commons.

In further envisioning a legal framework for property rights, the thesis contends that while property rights over natural resources in space is desirable, a regime should not emerge at the expense of cohesion of the law making process in international space law and to the detriment of the well-entrenched principle of international cooperation. In this wise, the thesis applies the theories of unilateralism and multilateralism in the light of several proposals for the creation of property right. The thesis argues that multilateralism, and not unilateralism, is the appropriate standard for the creation of a regime of property rights because "what concerns all must be approved by all." The

thesis concludes with an attempt to structure a new multilateral regime that would govern, among other issues, property rights over the natural resources in outer space.

Résumé

Depuis des temps immémoriaux, la question des droits de propriété est toujours rendue plus difficile lorsque des problèmes liés à la règlementation des ressources naturelles terrestres sont discutés et en particulier lorsqu'il s'agit des ressources naturelles abondantes dans l'espace, dont la Lune et les corps célestes. Le régime légal international pour les utilisations pacifiques de l'espace n'aborde pas toutes les questions qui peuvent découler des usages commerciaux grandissant de l'espace. Les droits de propriété sur les ressources naturelles dans l'espace sont une de ces questions. Les droits de propriété sur ces ressources naturelles sont fondamentaux afin d'encourager la participation des Etats et le secteur privé dans l'exploitation de ressources naturelles (minerais) dans l'espace. Mis à part la Traité sur la Lune, qui prévoit des droits partiels et limités sur les ressources naturelles sur la Lune et d'autres corps célestes, le droit international spatial semble réticent par rapport aux droits de propriété. Certains arguments contre les droits de propriété sur ces ressources sont ancrés dans l'idée que le concept de droit de propriété est incompatible avec le statut de l'espace qui appartient à tous. En se basant sur la théorie des droits de propriété de John Locke, cette thèse rejette cet argument. La présente thèse argument en faveur de la compatibilité du concept de droit de propriété avec la doctrine des biens communs.

Cette thèse défend également l'idée que bien que les droits de propriété sur des ressources naturelles spatiales est désirable, un régime ne devrait pas émerger au détriment de la cohésion du mécanisme de création du droit dans le cadre du droit international spatial ainsi qu'au détriment du principe bien établis de coopération internationale. C'est dans une telle perspective que cette thèse applique les théories de l'unilatéralisme et du multilatéralisme à la lumière de certaines propositions pour la création de droits de propriété. Cette thèse argumente que le multilatéralisme, et pas

l'unilatéralisme, est le standard approprié pour la création d'un régime de droits de propriété car "ce qui concerne tous doit être approuvé par tous." Cette thèse conclue avec une tentative de structuration d'un nouveau régime multilatéral qui régirait, entre autre, les droits de propriété sur les ressources naturelle dans l'espace.

Acronyms and Abbreviations

Antartic Treaty	Antartic Treaty, signed in Washington D.C. (1 December 1959).
Asteroids Act	American Space Technology for Exploiting Resource Opportunities In Deep Space Act, 13th Congress, House of Representatives (10 July 2014).
IBA	International Bar Association.
ILA	International Law Association.
Bogota Declaration	Declaration of the first meeting of equatorial countries (3 December 1976).
Chicago Convention	Convention on International Civil Aviation, signed in Chicago (7 December 1944).
CHM	Common Heritage of Mankind.
COPOUS	Committee on the Peaceful Uses of Outer Space.
GA	General Assembly.
IAA	International Academy of Astronautics.
IAF	International Astronautical Federation.
ICJ	International Court of Justice.
IISL	International Institute of Space Law.
ILA	International Law Administrations.
ITU	International Telecommunications Union.
Liability Convention	International Liability for Damage Caused by Space Objects (29 March 1972).
MIT	Convention on Massachusetts Institute of Technology.
Moon Agreement	Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (18 December 1979).

NASA	National Aeronautics and Space Administration of the United State.
Outer Space Treaty	Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (27 January 1967).
PCIJ	Permanent Court of International Justice.
Registration Convention	Convention on Registration of Objects Launched into Outer Space (6 June 1975).
Rescue and Return Agreement	Agreement on the Rescue of Astronauts, the Return of Astronauts and Return of Objects Launched into Outer Space (22 April 1968).
Space Resource Exploration and Utilization Act of 2015	An Act to promote the development of a United States commercial space resource exploration utilization industry and to increase the exploration and utilization of resources in outer space, 114th Congress, House of Representatives .
UN	United Nations.
UN Charter	Charter of the UN.
UNCLOS	UN Convention on the Law of the Sea, signed in Jamaica (10 December 1982).
UNCOSA	United Nations Coordination of Outer Space Activities.
UNGAOR	UN General Assembly Resolution.
UNODA	United Nations Office for Disarmament Affairs.
UNOOSA	UN Office for Outer Space Affairs.
USA	United States of America.
USSR	Union of Soviet Socialist Republics.
VCLT	Vienna Convention on the Law of Treaties, signed in Vienna (23 May 1969).

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CHAPTER IV

Multilateralism as the appropriate standard for envisioning a legal framework for the exploitation of the natural resources in outer space.

CHAPTER I

SETTING THE STAGE:

THE SIGNIFICANCE OF THE NATURAL RESOURCES IN OUTER SPACE AND THE NECESSITY FOR PROPERTY RIGHTS.

A. INTRODUCTION

This thesis is an attempt to envision a multilateral legal framework for property rights over the natural resources in outer space, including the Moon and other celestial bodies. It is not within the purview of this thesis to envision a legal regime for every conceivable issue that could arise in the process of the exploitation of the natural resources of the Moon and other celestial bodies. Rather, this thesis is preoccupied with the narrow but extremely significant question of property rights over the natural resources in outer space, including the Moon and other celestial bodies. John Locke's orthodox theory of property rights is evaluated for the sole purpose of considering if it could be used to structure a legal regime for property rights over these natural resources. After determining the appropriate template for property rights, the thesis concludes by arguing that only a multilateral legal framework can guarantee a peaceful and efficient enforcement of property law rules in outer space, including the Moon and other celestial bodies.

It is apt to begin with the recognised fact that every epoch in human history is replete with clear evidence of how humanity has exploited natural resources to support human civilization. From the early times of the Egyptian civilization to the modern times and up till now, natural resources have served as the invaluable grease on the wheel of human civilization and advancement. There is archaeological evidence that the famous Maya and Mesopotamia civilizations collapsed as a result

of the inability of their environments to effectively utilise resources to sustain civilization.[1] A study[2] by a group of scientists feeds the view that natural resources will play a crucial role in the collapse or sustenance of human society, drawing similarities with the incidences that led to the collapse of the Mayan civilization and the realities of today's world.[3] The ownership, use, coordination and control of resources have dictated, and in most cases, accelerated the pace of human development in ages past. Natural resources may exist as renewable stocks (wind, solar radiation, precipitation, rivers, etc.), non-renewable stocks (fossil fuels, mineral deposits, etc.) and regenerating stocks (forests, soils, animal herds, wild fish stocks, game animals, aquifers, etc.). Today, humanity is now aware of a category of natural resources in outer space and making concerted efforts for their exploitation. The launch of *Sputnik-1* by the Soviet Union heralded the dawn of a new age – the space age. The space age was greeted with hitherto inconceivable vista of opportunities for humanity to harness the fruits of technology to improve human civilization. In little above half a century, space technology is now woven into every fabric of humanity. The use of space for weather forecasting, telecommunications, global positioning, direct television broadcasting and military operations has made it an indispensable tool for human existence, such that it is becoming increasingly difficult to imagine a day without space.[4] The exploration of space came with the realization that outer space is home to an amalgam of tangible and intangible

[1]See Joseph Stromberg, "Why Did the Mayan Civilization Collapse? A New Study Points to Deforestation and Climate Change" *Smithsonian* (23 August 2012) online: <smithsonianmag.com/ist/?next=/science-nature/why-did-the-mayan-civilization-collapse-a-new-study-points-to-deforestation-and-climate-change>; see generally, Jared M. Diamond, *Collapse: How Societies Choose to Fail or Succeed* (United States: Vikings Press, 2005) 48-67.

[2] Safa Motesharrei, Jorge Rivas & Eugenia Kalnay, "Human and nature dynamics (HANDY): Modeling inequality and use of resources in the collapse or sustainability of societies" (2014) 101 Ecol. Econ 93.

[3] *Ibid* at 95.

[4] Ed Morris *et al*, "A Day Without Space: Economic and National Security Ramifications"(2008) Report presented by the Space Enterprise Council of the U.S. Chamber of Commerce and The George Marshall Institute p. 40.

resources[5]. Over the past decades, the international community has admirably evolved a system for the regulation of the intangible resources in space.[6] Today, the realization that outer space is home to diverse tangible resources which can support human activities in space and life on earth has given rise to new regulatory concerns. This thesis will critically examine the international legal framework for the exploitation of mineral resources in outer space, particularly the legal regime for property rights over them.

None of the five major international space treaties,[7] defines 'outer space'[8] or 'celestial bodies.'[9] It should, however, be noted that the Outer Space Treaty (OST) was legislated to govern the exploration of outer space, including the Moon and other bodies and would therefore apply to

[5] Philip De Man, *Exclusive Use in an Inclusive Environment: The Meaning of the Non-Appropriation Principle For Space Resource Exploitation* (Switzerland: Springer, 2016)196.

[6] N. Jasentuliyana & R. Chipman, "The Current Legal Regime of the Geostationary Orbit and Prospects for the Future" (1988) 17: 6 Acta Astronautica 599.

[7] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, adopted by the General Assembly in resolution 2222 (XXI), opened for signature on 27 January 1967, entered into force on 10 October 1967 Outer Space Treaty/OST); Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Rescue Agreement), adopted by the General Assembly in resolution 2345 (XXII), opened for signature on 22 April 1968, entered into force on 3 December 1968; Convention on International Liability for Damage Caused by Space Objects (Liability Convention), adopted by the General Assembly in resolution 2777 (XXVI), opened for signature on 29 March 1972, entered into force on 1 September 1972; Convention on Registration of Objects Launched into Outer Space (Registration Convention), adopted by the General Assembly in resolution 3235 (XXIX), opened for signature on 14 January 1975, entered into force on 15 September 1976; and Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, adopted by the General Assembly in resolution 34.68, opened for signature on 18 December 1979, entered into force on 11 July 1984 (the Moon Agreement).

[8]The definition of outer space has been on the agenda of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) since the 1960s and despite diverse suggestions and propositions, there is still no universally agreed boundary between airspace and outer space. For discussions on the elusiveness o the definition of outer space, see generally, Gbenga Oduntan, *Sovereignty and Jurisdiction in Airspace and Outer Space: Legal Criteria for Spatial Delimitation* (New York: Routledge, 2012)283-310.

[9]There is also no definition of 'celestial bodies' in any of the space law treaties. See Virgiliu Pop, "A Celestial Body is a Celestial Body" in *Proceedings of the Forty-Fourth Colloquium of the Law of Outer Space* (2001)100; Stephan Hobe "Article I" in Hobe et al (eds.) *Cologne Commentary on Space Law: Volume 1, Outer Space Treaty* (Cologne: Carl Heymanns Verlag, 2009) 32: "[o]uter space encompasses the terrestrial and the interplanetary space of the universe…celestial bodies, on the other hand, are a result of the natural creation of the universe." (Citing Elmar Vit with approval).

resources found in outer space, the Moon and celestial bodies. The Moon Agreement is a special treaty specifically dealing with exploitation rights over natural resources of the Moon and other celestial bodies.[10] This thesis focuses on the resources in outer space, the Moon and celestial bodies.

B. BACKGROUND TO THE STUDY

To dispel the thought that the existence of natural resources in space is a fictional tale, it is apposite to give a clear background on their nature, scope and uses. The exploitation of the natural resources in outer space no longer belongs to the realms of science fiction.[11] The long-list of natural resources on the Moon includes volatile gases, oxygen, potassium, manganese, silicon, iron, chromium, aluminium among other minerals.[12] Of particular significance is Helium-3, a valuable resource on the Moon, which can be used to support future development of nuclear fusion energy.[13] Helium-3 is highly regarded because of its ability to generate very little radioactive product; more so, its shortage on earth is compensated by its abundant supply on the Moon's soil by at least 13

[10] Steven Freeland & Ram Jakhu, "Article II" in Hobe et al (eds.) *Cologne Commentary on Space Law: Volume 1, Outer Space Treaty* (Cologne: Carl Heymanns Verlag, 2009) 59.

[11] Fictional literature is replete with diverse tales of asteroids mining and the issues that can arise from such a venture. See Carolyn Cherryh, *Heavy Time* (United States: Aspect, 2000) (where a company engaged in mining asteroids to the economy on earth and a war. Foreshadowing the question that have arisen for discussion in this thesis, the plot raises the issues that may arise in a space mining venture, including mining rights, coeporate corruption and economic exploitation); Garret P. Serviss, *Edison's Conquest of Mars* (United States: Carcosa House, 1947) (where Edison, alongside a group of scientists, develops ships and weapons and a disintegration ray to defend Earth. They fight aliens in space and on Mars and caused a flood that defeats the enemy aliens).

[12] Fabio Tronchetti, "The Moon Agreement in the 21st Century: Addressing Its Potential Role in the Era of Commercial Exploitation of the Natural Resources of the Moon and Other Celestial Bodies" (2010)36 J. Space L. 489 at 493; See generally, Viorel Badescu, *Moon: Prospective Energy and Material Resources* (Heidelberg: Springer, 2012) 57-87.

[13] See Ram Jakhu and Maria Buzdugan, "Development of the Natural Resources of the Moon and Other Celestial Bodies: Economic and Legal Aspects" (2008) 6:3 Aspropolitics 201 at 202, online: <www.tandfonline.com/doi/pdf/10.1080/14777620802391778>.

parts per billion (ppb) by weight.[14] Helium-3 "can generate nuclear power and, as a consequence, energy in a clean way, through a process of nuclear fusion which does not produce toxic waste."[15] Estimates show that Helium-3 on the Moon is sufficient to cater for the energy needs on earth for at least 1000 years;[16] while just twenty-five tonnes of Helium-3 can provide the power needed by the United States in a single year.[17] Also, asteroids are believed to contain diverse resources, including water. Since 1801, when Giuseppe Piazzi discovered the first asteroids (Ceres),[18] up till 2012, when some private entities expressed interest to mine them; otherwise technical information about asteroids have become more comprehensible.[19] Some Asteroids are "rocky, airless worlds that orbit our sun, but are too small to be called planets"[20] They are considered to be left over from the formation of the solar system about 4.6 billion years ago. They were christened "asteroids" because of their star like appearance.[21] There are diverse mineral resources deposited in asteroids. These resources are of immense benefits to life on earth and man's activities in space. It is believed that Near Earth Asteroids are rich in carbon and water[22] while other asteroids are said to be metallic

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[14] Cheerie Patneaude, "Helium-3: One of the Most Significant Contributions of the Apollo Missions" *NASA* (12 October 2012),online:<www.nasa.gov/centers/wstf/news/2012/helium3.html#.V1mbWd72Zet> (NASA retired astronaut and geologist Harrison Schmitt stated that "one of the most significant contributions of the Apollo Missions was confirming the presence of Helium-3 on the moon").

[15] Tronchetti, *supra* note 12 at 495.

[16] NASA, Johnson Space Centre, "Mining and Manufacturing on the Moon", online: <www.aerospacescholars.jsc.nasa.gov/HAS/cirr/em/6/6.cfm> ("One of the most significant contributions of the Apollo Missions was Confirming the presence of Helium-3 on the Moon.").

[17] See David Whitehouse, "Moon Map Aids Discovery" *British Broadcasting Corporation News* (2 December 1998), online: <www.news.bbc.co.uk/2/hi/sci/tech/226053.stm>; Tronchetti, *supra* note 7 at 495.

[18] G. Foderà Serio, A. Manara & P. Sicoli, "Giuseppe Piazzi and the Discovery of Ceres" online: <www.lpi.usra.edu/books/AsteroidsIII/pdf/3027.pdf> 21.

[19] See Benjamin Zellner, David Tholen & Edward Tedesco, *The Eight-Color Asteroid Survey: Results for 589 Minor Planets* (1985) 61 ICARUS 355, online:< https://www.researchgate.net/publication/222750667_The_Eight Color_Asteroid_Survey_Results_for_589_minor_planets>*;* see generally, Ricky Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space* (New York: Springer, 2007) 55.

[20] NASA, "Asteroids: In Depth", online: <www.solarsystem.nasa.gov/planets/asteroids>

[21] Serio, Manara & Sicoli, *supra* note 18 at 21.

[22] Ricky Lee, *supra* note 19 at 56.

in nature and thus contain troilite, olivine, pyroxene, plagioclase feldspar, nickel and iron. It also contains non-metals such as arsenic, selenium, germanium, phosphorus, carbon and sulphur.[23] Asteroids are also abundant in platinum metals including palladium, osmium, ruthenium and iridium. [24] Mars also plays host to immense natural resources. On 28 September 2015, the National Aeronautics and Space Administration (NASA) confirmed evidence of water on Mars,[25] under certain circumstances. This development certainly holds great prospects for humanity. There is also scientific evidence pointing to the existence of methane on Mars, suggesting that there may be some life on the planet.[26] While it is true that several financial and technical investments will be deployed in order to translate space mining from the realms of 'possible' to 'feasible,[27] it goes without saying that it will become a reality sooner rather than later because of the combination of

[23] *Ibid*; see also John Lewis, "Resources of the Asteroids" (1997) J. Br. Interplanetary Society 51-58.

[24]Lee, *supra* note 19 at *57*: "It is projected that concentrations of 30-60 parts per billion or even 250 to over 1,000 parts per billion of platinum group metals may be found on asteroids, as compared to four to six parts per billion in the best mines of Earth."

[25] [25]See NASA, "NASA Confirms Evidence that liquid water Flows on Today's Mars" (28 September 2015) online:<www.nasa.gov/press-release/nasa-confirms-evidence-that-liquid-water-flows-on-today-s-mars> (John Grunsfeld, an astronaut and associate administrator of NASA's Science Mission Directorate in Washington remarked thus on the confirmation of water on Mars:
"Our quest on Mars has been to 'follow the water,' in our search for life in the universe, and now we have convincing science that validates what we've long suspected…This is a significant development, as it appears to confirm that water -- albeit briny -- is flowing today on the surface of Mars.").

[26] NASA, "Alien Life on Mars? NASA Rover Spots Methane, a Possible Sign of Microbes" online:<www.news.nationalgeographic.com/news/2014/12/141216-mars-methane-curiosity-space-science/>; European Space Agency, "The Enigma of Methane on Mars", (2 May 2016) online: <http://exploration.esa.int/mars/46038-methane-on-mars/>

[27] Leonard David, "Is Asteroid Mining Possible? Study Says Yes, for $2.6 Billion" *Space.com* (24 April 2012), online:<www.space.com/15405-asteroid-mining-feasibility-study.html> ("…while Planetary Resources is still years away from actually snatching up an asteroid and staking a cosmic claim, the KISS asteroid retrieval study details in extreme detail exactly how such a project could work…the Asteroid Capture and Return mission — the central focus of the KISS study — blueprints the technological know-how to moving an asteroid weighing about 1.1 million-pound (500,000 kilograms) to a high lunar orbit by the year 2025. The mission's cost is expected to be $2.6 billion"; José Galache, "Asteroid Mining and Planetary Resources - Our Take on It" *The International Astronomical Union Minor Planet Centre* (9 July 2012) online:<www.minorplanetcenter.net/blog/asteroid-mining-and-planetary-resources-our-take-on-it/ > .

several factors. The world is currently faced with the trilemma of balancing energy equity, energy security and environmental sustainability. Tensions continue to heighten as the increase in the global energy demands is inversely proportional[28] to available resources and population growth.[29] This would ultimately lead us to look to other planets and extra-terrestrial resources to supplement or supplant resources on earth.[30] Furthermore, the spate of commercial activities in space now demands a corresponding development of critical space infrastructure for the successful conduct of those activities. This is seen in the several proposals for the development of orbital space stations and interplanetary probes;[31] thus, it is economically viable to use resources in space for the construction of these installations rather than transport them from earth.[32] The environmental challenges arising from man's exploitation of the natural/mineral resources of the earth are catastrophic, already resulting in complications such as deforestation, ocean acidification,

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[28] FAO, "How To Feed The World 2050", online: <www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf>; Shackleton Energy Company, "Space Industrialization and the Protection of Earth" WEF-McGill Workshop July 2013 Bringing Space Down to Earth (4 July 2013), online: <www.mcgill.ca/iasl/files/iasl/wef-mcgill_space-keravala.pdf>:("[c]ivilization reached its physical frontier over a century ago and now approaches its economic and resource limits"); Population Institute, "2030: The 'Perfect Storm' Scenario", online: <www.populationinstitute.org/external/files/reports/The_Perfect_Storm_Scenario_for_2030.pdf>; Katrin Muff et al, *Management Education for the World: A Vision for Business Schools Serving People and Planet* (UK : Edward Elgar Publishing Limited, 2013). The authors quoted, with approval, the statement by the UN Secretary-General's High Level Panel on Global Sustainability:
"But what, then, is to be done if we are to make a real difference for the world's people and the planet? We must grasp the dimensions of the challenge. We must recognise that the drivers of that challenge include unsustainable lifestyles, production and consumption patterns and the impact of population growth. As the global population grows from 7 billion to almost 9bliion by 2040, and the number of middle-class consumers increases by 3 billion over the next 20 years, the demand for resources will rise exponentially. By 2030 the world will need at least 50 percent more food, 45 percent more energy and 30 percent more water all at a time when environmental boundaries are throwing up new limits to supply."
[29] UN Department of Economic and Social Affairs, "World population projected to reach 9.6 billion by 2050" (13 June 2013), online:<www.un.org/en/development/desa/news/population/un-report-world-population-projected-to-reach-9-6-billion-by-2050.html>:
[30] Lee, *supra* note 19 at 6.
[31] *Ibid.*
[32] *Ibid.*

pollution, depletion of the ozone layer, climate change, loss of biodiversity etc. As a result, the global community is paying attention to how to use and harness the resources of the planet in an environmentally sustainable manner that meets the needs of the present generation, without compromising the needs of the future generation.[33] Exploitation of space mineral resources is, perhaps, an answer to these environmental concerns because the technology for exploiting the mineral resources in space could allow for the preservation of environmentally sensitive areas as "global sanctuaries"[34] Finally, and perhaps the most significant reason, is that while man's journey to space was ignited and inspired by the Cold War, space exploitation, and all the ambitions that are associated with it, have deep commercial motivations. To drive home this point, one needs only compare the 'moon speeches' of J.F. Kennedy[35] and George W. Bush[36]. It would be seen that both speeches reflect a radical change in generational space priorities. While President Kennedy chose the moon "because that goal will serve to organize and measure the best of our energies and skills…" President Bush's decision to "undertake extended human missions to the moon" was largely influenced by the fact that the moon is "home to abundant resources". Some private entities are already developing capacity to drive this very critical sector. In fact, some billionaire investors are reported to be backing major space mining ventures.[37] Also, Planetary Resources and Deep Space Industries are two major US companies involved in the space mining

[33] *Rio Declaration on Environment and Development* (14 June 1992) UN. Doc. A/CONF. 151/26 (Vol.I) /31 ILM 874 (1992) principle 3, online: <www.unep.org/documents.multilingual/default.asp?documentid=78&articleid=1163>

[34] Lee, supra note 19 at 6.

[35] John Kennedy Moon Speech - Rice University Stadium (12 September 1962) online :<www.er.jsc.nasa.gov/seh/ricetalk.htm>.

[36] The White House, "President Bush Announces New Vision for Space Exploration Program" online: <http://history.nasa.gov/Bush%20SEP.htm>.

[37] Mike Wall, "Asteroids Mining is just Latest Billionaire's Club Space Project" *Space.com* (25 April 2012) online:<www.space.com/15419-asteroid-mining-billionaires-private-spaceflight.html>.

campaign. Sagi Kfir, the General Counsel of Deep Space Industries echoes private sector interest in commercial space mining while making a case for space resource utilization. He enthused thus:

> "Space resource utilization is not primarily about mining precious metals in space and bringing them back to Earth. Rather, space resources such as water ice, metals, regolith, and silicates will be the raw material used to develop structures in space that will enable humanity to reach farther into the depths of our solar system and beyond. Such structures include the development of large space solar power satellites that will provide clean energy throughout the world and allow humanity to wean itself off fossil fuels that are destroying the Earth's environment. The development of an international space resource utilization industry will also foster economic growth throughout the world and will develop advanced technologies yet unknown to benefit all mankind. And the same technologies employed for exploring and using asteroid resources will also be used for planetary protection to ward off any deadly Earth-bound asteroid."[38]

C. FRAMING THE PROBLEM: RESEARCH QUESTION AND METHODOLOGY

It is against the backdrop of the foregoing that this thesis sets out to present arguments in favour of property rights over the natural resources in space. Private entities, and even States, do not have the incentive to engage in a space mining venture if they are not assured of property rights over the mined resources.[39] This is especially so, considering the fact that space exploration, nay

[38] Sagi Kfir, "The Truth Behind Title IV of the Commercial Space Launch Competitiveness Act of 2015" online: <www.deepspaceindustries.com/is-asteroid-mining-legal/>.
[39] Sagi Kfir, "Title IV of the U.S. CSLCA of 2015: A Critical Step Forward in Facilitating the Development of a Viable Space Infrastructure" (2016) Power Point Presentation made at the ASTRO 2016

mining, is an inherently risky and expensive venture.[40] The insurance and finance institutions that are expected to help cushion the risks and expenses involved will be hesitant without some form of assurance of property rights.[41] This will help ensure non-interference with the particular resource being mined, ensure political certainty and help investors and settlers determine conflicts more precisely.[42] This author realises that while it may be arguable that property rights may not be the only means of incentivising the participation of States and their private entities in the exploitation of the natural resources in space, it is definite that the certainty of property rights would ensure equitable exploitation. Absence of property rights over the exploitation of consumable resources may pose some problem, since it affects the freedom of other States to use the resources[43] and may lead to avoidable conflicts over priority of access.

But the peculiar nature of outer space environment may, however, pose some problems to the conferment of property rights on States in respect of the natural resources therein. The freedom to explore and exploit space contained in Article I of the Outer Space Treaty is circumscribed by several limitations. One of such limitations is that the freedom to use space must be exercised with due regard to the corresponding interests of other States.[44] When interpreted in the light of its history, purpose and context, it becomes clear that outer space, the Moon and their natural

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Conference of the Canadian Astronautics and Space Institute held on17-19 of May 2016 at the Delta Hotel City Centre, Ottawa Canada.

[40] Leonard David, *supra* note 27; Galache, *supra* note 27; Lee, *supra* note 19 at 96: "It has been estimated in 1996 that a typical asteroid mining venture would require a capitalization of at least U.S. $100 billion, or U.S. $120 billion in 2005 values."

[41] Jakhu and Buzdugan, *supra* note 13 at 11.
[42] See Wayne White, ''Real Property Rights in Outer Space'' *Proceedings, 40th Colloquium on the Law of Outer Space, International Institute of Space Law* (1998) 370, online: <www.spacefuture.com/archive/real_property_rights_in_outer_space.shtml>
[43] Philip De Man, *supra* note 5 at 196.
[44] OST, article IX.

resources are rightly regarded as a *commons*, and that no State or entity can have exclusive title over any part thereof. While space belongs to no one, the right of access, exploration, use and exploitation is given to everyone. But that right of access does not include the right to own or exercise any ingredient of property rights over space or any part thereof.

Thus, the question this thesis sets out to interrogate is whether the idea of property rights can co-exist with the long standing view that the exploration of space is the "province of all mankind" and the status of space as a *commons*. Contrary to the views of authors who argue that the two concepts are mutually exclusive,[45] this thesis attempts to answer that question in the affirmative.

D. THE EXISTING LEGAL FRAMEWORK AND ITS LACUNAE.

i. The Outer Space Treaty (OST).

The OST is the most important international space law agreement, not just because it is the most ratified of all the space law treaties,[46] but also because it laid the foundation for other international space law instruments. The treaty makes provision for the international liability for damage caused by space objects,[47] the protection of distressed astronauts[48], protection of space environment,[49] international cooperation in the use of space[50] and most importantly, the exploration and use of space as the province of all mankind.[51] Most of the provisions of the OST have been further elaborated in four other international agreements relating to space activities. The OST, however, presents some challenges against the growing government and private sector interest to exploit

[45] Michael Listener, "It's Time to Rethink International Space Law" *The Space Review* (31 May 2005) online:<http://www.thespacereview.com/article/381/1>
[46]Full list of signatories is available onine:<www.disarmament.un.org/treaties/t/outer_space/signature/asc>
[47] OST, article VII.
[48] OST, article V.
[49] OST, article IX.
[50] *Ibid.*
[51] OST, article I.

natural resources in space. First, being one of the vestiges of the cold war era, the OST does not adequately cater for the current spate of commercialization in the space industry.[52] Notwithstanding Article VI which imposes a broad international responsibility on State parties to the Treaty to ensure that the activities of their private entities remain in compliance with the Treaty and international law principles,[53] there is some difficulty in absorbing the infiltration of private entities into provision of space services.[54] Second, while Article I of the OST grants States the freedom to explore and use outer space for their benefits without any form of discrimination, Article II fetters that freedom by expressly prohibiting States and their private entities from exercising sovereignty and/or property rights over outer space including the Moon and other celestial bodies. The prohibition of property rights creates a disincentive for States and their private entities to exploit these resources.

ii. The Moon Agreement

The Moon Agreement is the only international legal instrument that attempts to specifically deal with the exploitation of the Moon and other celestial bodies. This treaty outlines the principles that ought to govern the exploitation of the resources on the Moon and other celestial bodies. Amongst others, the Agreement makes provision for the use of the Moon and other celestial bodies

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[52]Katrin Metcalf, *Appropriation in Space – Appropriation or Use* (Uppsala: Iustus Förlag AB, 1999)21; Lee, *supra* note 19 at 96; Andrew Park, "Incremental Steps for Advancing Space Security: The Need for a New Way of Thinking to Enhance the Legal Regime for Space" (2006) 28 Houston J. Int'l. L. 871; See Space Foundation, "The Space Report 2015: The Authoritative Guide to Global Space Activity" online: "The year 2014 was a good one for the global space economy overall. Consisting of launch and ground services, satellite manufacturing, satellite television and communications, government exploration, military spending, and other interests, the global space economy grew by 9% in 2014, reaching a total of $330 billion worldwide. Together, commercial space activities made up 76% of the global space economy and grew 9.7% in 2014. The remainder was composed of government investments in space, which experienced a combined growth of 7.3% in 2014"<www.spacefoundation.org/sites/default/files/downloads/The_Space_Report_2015_Overview_TOC_Exhibits.pdf>

[53] Jakhu and Buzdugan, *supra* note 13 at 217.

[54] Francis Lyall, "Cologne Commentary on Space Law" (2014) 30: 1 at 48-49.

exclusively for peaceful purposes;[55] freedom to explore the Moon and other celestial bodies without discrimination;[56] disruptions to the lunar environment or harmful contaminations are prohibited and are to be prevented.[57] Although the Agreement was a rational attempt to manage space resource by setting the stage for an international regime, Article 11(3) the Agreement provides for a broader prohibition of property rights than that provided in Article II of the OST.[58] The Agreement further declares that the Moon and other celestial bodies and their natural resources are the "common heritage of mankind"[59] and that States "undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the Moon as such exploitation is about to become feasible."[60] Thus, the Agreement also fails to confer property rights in a way that would incentivise the exploitation of natural resources.[61] The international regime contemplated by Article 11(5) is now imperative.

[55] Moon Agreement, article 3.
[56] Moon Agreement, article 4.
[57] Moon Agreement, article 7.
[58]Article 11(2) of the Moon Agreement provides that: "[t]he Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means." Similarly, Article 11(3) of the Moon Agreement contains a broader prohibition on any form of property rights in outer space. 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 or subsurface, shall not create a right of ownership over the surface or the subsurface of the Moon or any areas thereof. The foregoing provisions are without prejudice to the international regime referred to in paragraph 5 of this article.
[59]Moon Agreement, article 11(1).
[60]Moon Agreement, article 11(5).
[61] Notwithstanding this, a purposive and conjunctive interpretation of Articles 6(2) and 11(3) of the Agreement would reveal that States can exercise limited property rights over natural resources not "in place" on the Moon and other celestial bodies. Articles 6(2) and 11(2) have hardly been applied by States as the Agreement has only received 16 ratifications. For a detailed discussion of this point, see *infra* pages 52-56.

This thesis thus looks to philosophical principles in envisioning a regime that accommodates both the features of the *global commons* doctrine and the principle of property rights in outer space. The Lockean principle of property rights is found to be of much value in this regard.

E. JUSTIFICATION FOR THE USE OF JOHN LOCKE'S THEORY OF PROPERTY RIGHTS TO FILL THE LACUNAE

It is to be noted that in formulating theories, philosophers are usually influenced by their ideological prejudices and the peculiar sociological context with which the theory is formulated. It is a constant feature of virtually every legal undertaking. Even attempts to define law itself have been perpetually elusive, always dependent on the prejudices and idiosyncrasies of whoever attempts the task.[62] This is applicable to Locke's theory of property rights. Out of the abundance of property theories, three important reasons inform the choice of the Lockean school to envision a legal regime for property rights over the natural resources in space. First, over the years, the Lockean theory of property has proven to be of immense utilitarian value in legal and political thought. More than most theories, it has been applied to diverse areas including bioengineering, territorial rights, colonial annexation of territory and international law.[63] The perceived vagueness of Locke's theory is accompanied with the advantage of sustained relevance, thus making the theory amenable to contemporary circumstances and invoking a variegated tapestry of interpretations.[64] This thesis offers the interpretation of Locke's theory of Locke's theory of property rights to the exploitation of natural resources in space. Second, most contemporary discussions on the exploitation of natural resources in outer space undermine or totally ignore the

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[62] See A.A.O. Okunniga, *Transplants and Mongrels and the Law: The Nigerian Experiment,* (Ife: University of Ife Press, 1983) - Inaugural Lecture Series 62 delivered at University of Ife, Nigeria on May 17, 1983 1: "[n]o one including the lawyer has offered, no one including the lawyer is offering, no one including the lawyer will ever be able to offer a definition to end all definitions of law."

[63] Karl Widerquist, "Lockean Theories of Property: Justifications for Unilateral Appropriation" (2010) 2(1) Public Reason 3 at 5.

[64] *Ibid.*

significance of legal theory in shaping a legal framework for property rights over space resources. While some scholars concentrate on the interpretation of the existing space law treaties,[65] others draw inspiration from other analogous areas beyond the limits of national sovereignty and/or the other structured legal regimes within international space law.[66] This thesis attempts to fill that gap. This is in keeping faith with Lord Coke's dictum that "who knoweth the law, and knoweth not the reason thereof, soon forgetteth his superfluous learning."[67] Philosophy is the 'reason' behind the law. Finally, and perhaps the most important reason is that, I am persuaded that Locke's conception and discussion of property rights can be situated within the context of property rights over the natural resources in outer space particularly because of Locke's arguments in favour of private property and his allusion to "a more affirmative original communism in which everyone has equal rights to access to the world's natural resources, and in which people therefore owe duties to one another from the outset."[68] This appears to fit well within the present framework for outer space activities which mandates activities in outer space to be carried for the benefit of *all* countries.[69] When Locke's theory is applied, the question that arises is whether a unilateral or multilateral regime is more suitable in bringing about a new regime of property rights. This thesis argues that the law making process for the provision of property rights over the natural resources in outer space must to be multilateral and not unilateral. A multilateral regime is compatible with the object and purpose of international law and the principle of international cooperation. As we

[65] Stephen Gorove, "Interpreting Article II of the Outer Space Treaty" (1969) 37:3 Fordham L. Rev. 349.
[66] Lee, *supra* note 19; Tronchetti, *supra* note 12; De Man, *supra* note 5.
[67] "The Importance of Theory in Law", *The Law Office of Rick Horowitz Criminal Defense* (18 January2009)online:<www.academia.edu/4216012/Public_Reason_2_1_3->26_2010_by_Public_Reason_Lockean_Theories_of_Property_Justifications_for_Unilateral_Appropriation> ;William Everett Britton and Ralph Stanley Bauer, Cases on Business Law, William Everett Britton and Ralph Stanley Bauer, Cases on Business Law, (1922) 629.
[68] Gregory Alexander & Eduador Peñalver, *An Introduction to Property Theory* (New York: Cambridge University Press, 2012) at 38.
[69] OST, article I.

have learnt from international environmental law, developed and technologically advanced States are more inclined to act unilaterally than their developing and less advanced counterparts.[70] Some States have opted for national legislation to provide for property rights, while others continue to advocate for a multilateral framework. In November 2015, the U.S took a huge step towards unilateral regulation of property rights over space resources by enacting legislation that expressly provides that:

> "A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States."

While some States have commended[71] this legislation and demonstrated intention to follow suit,[72] other States and commentators have condemned it as a violation of the OST and "full-frontal attack

[70] Lindsey Powell, "In Defense of Multilateralism", paper prepared for the Global Environmental Governance: the Post-Johannesburg Agenda, 23-25 October 2003, Yale Center for Environmental Law and Policy New Haven, CT, online: <www.yale.edu/gegdialogue/docs/dialogue/oct03/papers/ Powell.pdf> p.7.

[71] *Report of the Legal Subcommittee on its fifty-fifth session* UN Doc A /AC.105/1113 (2016), online:<www.unoosa.org/oosa/en/oosadoc/data/documents/2016/aac.105/aac.1051113_0.html>

[72] Haroon Siddique, "Luxemburg Aims To be a Big Player in Possible Asteroid Mining" *The Guardian* (3 February 2016), online: <www.theguardian.com/science/2016/feb/03/luxembourg-aims-to-be-big-player-in-possible-asteroid-mining>.

on settled principles of space law."[73] This unilateral legislation is likely to occasion conflicts over space resources. Apart from violating Article II of the OST, this could potentially lead to a situation where the domestic law of a State is binding on other States. This would be contrary to Article 2 of the Charter of the United Nations[74] which forbids States from interfering with the sovereignty and territorial integrity of other States. The debate on the legality of this unilateral provision has continued to rage on and even elicited a debate at the April, 2016 Legal Sub Committee Meeting of COPUOS with States' delegations expressing views in support and in opposition to the legislation. At the core of the debate over property rights in outer space are two competing legal theories that influence the creation of international law – unilateralism and multilateralism. Multilateralism and unilateralism are two points on the spectrum of foreign relations and affairs. Unilateralism refers to a situation where a State acts in an individualistic manner outside the structure of collective decision making at the international level while multilateralism emphasizes a collective decision making process, especially which such issues are of mutual interests to members of the international community. The issues of property rights over space resources will be considered with these theoretical lenses. The ingredients of both theories will be examined in order to determine the more suitable option within the context of the exploitation of space resources. The possibility of a middle ground approach will be considered, considering the fact that unilateral action can invariably lead to multilateral solutions.

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[73] Gbenga Oduntan, "Who owns space? US Asteroid-Mining Act is Dangerous and Potentially Illegal" *The Conversation* online: <www.theconversation.com/who-owns-space-us-asteroid-mining-act-is-dangerous-and-potentially-illegal-51073≥.

[74] United Nations, *Charter of the United Nations*, 24 October 1945, 1 UNTS XVI, Article 2.

The issues are significant, not only because of the possible use of these resources for the betterment of humanity, but also because they are possible causes of international conflicts. Apart from the ongoing debates on the legality of the US legislation, it is not difficult to contemplate other possible conflicts that may arise as a result of mining space resources.

F. CONCLUDING REMARKS

It is important that these avenues for potential conflicts are addressed before substantive mining activities commence. At the beginning of this chapter, it was remarked that natural resources have been the oil in the wheel of human civilization from time immemorial. It was further remarked that the resources on earth are gradually depleting and moving towards a point when alternative resources will be required to supplement or replace them. This is the context within which the exploitation of space resources becomes imperative. But a caveat must be entered at this point that the conflicts which characterised the exploitation of resources on earth should serve as a lesson in mining space resources. The United Nations Environmental Programme states that 40 percent of all intrastate conflicts in the last sixty years have a link with natural resources.[75] Since 1990, exploitation of high value resources has catalysed at least 18 violent conflicts.[76] Nigeria, Sudan, South Sudan, Sierra Leone, Iraq, Venezuela, the South China Sea etc. all make up the long list of the areas impacted by resource conflicts. This is another reason why the question of property rights is worth considering. The theoretical lenses of unilateralism and multilateralism would give fillip to the proposal for a legal framework that would be made in the final chapter of this thesis.

[75] UN, "Conflict and Resources" online:<www.un.org/en/peacekeeping/issues/environment/resources.shtml>
[76] *Ibid.*

CHAPTER II

LEGAL PROHIBITION AGAINST PROPERTY RIGHTS IN OUTER SPACE

A. INTRODUCTION

This chapter follows the discussion in the previous chapter and sets the stage for the next chapter. It evaluates some arguments in contemporary space law literature that property rights can exist over natural resources in space under the current space law regime. The implication of this contention, if accepted, is that there already exists a legal endorsement for States and their private entities to exercise property rights over these natural resources. This chapter attempts to expose the frailty of those arguments by considering the relevant provisions of the OST in line with the acceptable rules of interpretation in international law. It sets the stage for the next chapter in that it emphasizes the necessity of the Locke-an approach to property rights.

B. THE SCOPE OF THE PROHIBITION AGAINST PROPERTY RIGHTS IN OUTER SPACE AND ON CELESTIAL BODIES

i. Prohibition under the OST

Article II of the OST provides that "[o]uter 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." It is generally understood that the status of outer space cannot accommodate any form of claim of sovereignty. But the non-appropriation by use or occupation seems to breed some controversies. While a State has the freedom to explore and use space under Article I of the OST, any use that amounts to appropriation is prohibited by Article II. In essence, States cannot exercise their rights to use space in a manner that amounts to appropriation. A functional test would have to be applied on a case by case basis in order to determine whether a particular use amounts to appropriation. For example, while States may be allowed to exploit celestial bodies, they would

be infringing Article II if the celestial body is "exploited out of existence."[77]Article II also excludes the application of traditional principles on the acquisition of territory under international law. Prescription and Occupation are two modes of acquisition of territory based on continuous exercise of effective control.[78] In the *Western Sahara Case*, the ICJ reasoned that "'occupation' was a means of peaceably acquiring sovereignty over the territory otherwise than by cession or succession…"[79] Occupation as a means of appropriation of acquisition of territory is therefore forbidden in outer space. While a State has the right to exercise jurisdiction and control over its space objects launched into outer space,[80] such exercise of control does not entitle a State to appropriate the portion of space where the space object is placed.

There are divergent views in literature on the exact meaning of 'national appropriation' under Article II of the OST. There are essentially two schools of interpretation of the provisions of the existing regime. The first school postulates that there is no prohibition for private appropriation under the OST. Hence, private appropriation is permitted under the OST. The second argues that the OST prohibits private appropriation. Both schools will be considered. The first school contends that the OST only prohibits 'national appropriation' and not private appropriation.[81] Hence, private appropriation is permitted under Article II. This interpretation is anchored on the principle of interpretation of statutes which states that *expressio unis est exclusion alterius* i.e. the express mention of one things is the exclusion of the other. Applied to the present discussion, the express

[77] Freeland and Jakhu, *supra* note 10 at 53.
[78]Malcolm Shaw. *International Law* (Cambridge: Cambridge University Press, 2008) 502-507; I*sland of Palmas Case (or Miangas), United States v Netherlands*, Award, (1928) II RIAA 829, 4th April 1928, Permanent Court of Arbitration [PCA].
[79] Western Sahara Case, Advisory Opinion, ICJ Report 6 [1975] [hereafter "Western Sahara case"] para. 75-83
[80] OST, article VIII.
[81] Virgiliu Pop, *Who Owns the Moon? Extraterrestrial Aspects of Land and Mineral Resources Ownership* (Berlin: Springer, 2009) 63.

prohibition of 'national appropriation' means the exclusion of 'private appropriation'. Gorove, a leading proponent of this view enthused thus:

> "While further development in space law, by international custom or treaty, any eventually prohibit spatial appropriation by John Doe…., the [Outer Space] Treaty in its present form appears to contain no prohibition regarding individual appropriation….Thus, at present an individual acting on his own behalf or on behalf of another individual or a private association or an international organisation could lawfully appropriate any part of outer space, including the moon and other celestial bodies" [82]

This perceived 'loophole' is perhaps what imbued space entrepreneurs like Dennis Hope of the Luna Embassy Corporation to sell plots on the Moon and other celestial bodies for "$20 (£12) an acre, or $25 (£15) including mineral rights"[83] Frans von der Dunk states that "it is smart reasoning. There is no actual specific clause in any legal document to say Mr. Hope is wrong."[84] If this argument is accepted, it would be a convenient point to conclude this thesis, as it would mean that the existing framework already accommodates Locke's argument on property rights. However, this argument falls like a pack of cards when confronted with a purposive interpretation of Article II. Freeland and Jakhu counsel that "the precise meaning of the [non appropriation] principle, as it is set out in Article II of the Outer Space Treaty, is not to be determined according to broad

[82] Gorove, *supra* note 65 at 351.

[83]Chris Pleasance, "Former Car Salesman Who Claims He Owns The Moon Has Made $11MILLION by Selling Pieces of Lunar Landscape - and Buyers include Tom Cruise, Tom Hanks and George Lucas" *Mail Online* (10 June 2014), online: <www.dailymail.co.uk/news/article-2654045/Id-buy-moon-Former-car-salesman-claims-owns-Earths-satellite-10million-selling-pieces-lunar-landscape-buyers-include-Tom-Cruise-Tom-Hanks-George-Lucas.html#ixzz4DbNJB83K>

[84] Pop, *supra* note 81 at 63.

philosophical arguments, but rather through the traditional methodology relating to treaty interpretation."[85] The Vienna Convention on the Law of Treaties[86] (VCLT) is the prime legislative document for the interpretation of international treaties and is applicable to the interpretation of the OST. Article 31(1) provides that "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose" (underlined for emphasis). The underlined are the cumulative ingredients that must exist when attempting to define a treaty.

a) Ordinary Meaning.

When the ordinary meaning is given to the terms of Article II of the OST, it is clear that the Article does not *strictu sensu* prohibit private appropriation of outer space, including the Moon and other celestial bodies, since the provision expressly prohibits national appropriation without more. 'National' is an adjective that describes anything "of or belonging to a nation; affecting, or shared by the nation as a whole."[87] This is particularly so, in view of Article 11(2) of the Moon Agreement which contains a similar provision but goes ahead to state in paragraph (3) 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." It is thus arguable that

[85]Freeland & Jakhu, *supra* note 10 at 38.

[86] *Vienna Convention on the Law of Treaties,* 23 May 1969, UNTS Vol. 1155 (entered into force on 27 January 1980) [*VCLT]* Article 4. It is to be noted that the VCLT postdates the OST and will be otherwise inapplicable to the interpretation of the OST due to Article 4 of the VCLT which provides for the non-retroactivity of the VCLT. The provisions of Article 31 of the Convention have, however, crystallised into customary international law: *Case concerning The Territorial Dispute (Libyan Arab Jamahirriya v Chad)* (Judgment) [1994] ICJ Rep 6, paragraph 41; *Case concerning Maritime Delimitation and territorial Question (Qatar v Bahrain)* (Judgment) [1995] ICJ Rep 6, paragraph 33; *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory (Advisory Opinion)* [2004] ICJ Rep 136, paragraph 94.

[87]*The Oxford English Dictionary*, 2nd ed, *sub verbo* "national" 232.

if the negotiating States of Article II of the OST intended to prohibit private appropriation, they would have expressly done so, like it was done under Article 11(3) of the Moon Agreement, without leaving it to conjecture.

b) Good faith and contextual interpretation.

One may fall into the trap of interpreting a treaty with stultifying narrowness if the interpretation of a treaty is restricted to the ordinary dictionary meaning of the words employed. The meaning of the term, 'national appropriation' must be considered within the context of other provisions of the Treaty. The word, national, is also used in Article VI of the Outer Space Treaty. Article VI provides that States are internationally responsible for "national activities in outer space" and for making sure that "national activities are carried out in conformity with the provisions set forth in the present treaty." States are also obligated to ensure that the activities of non-governmental entities in outer space, including the Moon and other celestial bodies shall require authorization and continuing supervision of the appropriate State. Since private entities are not subjects of international law, their activities are regarded as national activities under Article VI of the Outer Space Treaty.[88] States also bear international responsibility for national activities in outer space, whether such activities are carried on by governmental agencies or by non-governmental entities. When Articles II and VI are read conjunctively, it is abundantly clear no State can use its private entities as a cloak or shawl to carry out activities which it is prohibited from carrying out in outer space. The State remains responsible and liable under international law for the breach of the Space Treaty and cannot outsource its obligations.[89] In further construing the context of Article II of the OST, Article 32 of the VCLT should be called in aid. It provides that the preparatory work of a

[88] Freeland & Jakhu, *supra* note 10 at 52.
[89] Carl Christol, "Article 2 of the 1967 Principles Treaty Revisited" (1984) 9 Annals Air & Sp L 217- 218.

treaty and the circumstances of its conclusion are relevant in interpreting a treaty. In his letter to the Senate for advice and consent to the US ratification of the Outer Space Treaty, President Lyndon Johnson stated that:

> "We of the United States do not acknowledge that there are landlords in outer space who can presume to bargain with the nations of the earth for the price of access to this domain..."[90]

During negotiations of the OST, US, a champion of private enterprise posited that private entities be allowed to participate in space exploration and use. In contrast, the Soviet Union, in line with its communist creed countered the US' proposal.[91] Both States were only able to agree on the participation of private entities when appropriate States were conferred with the obligation to authorise and continually supervise private entities under their jurisdiction and control.[92] This compromise is a departure from the principle of international law that a State is not responsible for the activities of its citizens.[93] "A study of the preparatory work of the Outer Space Treaty clearly shows that the draftsman of the principle of non-appropriation never intended this principle to be circumvented by allowing private entities to appropriate areas of the Moon and other celestial

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[90] Cited in Freeland and Jakhu, *supra* note 10 at 51.

[91] See generally: Frans G. von Der Dunk, *National Legislation in Europe: Issues and Authorisation of Private Space Activities in Light of Developments in European Space Cooperation* (Leiden: Brill, 2011)3; Bin Cheng, "Article VI of the 1967 Space Treaty Revisited: 'International Responsibility', 'National Activities', and the 'Appropriate State' " (1998) 26:1 J. Space L. 7.

[92] *Ibid*; Nicolas Matte, *Aerospace Law: Telecommunications Satellites* (Toronto and Vancouver: Butterworths, 1982) 309.

[93] Under international law of state responsibility, a State is only responsible for an international wrongful act if such an act is conducted by an organ of the state, where such an activity is attributable to a state; where such an activity is conducted or controlled by a State; and conducts acknowledged by a State as its own. See generally, International Law Commission, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, November 2001, Supplement No. 10 (A/56/10), chp.IV.E.1, online: <www.legal.un.org/ilc/texts/instruments/english/draft_articles/9_6_2001.pdf>.

bodies", says Goedhius.[94] Subsequent State practice[95] also supports this interpretation. In *Nemitz v United States*[96], the plaintiff claimed parking fees from NASA for the placing of its 'NEAR Shoemaker' research spacecraft on asteroid 433 (Eros). Mr. Nemitz had claimed the asteroid as his private property. Before approaching the court, he demanded compensation from NASA. NASA responded to his claim in the following unflinching terms:

> "An individual claim of appropriation of a celestial body (the asteroid 433 Eros) appears to have no foundation in law. It is unlike an individual's claim or sea bed minerals, which was considered and debated by the US Congress that subsequently enacted a statute, The Deep Sea Bed Hard Mineral Resources Act, P.L. 96-283. 94 Stat. 533 (1980), expressly authorizing such claims. There is no similar statute related to resources in outer space."[97]

It should be noted, however, that any national statute authorising any individual claim over space or a celestial body would be a violation of international space law. In another letter,[98] NASA also added that, this treaty provision [Article II] would seem to preclude any claim to own Eros."[99]The Department of State also reacted to Mr. Nemitz's claim in the following uncompromising words:

> "In the view of the Department, private ownership of an asteroid is precluded by Article II of the Outer Space Treaty…Accordingly, we have concluded that your claim is without legal basis."

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[94]Daniel Goedhuis, "Legal Aspects of the Utilization of Outer Space" (1970) 17 Nethl Int'l L Rev 25 at 36.
[95]Article 31(3)b of the VCLT provides that "Any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretations"
[96]Nemitz v United States and ors, 2004 Nev. 2004, ILDC 1986 [Nemitz v USA].
[97]Freeland and Jakhu, *supra* note 10 at 56.
[98]*Ibid.*
[99]*Ibid.*

In like manner, the Federal District court for the District of Nevada reasoned that the OST did not "create any rights in Nemitz to appropriate private property rights on asteroids." The summation of the above positions points to the fact that the US appreciates that it is illegal for State, nay, a private entity to exercise ownership rights over the asteroids or any portion of space. Similarly, in *Beijing Moon Village Astronautics Science and Technology Co. Ltd. v. Beijing Municipal Administration for Industry and Commerce*,[100] the plaintiff corporation "sold" land on the moon to some Chinese citizens and was penalised by the defendant. The court held that the penalty was appropriate and that the plaintiff had not title to convey because the Outer Space Treaty forbids ownership of land on the moon. The court dismissed the plaintiff's contention as "groundless and illegal". Thus, the interpretation that Article II does not prohibit private appropriation is not supported by law. It is against the backdrop of the above arguments that attempts by States to appropriate the outer space or any part thereof has failed to pass legal scrutiny.

c) Article II of the OST has crystallized into customary international law.

Although international space law is in a class of its own, being *jus speciale*, it cannot be divorced from general international law. Rather, it is anchored on international law which is *jus generale*.[101] In this wise, Article III of the OST mandates compliance "with international law, including the Charter of the United Nations". Article 38(1) (b) of the Statute of the ICJ provides for "international custom, as evidence of a general practice accepted by law" as a source of international law. International customs stand in a class of their own, so that even where treaty law

[100]*Beijing Moon Village Astronautics Science and Technology Co. Ltd. v. Beijing Municipal Administration for Industry and Commerce* 2006 Haidian District People's Court, 2006 ILDC 846 China (*Beijing Moon Village)*.

[101]Marietta Benko, Willem de Graaff & Gijsbertha Reijnen*, Space Law in the United Nations* (Dordrecht: Martinus Nijhoff Publishers, 1985) 179; Oliver Ribberlink, "Article III" in Hobe et al (eds.) *Cologne Commentary on Space Law: Volume 1, Outer Space Treaty* (Cologne: Carl Heymanns Verlag, 2009) 64-69.

is inapplicable, States are still bound by those sets of norms which mirror accepted usage. Apart from instances where the ICJ expressly declares a particular principle of law to constitute customary international law, there are essential ingredients that must coexist before a rule or norm can be classified as international custom. There must have been State practice which must be accompanied by *opino juris,* pointing to the binding nature of the said norms.[102] Put differently, there must not only be evidence of States practice, there must be sufficient evidence that by so acting, States were acting under a legal obligation and intend to be bound by law.[103] The earlier cited court decisions from the United States and China point to wide spread acceptance among States that outer space, including the Moon and other celestial bodies cannot be appropriated by a State or its private entity. In 1961, even before the adoption of the of the first UNGA Resolution on outer space[104] and the OST, the US stated in a statement to the First Committee of the General Assembly that "man should be free to venture into space without any restraining except those imposed by the laws of his own nation and by international law."[105] Therefore, whether or not one agrees with the interpretation proffered with respect to Article II, States and their private entities are inevitably mandated to comply with the customary international law not to exercise exclusive property rights in outer space, including the Moon and other celestial bodies.[106] One evidence of

[102]Shaw, *supra* note 78 at 77-79.
[103] See the decision of the ICJ *Case Concerning the Military and Paramilitary Activities in and Against Nicaragua* (Nicaragua v. United States of America) [1986] ICJ Report 98, where the court reasoned that: "In order to deduce the existence of customary rules, the Court deems it sufficient that the conduct of States should, in general, be consistent with such rules, and that instances of state conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indicators of a recognition of a new rule."
[104]*Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space*, UNGA Resolution 1962 (XVIII) (13 December 1963), online: <www.unoosa.org/pdf/gares/ARES_18_1962E.pdf>
[105]See the submission by Australia, Canada, Italy, and the United States of America to the First Committee of the General Assembly, 4 December 1961, U.N.Doc.A/C.1/L.301 and A/C.1/SR.1210 at 245 cited in Lee, *supra* note 19 at 170.
[106] Lee *supra* note 19 at 171.

this international custom is the case of the Bogota Declaration of 1976. The Bogota Declaration is the first significant step that cast doubts on the non-appropriation principle. Eight equatorial States[107] converged in Bogota on 3 December 1975 and adopted the Bogota Declaration[108] claiming that segments of the geostationary orbit ("GEO") were a part of the territory of the sub adjacent States; and that those sub adjacent States were entitled to exercise sovereignty. The peculiar nature of the GEO ensures that the satellite's orbit around the earth is harmonized with the earth's rotation around its axis, thus allowing space objects in that orbit to appear stationary because it appears at the same speed with the earth. GEO has been described as a limited "natural resource" which is especially useful for satellite communications.[109] A relevant portion of the Bogota Declaration reads thus:

> "Devices to be placed permanently on the segment of a geostationary orbit of an equatorial state shall require previous and expressed authorization on the part of the concerned state, and the operation of the device should conform with the national law of that territory country over which it is placed."

As far as they were concerned, the "province of all mankind" only begins after the GEO.[110] "Indeed, it may well be argued that when an object hangs permanently over a State it has a special relationship to it which cannot be easily overlooked", says Oduntan. Article 1 of the Chicago Convention declares that "a State has complete and exclusive sovereignty over the airspace above

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[107] Brazil, Colombia, Ecuador, Indonesia, Congo, Uganda, Zaire (now Republic of Congo) and Kenya.
[108] *Declaration of the First Meeting of Equatorial Countries* of Dec. 3, 1976, ITU DOC. WARC-B-81-E, reprinted in N. Jasentuliyana & R.S.K. Lee (eds.), *Manual on Space Law* (New York), Vol.II,p.383,online:<www.spacelaw.olemiss.edu/library/space/International_Agreements/declarations/1976_bogota_declaration.pdf>
[109] Gbenga Oduntan, *Sovereignty and Jurisdiction in Airspace and Outer Space: Legal Criteria for Spatial Delimitation* (New York: Routledge, 2012) 301; Gorove, 'The Legal Status of the Geostationary Orbit: Some Remarks' (1985) J. Sp. L. 53.
[110] Oduntan, *supra.*

its territory." The case of the Bogota declarants was anchored on the fact that there was no (and there still isn't) an internationally agreed boundary between airspace and outer space.[111]Just like Dennis Hope, who sought to exploit a perceived loophole in the OST, the Declaration also sought to take advantage of the uncertainties surrounding the end of complete and exclusive sovereignty and the begging of the "province of all mankind." As expected, the Declaration met the disapproval both developed and developing States and the proposal of the equatorial States failed to general support and they were unable to physically enforce claims.[112]

d) Space Mining In The Face of the Law: A Critical Examination of §51303 of the Space Act.

On 25 November 2015, the President of the United States signed the Space Act into law.[113] The Act outlines the legal framework for the commercial uses of the outer space in a way that would improve the competitiveness of and benefit the space faring private entities of the United States. The Act covers diverse recondite issues of space exploration, including orbital traffic management,[114] space surveillance and situational awareness,[115] utilization of the international space station,[116] commercial launch facilities[117] and remarkably, asteroid resources and space mining rights.[118] Chapter 513 of the Act envisions a legal framework for space resource commercial exploration and utilization. Space resource is defined as "an abiotic resource in situ in

[111] *Ibid* at 310.
[112] Tronchetti, *supra* note 12 at 177
[113] *Commercial Space Launch Competitiveness Act* US H.R.2262 [2015]; The legislation was first introduced in the US House of Representatives as the American Space Technology for Exploring Resource Opportunities in Deep Space (ASTEROIDS) Act, but its title was changed to the Space Act in the course of its negotiation.
[114] §109.
[115] § 110.
[116] §114.
[117] §113.
[118] §51303.

outer space"[119] and it includes water and minerals.[120] An asteroid resource, under the Act, is a space resource found within a single asteroid.[121] The Act makes no pretence that its broad intention is to aid and facilitate US citizens in the commercial use of the outer space. The President is authorised to facilitate commercial exploration for and commercial recovery by US citizens.[122] The President is also obligated to promote the right of US citizens to engage in commercial exploration and recovery of space resources in manners consistent with the international obligations of the US. The legality of the legislation would be considered only against the backdrop of the OST and general international law principles. This is because the OST is the most relevant international space law treaty to this discussion, the US not being a party to the Moon Agreement.

The most controversial part of this legislation is Section 51303. It states that "A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including the right to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States.'' While the private space mining industry in the US gave the Bill unflinching support and has hailed it as the most "the single greatest recognition of property rights in history,"[123] not a few space law scholars have questioned in harsh tones,[124] the legality of the above

[119] §51303 2(A).
[120] §51303 2(B).
[121] §51301(1)
[122] § 51302.

[123] See Wash Raymond, "President Obama Signs Bill Recognizing Asteroid Resource Property Rights into Law" *Planetary Resources* (25 November 2015), online: <www.planetaryresources.com/2015/11/president-obama-signs-bill-recognizing-asteroid-resource-property-rights-into-law/>

[124] Gbenga Oduntan, "Who owns space? US Asteroid-Mining Act is Dangerous and Potentially Illegal" *The Conversation* (25 November 2015), online: <www.theconversation.com/who-owns-space-us-asteroid-

provision and its implications for international space law. Although section 51303 expressly states that the property rights over space resources and asteroids conferred on US citizens shall be exercised in accordance with the international obligations of the US, it is very doubtful whether such rights are compatible with the current legal regime governing the exploration and use of the outer space and indeed, the US' international obligations. The primary instrument containing the international obligation of the US is the OST. The rights and obligations conferred under the OST have been discussed in earlier chapters and it is the opinion of this author that the title 51303 of the Act upsets those obligations.

(A) The Conflict between the Space Act and the Duties/Obligations under the OST.

The US is entitled and in fact, duty bound to enact a legislation to regulate the activities of its private entities in outer space. After all, Article VI mandates States to authorise and continually supervise the activities of private entities in outer space. Thus the Act complies with international law to the extent that it provides that the US President shall make recommendations to Congress, not later than 180 of the enactment of the Act, for the "allocation of responsibilities among federal agencies" for the commercial exploration and recovery of space resources. However, once a domestic legislation touches on a matter catered for under international law, it would have to be evaluated against the backdrop of the relevant rules of international law.

The relevant rule of international law which section 51303 violates is Article II of the OST which prohibits any form of appropriation of outer space or any part thereof. Section 403 of the Act

mining-act-is-dangerous-and-potentially-illegal-51073>. Oduntan writes that "Although the act, passed with bipartisan support, still requires President Obama's signature, it is already the most significant salvo that has been fired in the ideological battle over ownership of the cosmos. It goes against a number of treaties and international customary law which already apply to the entire universe. The new law is nothing but a classic rendition of the he who dares wins' philosophy of the Wild West."

attempts to temper the effect of Article II of the OST by providing that "it is the sense of Congress that by the enactment of this Act, the United States does not thereby assert sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body"; but this does not remedy the situation. First, this section does not add anything to the existing regulation for the exploitation of space resources as it does not prescribe any binding legal rule. It would have been worthwhile if the section had stated that "a US citizen shall not assert sovereignty or exclusive rights or jurisdiction over, or the ownership of, a celestial body. Second, the test for 'sovereignty' and 'an exclusive right' is functional and not determined by the 'sense of Congress'. Third, the Act authorizes US private citizens to exercise the rights granted under section 51303 in accordance with the international obligations of the US (the relevant obligation being the prohibition against appropriation). Yet, section 403 conclusively declares that the US (even without any activity yet) does not assert sovereignty or ownership over any celestial body, thus effectively precluding the functional test. The offence section 51303 commits against the letter and spirit of Article II of the OST has been discussed in this chapter. But it bears emphasis to reiterate some of these points within the specific context of this Act and its impact on multilateralism in space law making process for space activities. There are diverse arguments in justification of this unilateral approach for the legislating on space resource exploitation, three of those perspectives stand out in literature and would be evaluated.

(B) Article II of the OST does not expressly prohibit the appropriation of space by private entities, thus section 51303 is valid.

This argument, pursued by Gorove and other scholars has already been considered in chapter II. It still remains invalid. Recall that Article VI of the OST makes it clear that while there are private activities in space, there are no private rights of access to space. A private entity derives its rights of access to space from the right of its authorising State. A US private citizen, therefore, cannot,

exercise any right that the US is prohibited from exercising by virtue of being a party to the OST. One cannot put something on nothing and expect it to stand[125] - *ex nihiko nihil fit (*from nothing, nothing comes). The decisions in *USA v. Nemitz, Beijing Moon Village Astronautics Science and Technology Co. Ltd. v. Beijing Municipal Administration for Industry and Commerce* all emphasize this point. The application of section 51303 of the Act would therefore amount to a violation of Article II of the OST.

(C) Whatever is not prohibited is permitted?

The expression, "whatever is not prohibited is permitted", has found its way into contemporary international law discourse and usually provides shelter when lawyers seek to canvass positions that is not expressly permitted in law. This expression does not stand on its own. Rather, it derives its validity from the reasoning in (i) above that private appropriation is permitted because it is not expressly prohibited by the OST. Thus, the invalidity of the argument in (i) above renders the expression baseless without much ado. Nevertheless, the contextual application of the phrase to the space environment is worth considering. More so, the Board of the IISL, a prominent body consisting of numerous body lawyers from across the world, has issued a position paper in favour of the Act wherein it argued that "in view of the absence of a clear prohibition of the taking of resources in the Outer Space Treaty one can conclude that the use of space resources is permitted."[126]

[125] MacFoy v. United Africa Co. Ltd. [1961] 3 All E.R. 1169, P.C. at 1172.
[126] See the Position Paper on Space Resource Mining (adopted on 20 December 2015) by the Board of the IISL, online: <www.iislweb.org/docs/SpaceResourceMining.pdf>

The expression is an age-long rule of general international law[127] which was amplified by the PCIJ decision in *The Steamship Lotus Case,*[128] where the PCIJ reasoned that "restrictions upon the independence of States cannot be presumed." The decision in the *Lotus Case* is not applicable to international space law and ought to be considered in the light of the facts and circumstances before the court. Apart from the fact that the decision was reached with the President's casting vote, the reasoning on the presumption in favour of freedom of action is a mere *obiter dictum*.[129] The decision has received minimal approval in international law discussions. According to Lachs, "[t]he old principle that everything not prohibited is permitted is not valid today. The freedom of action is determined by the possibility of infringing upon the rights of others. Hence the limitation of rights and the need for cooperation and consultation in all cases where a State may by its activity affect the rights of others. This is of particular importance in regard to outer space."[130] The OST has also put paid to the *Lotus Case* by stressing that the outer shall be used for the benefit of all countries and that States shall ensure international cooperation in the exploration and use of the outer space.[131] The *Lotus Case* is not "a precedent in favour of unrestricted national uses and

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[127] M.J. Peterson, *International Regimes for the Final Frontier* (Albany: State University of New York Press, 2005) 144.

[128] *The Steamship Lotus Case,* (France v Turkey), Judgment, (1927) PCIJ Series A no 10, ICGJ 248 (PCIJ 1927):
"The rules of law binding upon States therefore emanate from their own free will as expressed in conventions or by usages generally accepted as expressing principles of law and established in order to regulate the relations between these co-existing independent communities or with a view to the achievement of common aims. Restrictions upon the independence of States cannot therefore be presumed."

[129] Ram Jakhu, "Legal Issues Relating To Global Public Interest in Outer Space" at the Workshop on Remote Sensing and Rules for Space, organized by the Center for International and Security Studies at Maryland, School of Public Affairs, University of Maryland, USA, on 19 – 20 July 2004,online:http://drum.lib.umd.edu/bitstream/handle/1903/7916/jakhu.pdf;jsessionid=07BF3D35BE4369E92E0C15F8945EA255?sequence=1 at 11.

[130] Cited in Jakhu, *Ibid* at 12.

[131] Claude-Albert Colliard, "Report on Colloquium" in *Twenty-Fifth Colloquium on the Law of Outer Space* (1983) 331, at 332; Vladlen Vereshchetin, *Prevention of the Arms Race in Outer Space: International Law Aspect, United Nations Institute for Disarmament Research*, UNIDIR/86/08, 10-11; OST, article III.

activities in outer space."[132] The aggregate of the above arguments makes the final contention of the IISL, that section 51303 of the Space Act is not a violation of US' international obligations highly misplaced. The Outer Space Treaty does not just provide for freedoms in the use of the outer space, it also provides for restrictions on these freedoms. The freedom granted States to explore and use space granted in Article I para 2 of the treaty should be understood in the light of the diverse restrictions embedded in the same treaty. A State cannot claim benefits/freedoms under a provision of a treaty and turn around to eschew the obligations/restrictions in the same Treaty.

There is no freedom of space outside the Outer Space Treaty. There is no absolute freedom. Freedom to explore and use comes from the Treaty. If the exploration and use of the outer space must indeed be the province of all mankind and all States are free to explore space, then there must be restrictions to ensure that States do not abuse this freedom to the detriment of other States. This is what the draftsmen have done by infusing Articles II, III, IV, VI, IX, X and XI, which provide for restrictions in the use of the outer space, in the treaty. In fact, one observes that a large chunk of the provisions of the Treaty are restrictions on the freedoms granted States in Article I. The OST is as much a bag of freedoms as it is a bag of restrictions. Besides, the OSTreaty occupies a pride of place in the comity of treaties because of its unique provisions. While most multilateral public international law treaties look backwards to concretize existing customary international law on a subject, the OSTreaty does something entirely different. Rather than look backwards, it looks forward to cater for future activities of States in the exploration and use of the outer space. For example, while it is agreed that the problem of space debris was not prominent in 1967, when the treaty entered into force, there is no doubt that Article IX of the Outer Space Treaty discourages

[132]Carl Christol, *The Modern International Law of Outer Space* (New York: Pergamon Press, 1982) 267.

contamination of the space environment with space debris. In like manner, although the OST does not specifically refer to the prohibition of the acquisition of property rights over space resources, there is no doubt that Article II and other restrictions in the OST[133] are broad enough to prohibit the acquisition of property rights over space resources.

(D) Mining resources in space is parallel to fishing in the international waters.

In a bid to justify section 51303 of the Act, some space law scholars have argued that the right of a US private citizen to "…possess, own, transport, use, and sell the asteroid resource or space resource obtained..." is not a license to violate Article II of the OST. They take the argument further by comparing mining resources in space to fishing in the international waters. They argue that "the boat flies the flag of the country under whose laws it is bound…and while it doesn't own the water (and) or the fish (resources) in the water, it has a right to the ownership of the fish once extracted."[134] This argument looks attractive at first, but loses its value when tested legally. Whenever a novel legal issue arises in relation to space activities, there is often the temptation to resort to draw inspiration from areas beyond the limits of national jurisdiction. This argument is another manifestation of that temptation. It must be pointed out that the UNCLOS III governs activities in international waters, including fishing. Thus, it is inappropriate to transplant the rules governing an entirely different body of laws to outer space. Further, fishes are biotic resources which are transitory as opposed to space resources which are abiotic and may be domiciled on a celestial body. Therefore, while it is possible to conceive taking fishes in the international waters without owning the waters, it is difficult to contemplate mining space resources from a part of a

[133] For example, Article IX of the OST mandates states to take due regard of the corresponding interests of other States in the exploration and use of the outer space.

[134]Tanja Masson-Zwaan and Bob Richards, "International Perspectives on Space Resource Rights", online: <www.spacenews.com/op-ed-international-perspectives-on-space-resource-rights/>

celestial body or an asteroid without exercising exclusive rights over the said the celestial body throughout the period of the mining activity. Lachs has warned that "…it is in any case a serious mistake to employ analogy for the purpose of bringing a new developing branch of international law…"[135] The principles of law applicable to areas analogous to space should not be transplanted to the space regime in the like of the Delphic Oracle. The legal regime for those areas is to be treated applicable to them only. At best, they should only offer guidance on how to structure a multilateral framework for the exploitation of space resources.

What better way to lay this controversy to rest and to dismiss the position of the IISL than to confront it with an earlier position taken by the same Board of the IISL in condemning the sale of plots on the Moon by the Beijing Moon Village? The IISL was quick to condemn the sale of portions of the Moon and reiterate the fact that it was illegal for any State or private entity to claim ownership over portions of outer space, including the Moon and other celestial bodies. The IISL stated thus:

> "The prohibition of national appropriation by Article II thus includes appropriation by non-governmental entities (i.e. private entities whether individuals or corporations) since that would be a national activity. The prohibition of national appropriation also precludes the application of any national legislation on a territorial basis to validate a 'private claim.' Hence, it is not sufficient for sellers of lunar deeds to point to national law, or the silence of national authorities to justify their ostensible claims. The sellers of such deeds are unable to acquire legal title to their claims. Accordingly,

[135] Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law Making* (The Netherlands: Martinus Nijhoff Publishers, 2010) at 21.

the deeds have no legal value or significance, and convey no recognised rights whatsoever."

It is submitted that the US legislation is an attempt to foist a unilateral legislation on the entire community of space faring States. The value of unilateralism and multilateralism would be considered in detail in the concluding chapter.

ii. Prohibition under the Moon Agreement.

As stated in the first chapter, the Moon Agreement is the only international treaty that envisions the exploitation of the natural resources on celestial bodies and grants *limited* property rights. The Agreement also offers a pathway to a multilateral framework for the exploitation of natural resources – an avenue for States to discuss proposals (like Locke's) for property rights over the resources. But it has enjoyed damaging but unwarranted criticisms from States and space lawyers alike. These misconceived criticisms are partly responsible for why it has only received 16 ratifications since its adoption in 1979.

a) The meaning of 'common heritage of mankind (CHM).

Article 11(1) of the Agreement declares that "the Moon and its natural resources as the common heritage of mankind, which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article." The CHM doctrine strikes the mind of most international law experts with piercing familiarity because of its presence in the UN Convention of the Law of the Sea (UNCLOS III)[136] which concerning the international deep sea bed, states that: "the Area and its resources are the common heritage of mankind." It must be recalled that the negotiation of UNCLOS III and the Moon Agreement went on around the same time; and when the latter was

[136] *United Nations Convention on the Law of the Sea* 1833 UNTS 3 / [1994] ATS 31 / 21 ILM 1261 (1982).

concluded in 1979, negotiations on the former were still ongoing.[137] This is significant because it occasioned a situation where the meaning and scope of CHM in one regime was virtually transplanted to the other. The operational definition accorded the principle under the original draft of UNCLOS was that "all nations [were] entitled to share in the profits derived from sea-bed resources, regardless of their contribution of capital or technology to the extraction of those resources"[138] Developed and industrialized States hugely disagreed with the scope of the CHM as espoused under Part IX to UNCLOSIII. It, according to them, deters the development of oceans resources and was unfriendly to private capital.[139] This impasse was not resolved until 1994.[140] Meanwhile, the sentiments that were whipped against CHM in UNCLOSIII were transplanted to Article 11(1) of the Moon Agreement. In his testimony against the Moon Agreement before the US Congress, Leign Ratiner, a member of the US delegation to the Law of the Sea Conference said:

> "That treaty, Mr. Chairman, gives us a roadmap to the meaning and interpretation which the moon treaty will have…If we sign this treaty and ratify it, we will be sacrificing an interest we cannot even calculate today in terms of the source of the world's resources in the next 100 years. Will they come from outer space, what will those resources be, and what happens to mankind's whole reach for outer space if we essentially put under an international socialist system the development of all the resources in the

[137] See generally, Timothy Nelson, "The Moon Agreement and Private Enterprise: Lessons from Investment Law" (2011) 17:2 ILSA J. Int'l & Comp. L. 380-399.
[138] *Ibid*; In fact, Ambassador M.C.W. Pinto of Sri Lanka, the delegate of Sri Lanka at the Law of the Sea Conference enthused thus: [i]f you touch the nodules at the bottom of the sea, you touch my property. If you take them away, you take away my property" – cited in Tronchetti, *supra* note 12 at 57.
[139] *Ibid.*
[140] See Nelson, *supra* note 137 at 405.

> solar system beyond… And at the root of this international socialist threat to the American way is the "common heritage of mankind."[141]

Like Ratiner, others have pointed to UNCLOSIII to understand how the CHM doctrine would work under the Moon Agreement.[142] They argued that the CHM concept under Part XI have a semblance with the Moon Agreement.[143] These criticisms were sufficient to raise sentiments against the Moon Agreement. One commentator even saw it as "socializing the Moon."[144] However, as argued earlier, any attempt to interpret a treaty must be anchored on the principles enunciated in Article 31 of the VCLT and not extraneous documents. When read properly, Article 11(1) of the Agreement does not make reference to any similar regime. It simply says that the meaning of CHM shall be found "in the provisions of the Agreement, in particular in paragraph 5 of this article". Paragraph 5 states that States undertake to establish an international regime to govern the exploitation of the natural resources when exploitation is about to become feasible. When read together, it means that CHM under the Agreement would only be clothed with the meaning that States agree to give it under the international regime to be agreed upon. The statement of the American Bar Association is apt:

> "There is no generally accepted definition of this term; furthermore, this or any other term may be specifically defined for the purposes of a particular

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[141] The report of the American Bar Association, cited in Thomas Gangale, "Myths of the Moon Agreement", online: <www.ops-alaska.com/publications/2008/2008_AIAA-2008-7715.pdf> p.6

[142] *1994 Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea* (28 July 1994) Doc. A/RES.48/263; Nelson, *supra* note 137 at 401.

[143] Kevin Walsh, "Controversial Issues under Article XI of the Moon Treaty" (1981) 6 Annals Air & Sp L. 489/ 496; see also, Stephan Hobe, "The Common Heritage of Mankind –An Outdated Concept in International Space Law? in *Proceedings of the Forty-first Colloquium of the Law of Outer Space* (1998) 271.

[144] J.M. Spectar, "Elephants, Donkeys or Other Creatures? Presidential Election Cycles & International Law of the Global Commons" (2000) 15 Am. U. Int'l L. Rev. 975/ 1031.

> text in which it is used... this explicit direction to derive the definition only from within this text would seem to be legally sufficient to counter any assertion that the draft Law of the Sea Convention must be used as a precedent for the development of the future lunar resources regime...."[145]

The terminology may be the same, but they have entirely different meanings.[146] Shakespeare offers wise counsel on our aversion with names when he remarked thus: "what's in a name? That which we call a rose by any other name would smell as sweet."[147] In essence, we should eschew the obsession with mere terminologies and focus on substance – 'the smell of the rose'– and not the name it answers. Despite the fact that the CHM concept is not defined under the Moon Agreement, some core elements are however provided. First, the Agreement prohibits the appropriation of the Moon, celestial bodies and their natural resources. These resources can be used, but not appropriated. Second, the Moon and celestial bodies shall be reserved exclusively for peaceful purposes and shall not be used for any hostile act, nether shall object carrying nuclear weapons or other weapons of mass destruction be placed on the Moon.[148] Similarly, the Agreement prohibits the establishment of military bases, installations and fortifications on the Moon and other celestial bodies.[149] The prohibition of the use of force, object carrying nuclear weapons and weapons of mass destruction on the Moon reflects the customary international law prohibition of the use of

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[145] Thomas Gangale, "Myths of the Moon Agreement" online: <http://ops-alaska.com/publications/2008/2008_AIAA-2008-7715.pdf>at 9;
[146] L.F.E Goldie, "A Note On Some Diverse Meanings of the Common Heritage Of Mankind" (1983) 10:69 Syr. J. Int'l L.& Com. 69.

[147] William Shakespeare *Romeo and Juliet*, Act II. Scene II (Romeo Speaking).
[148] Moon Agreement, article 3.
[149] Moon Agreement, article 3(4).

force.[150] Third, the Agreement mandates parties to take steps to avoid environmental contamination and harmful interference in the extra-terrestrial environment.[151]

b) **The purported moratorium on exploitation.**

It is recalled that Article 11(5) of the Agreement provides that States undertake to establish a legal regime when exploitation is about to become feasible. It has been argued that the Agreement imposes a moratorium. Dula argues that the word "undertake" in Article 11(5) confers a legal obligation which means that States would refrain from engaging in any exploitative activity until the international regime is put in place.[152] "In order to give meaningful effect to the obligations of Article Xi, paragraph 8, the Moon Treaty as a whole contemplates the creation of an international regime prior to allowing the use of space natural resources for the other than scientific and "pilot plant" purposes."[153] This is not correct. Had the parties intended to place a moratorium on exploitative activities, they would have stated so expressly without leaving it to conjecture or extreme inferences. Another way to dispel Dula's argument is to ask: when is exploitation about to become feasible?[154] Dula answers that exploitation would be feasible when exploration shows that "commercial exploitation is technically and economically possible."[155] Thus, Article 11(5)

150 See generally, *Legality of the Thereat of Use Nuclear Weapons* (Advisory Opinion) [1996] ICJ Rep. 226, pra. 95 (for a discussion on the unlawfulness of the use of nuclear weapons); Ram Jakhu & Peter Stubbe, "Article 3" in Hobe et al (eds.) *Cologne Commentary on Space Law: Volume II, Moon Agreement* (Cologne: Carl Heymanns Verlag, 2009) 362 (for a comprehensive discussion on the illegality of the use of force and weapons of mass destruction on the Moon and other celestial bodies); Kai-Uwe Schrogl & Julia Neumann, "Article IV" in Hobe et al (eds.) *Cologne Commentary on Space Law: Volume I, Outer Space Treaty* (Cologne: Carl Heymanns Verlag, 2009) 18-28.

151 Moon Agreement, article 7; Steven Freeland, "Article 3" (Environment/Radioactive Materials) in Hobe et al (eds.) *Cologne Commentary on Space Law: Volume II, Moon Agreement* (Cologne: Carl Heymanns Verlag, 2009)372-377.

152 Cited in Thomas Gangale, "Myths of the Moon Agreement" online: http://ops-alaska.com/publications/2008/2008_AIAA-2008-7715.pdf at 15.

153 Arthur Dula, "Free Enterprise and the Proposed Moon Treaty" (1979) Hous J Int'l L. 2: 3 p.8-9.

154P.P.C. Hannapel, "Article XI of the Moon Treaty" in Proceedings, Twenty-third Colloquium on the Law of Outer Space (1980) 29-33.

155 *Ibid.*

should not be read to mean that a private enterprise should invest its resources in exploring the feasibility of exploitation only to be constrained from actually exploiting because a regime is not yet in place.[156] "The formation of the proposed regime and its becoming operational will follow the exploitation of the resources"[157] and not otherwise, argues Christol.

The Agreement is even more liberal on the exploitation of the natural resources on the Moon and other celestial bodies than the OST. Whereas Article II of the OST places a blanket prohibition on the exploitation on the natural resources on the Moon and other celestial bodies, the Moon Agreement permits the collection of mineral samples. Article 11(3) 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..."

The emphasis here is on the words, "in place". It is clear that the prohibition against property rights only applies to natural resources in place. The US' positon during the negotiations was that the prohibition does not extend to resources reduced to possession.[158] This author is persuaded that it is the right interpretation of the Moon Agreement in view of the fact that the *traveaux préparatoires* of the Agreement confirms that 'in place' was deliberately inserted to allow the creation of property rights over natural resources once removed.[159] Similarly, Article 6(2)

[156] *Ibid;* Gangale, *supra* note 145 at 15.
[157] Carl Christol, "The Moon Treaty: Fact and Fiction" (1980), online: <http://www.csmonitor.com/1980/0402/040234.html>
[158] Gangale, *supra* note 145 at 18.
[159] Tronchetti, *supra* note 12 at 512; H.L. van Traa-Engelman, Clearness Regarding Property Rights on the Moon and Other Celestial Bodies in Proceedings Of The Thirty-Ninth Colloquium on the Law of Outer Space (1996) 38; Ram Jakhu & Yaw Nyampong, "Some Legal Aspects of Space Natural Resources" (2015).

provides that parties have the right to "collect on and remove from the Moon samples of its minerals and other substances". These provisions further discredit any contention that the Moon Agreement places any moratorium on exploitation. Surprisingly, the IISL recently stated that "there is no international agreement, whether the right of 'free use' includes the right to take and consume non-renewable natural resources, including minerals and water on celestial bodies."[160] This submission is completely oblivious or deliberately ignored of the reality of Articles 6(2) and 11(3) of the Moon Agreement. If the US had ratified the Moon Agreement, it might have been able to argue that the legislation was supported by Articles 6(2) and 11(3). Nevertheless, the Moon Agreement has left the issues of priority rights, the role of the private sector etc. unattended.

The reader of this thesis may then query the necessity for the provision of property rights, if it is already contained in the Moon Agreement. Three reasons will still make a new regime of property rights imperative. First, State parties can only collect and remove samples of minerals from the Moon only for the purposes of "scientific investigations." It does not cover commercial activities. Besides, the use of the words "collect samples" means such minerals cannot be exploited in commercial quantity. Second, property rights ought not to be restricted to resources that are no longer "in place". A mineral resource may still be "in place" while a State party has affixed its labour and exploited it. Such a State is entitled to property rights under the Lockean proposal. While some semblance of property rights is granted by Articles 11(3) and 6(2), the Agreement is silent on the features and incidences of such a right. Is it a right of ownership or possession? Is it temporary or permanent? These have to be answered by the regime. The regime would also have

[160] See the Position Paper on Space Resource Mining (adopted on 20 December 2015) by the Board of the IISL, online: <www.iislweb.org/docs/SpaceResourceMining.pdf>

to adequately define the CHM concept within the framework of international space law. Such definition must take cognisance of the third exception in Locke's theory: the principle of charity.

C. CONCLUSION

Using every interpretative parameter available in international law, there is no legal basis for the exercise of property rights over outer space, including the Moon and other celestial bodies and by extension, their natural resources. It is in light of this that the US legislation is an attempt apply unilateral legislation to a common area. The existing regime fails to grasp the scope and salience of the normative issue of property rights addressed in this treaty. Bearing in mind, as argued in the previous chapter, that it is necessary to provide property rights in order to incentivize the exploitation of these resources; a new thinking would therefore be required for States and their investors to be able to acquire property rights over resources exploited while still preserving outer space as global commons.

CHAPTER III

USING JOHN LOCKE'S THEORY OF PROPERTY RIGHTS TO ENVISION A REGIME OF PROPERTY RIGHTS OVER SPACE RESOURCES.

A. INTRODUCTION

The specific question sought to be answered in this thesis is how to ensure property rights while still preserving the status of outer space as global commons. This chapter offers a way out. The point has also been made that the extant legal framework for the exploitation of space resources is a stumbling block for commercial mining of space resources especially as it relates to private sector participation. More specifically, while private entities have taken up the gauntlet to mine natural resources in space, especially asteroids, the current legal framework prohibits the ownership of celestial bodies, asteroids and indeed the resources extracted therefrom, thus preventing those companies from having a secure claim.[161] It can hardly be imagined that a private entity would devote a deluge of resources to such a venture without the faintest assurance that it would own what it mines or at least exercise property rights over them. In justifying the assertion that it is possible to have property rights while still preserving the status of outer space as a commons, this chapter draws inspiration from legal philosophy – John Locke's theory of property rights. This chapter is an attempt to apply the Lockean theory of private property rights to the exploitation of natural resources in space. This author recognises that while philosophical theories may not be expressly acknowledged in a property debate, at the base of every property argument is an underlying theory of property.[162] This, perhaps, underscores why most philosophical thinkers –

[161] Ross Meyers, "The Doctrine of Appropriation and Asteroid Mining: Incentivising the Private Exploration of Outer Space" (2015) Vol. 17, 183 Or. Rev. Int'l L. 194.

[162] Alexander & Peñalver, *supra* note 68 at xi.

Aristotle, Locke, Hegel, Kant, Aquinas etc. – devoted considerable attention to trying to fashion out the philosophy at the heart of the property disputes of their day.

i. Defining property.

Locke does not offer specific proposals on the incidences of property rights which he advocated. He does not define property. The property rights advocated by Locke would not confer sovereignty over the resources in the *commons* on the individual who applies his labor to natural resources.[163] But Locke is not the only philosopher that avoided putting a definition stamp on property. "Property is not material, it is metaphysical; it is a mere conception of the mind,"[164] says Bentham. To Kevin Gray, "few other legal notions operate such gross or systematic deceptions."[165] "The ultimate fact about property is that it does not really exist: it is a mere illusion. It is a vacant concept…rather like thin air"[166], Gray adds. Neil Meyer[167] gives some dint of certainty to the property by describing it as "the access right to a stream of benefits from a given set of resources." Meyer's view is now known as the bundle of rights theory. The US Supreme Court described the bundle of rights to include the rights to "posses, use, transport, sell, donate, exclude or devise."[168] This is supported by the jurisprudence of the European Court of Justice.[169] Lachs describes the content of this bundle of rights as "the right to use or dispose of an object and exclude all others from doing so."[170] Other space law jurists have also applied the 'bundle of rights' theory to space

[163] John Locke, *Two Treatises of Government* (London: Printed for R. Butler, etc. 1821) online: <www.socserv2.socsci.mcmaster.ca/econ/ugcm/3ll3/locke/government.pdf > at116.
[164]Pop, *supra* note 81 at 62.
[165]Kevin Gray, "Property in Thin Air"(1991) 50 Cambridge L.J. 252.
[166]*Ibid.*
[167]Pop, *Ibid.*
[168]See Laura Underkuffler, *The Idea of Property: Its Meaning and Power* (Oxford: Oxford University Press, 2003) 19.
[169]Cited in De Man, *supra* note 5 at 290
[170]Lachs, *supra* note 135 at 42.

exploration.[171] Pop agrees that property is a bundle of rights that includes "the right to use, to enjoy the fruits, and to abuse one's own goal in so far as the law allows this."[172] This author is of the view that the bundle of rights theory is the appropriate framework that would help set the tone for property rights over the resources in space. Smith has criticized the theory as being "myopic, inflexible, unworkable and ultimately failing to provide a theory of property at all."[173] Many others criticize it in the same vein as lacking in specifics. Despite these criticisms, it cannot be disputed that it serves as the foundation for other theories. By describing property as the right to exclude, for example, one is only elaborating on one of the contents of the bundle. Whereas other theories treat the contents in piecemeal, the 'bundle of right theory' amalgamates it all in a symphony of finished products. Aristotle was right when he stated that "the whole is greater than the sum of its parts." Although De Man argues that the bundle of rights theory "adds little or nothing to our understanding of the concept as a legal notion", he contradicts himself by admitting that "the success of the theory is due to its "easy adaptability to a host of widely diverging philosophical, economic and societal under currents." Property rights over the resources in space are one of such "diverging philosophical undercurrents."[174]

ii. Outer space as *res communis.*

Centuries ago and before man's foray into space, *Corpus Juris Civilis* enunciated with regard to the seashore that "by natural law itself these things are the common property of all…seashores are regarded as the property of no one but being of the same legal status as the sea itself and as things lying under the sea, earth and sand"[175] Grotius famously remarked that "in the legal phraseology

[171]See generally, De Man *supra* note 5 at 291.
[172] Pop, *supra* note 81 at 62.
[173]De Man *supra* note 5 at 242.
[174]*Ibid.*`
[175]This quote is reproduced in Pop, *supra* note 81 at 73.

of the Law of Nations, the sea is called indifferently the property of no one (*res nullius)*, or a common possession (*res communis)*, or public property *(res publica*)."[176]Outer space, together with the high seas and the Antarctic are classified as public property, public spaces, open access resource, common goods, public property etc.[177]The *res communis* stems from Roman property and establishes that "states have rights of free access and use – but not rights of ownership – to the shared property of the community."[178] A diametrically opposed concept to that of *res communis* is that of *terra nullius* which refers to a "legal term of art used in connection with the mode of acquisition of territory known as 'occupation'"[179] It is a mode of acquisition of title to territory which does not belong to anyone (*terra nullius*). Shaw argues that in acquiring title to a *terra nullius*, the occupation must be by a State and not by a private individual; and such occupation must be effective, point to the claim of sovereignty over the area.[180] Occupation is usually preceded by discovery, i.e. realising that a piece of land existed. This element of occupation is very vital and must be in existence before title in a *'terra nullius'* can be said to have passed. Although there have been attempts to classify outer space as *terra nullius*,[181] the international law principle that occupation of a *terra nullius* vests title in the occupier is in consonance with the Article II of the OST which provides that occupation cannot be used as the basis of appropriation of space.[182] As stated earlier, outer space, including the Moon and other celestial bodies fits more with the

[176]*Ibid*.
[177]Pop, *supra* note 81 at 74.
[178]*Ibid.*
[179] *Western Sahara Case* ICJ Reports, 1975, pp. 12, 39;Shaw, *supra* note 78 at 503.
[180] Shaw, *Ibid.*
[181] Wian Erlank, "Rethinking *Terra Nullius* and Property Law in Space" (2015) 18:7 Potchefstroom Electronic L. J.at 2514; Bin Cheng, cited in Tronchetti, *supra* note 12 at 11("[…] the Moon and other planets must *prima facie* be regarded as *res nullius* which, like the New World and the continent of Africa at one time, are susceptible to being appropriated as national territory through effective occupation");
[182] Frans von der Dunk, "The Dark Side of the Moon, The Status of the Moon: Public Concepts and Private Enterprise" in *Proceedings of the Fortieth Colloquium on the Law of Outer Space* (1997), at 120; Lachs *supra* note 135 at 44.

description of *res communis* than any other descriptive legal phraseology due to the provisions of Article I of the OST.[183] The features of a *res communis* have been ably captured by the US Supreme Court in *Geer v Connecticut*[184]citing Pothier (a French jurist) with approval. [185] The summary of the description is that *res communis* refers to my freedom/liberty to use a good without any let or hindrance from another person. But once I cease to use that good, another person is permitted to have access to it for use. Outer space can also be regarded as *commons.*[186]

In this wise, Article I of the OST specifically outlines the freedom of all countries to explore and use outer space. The freedom is in three broad categories. First, it states that the exploration of the outer space, including the Moon and other celestial bodies shall be carried out for the benefit and in the interest of all countries and shall be 'province of all mankind.' Second, it forbids any kind of discrimination in the exploration and use of space and provides that activities in outer space

[183] Gyula Gál, *Space Law* (Leiden: Sijthoff, 1969) at 189; Manfred Lachs, *Law of Outer Space* (the Netherlands: Springer, 1972) 30.
[184] G*eer v. Connecticut*, 161 U.S. 519 (1896).
[185] Virgiliu Pop, *supra* note 81 at 76: ("…It was a 'negative community,' which resulted from the fact that those things which were common to all belonged no more to one than to the others, and hence no one could prevent another from taking these common things that portion which he judged necessary in order to subserve his wants. Whilst he was using them, if they were not things which were consumed by the fact of use, the things immediately re-entered into the negative community, and another could use them…these things are those things which the jurisconsults called 'res communis").

[186] *Ibid*; U.S. Dept. of Defense, Sustaining U.S. Global Leadership: Priorities for 21st Century Defense, Jan. 2012 ("[t]o enable economic growth and commerce, America, working in conjunction with allies and partners around the world, will seek to protect freedom of access throughout the global commons."); North Atlantic Treaty Organization, Assured Access to the Global Commons Final Report, Apr. 18, 2009([t]ermed the "connective tissue" of our vibrant global economy, the four domains of the Global Commons - maritime, air, outer space, and cyber space - constitute a universal public good." For a contrary argument that outer space is being wrongly regarded as *commons,* see Henry Hertzfeld, Brian Weeden & Christopher Johnson, "How Simple Terms Mislead Us: The Pitfalls of Thinking about Outer Space as a Commons" (2015), online: <www.swfound.org/media/205285/how-simple-terms-mislead-us-hertzfeld-johnson-weeden-iac-2015.pdf> at 2 ("[i]t is also important to note that the noun,commons, never appears in any space treaty. Furthermore, the word, common, is used in the treaties only twice as an adjective, a descriptor..."

shall be carried out on the basis of equality and in accordance with international law. It also guarantees free access to all areas of celestial bodies. Third, it guarantees the freedom of scientific investigation. It should be noted that it is not outer space, but its exploration and use that is the 'province of all mankind'.[187]. Exploration refers to the process of investigating and researching into the possibility of 'use'.[188] Use, on the other hand, is the practical utilization of the knowledge acquired. Use includes the exploitation of the natural resources of space and of celestial bodies.[189] Scholars have argued that the principles enunciated under Article I of the OST existed prior to the adoption of the Treaty and that they have now assumed the status of customary international law.[190] Hobe argues that 'freedom' in this context means that a State that seeks to benefit from this freedom need not ask for permission from other States.[191]

B. LOCKE'S PROPOSAL FOR PROPERTY RIGHTS IN THE COMMONS

Locke's discourse on property can be substantially gleaned from Chapters II and V of the second treatise of his seminal work – *Two Treatises of Government*.[192] To comprehend Locke's conception of property theory, one ought to view it within the context of his analysis of the state of nature. Locke's state of nature is a departure from the Hobbesian state of nature where life is "solitary, poor, nasty, brutish, and short"[193] and human beings are perpetually in a state of 'all against all.' As in outer space, Locke's philosophical commons is replete with natural resources. Locke contemplates a state of equality and reciprocity between the inhabitants of such a state with

[187]Hertzfeld, Weeden & Johnson, *Ibid* at 3.
[188] Stephan Hobe, "Article I" in Hobe et al (eds.) Cologne Commentary on Space Law: Volume 1, Outer Space Treaty (Cologne: Carl Heymanns Verlag, 2009) 25 at34.
[189] *Ibid.*
[190] Lee, *supra* note 19 at 154.
[191]Hobe, *supra* note 9 at 36-39.
[192]John Locke, *supra* note 163.
[193] Thomas Hobbes and J. C. A. Gaskin, *Leviathan* (Oxford: Oxford University Press, 1998) online: <www.socserv2.socsci.mcmaster.ca/econ/ugcm/3ll3/hobbes/Leviathan.pdf≥ p.78.

"no one having more than another"[194]similar to the description of outer space in Article I of the OST:

> "A state also of equality, wherein all the power and jurisdiction is reciprocal, no one having more than another, there being nothing more evident than that creatures of the same species and rank, promiscuously born to all the same advantages of Nature, and the use of the same faculties, should also be equal one amongst another, without subordination or subjection."[195]

Waldron[196] argues that Locke's state of nature has two possible descriptions: the first is negative communism where everyone has neither the right nor a corresponding duty over natural resources while the second, a more affirmative communism where everyone has equal right to natural resources and consequently owe one another corresponding duties over same. Waldron's conception of affirmative communism appears compatible with Locke's reasoning when he argues, citing King David[197] with approval, that God has "given the earth to the children of men, given it to mankind in common."[198]

The major challenge of property rights in the state of nature is how individuals can make use of the resources God has given humanity collectively without interfering with or violating the equal rights already given to others over those natural resources. Recall that this is the exact problem that was identified in the first chapter of this thesis. According to Locke, property rights is necessary for self-preservation because human beings, once born, have a right to "meat and drink

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[194] Locke, *supra* note 163 at 106.
[195] *Ibid.*
[196] Jeremy Waldron, *The Right to Private Property* (Oxford: Clarendon Press, 1988) 53; Alexander & *Peñalver*, *supra* note 68 at 38.
[197](Psalm 115: 16) The Bible, (London, England: Fireside Bible Publishers, 1999).
[198] Locke, *supra* note 163 at 115.

and such other things as nature affords for their subsistence."[199] Just like in Locke's commons, preservation of human existence on Earth is one of the reasons why human desire to exploit the natural resources in space. Although the world has been given by God to men in common for their benefit and the "greatest conveniences of life"[200], He did not intend that it should always remain common and uncultivated. This would be tantamount to starving in the midst of plenty, otherwise known as the paradox of plenty[201] – a situation prevailing lack and poverty despite the availability of abundant resources. Rather, He expected that the industrious and hardworking ones will exert their effort, input, resources and labour to transform the natural resources in the commons into a finished product for their benefit. Even though the Earth and all the natural resources therein are common to all, everyone has a right in his own person. In order to avoid a paradox of plenty, Locke invokes the labour theory of appropriation. He argues that the first property every man owns is his person, his innate capacity and labour. This is one property that everyone possesses to the exclusion of every other and is not shared with other inhabitants of the state of nature. Once he exerts his labour to a resource or thing which has been given in the state of nature to everyone in common, such a thing becomes his property "it being removed from the common state of nature placed it in, it hath by this labour something annexed to it, that excludes the common right of other men." Because the labour is the "unquestionable right" of the labourer, no other person can have a right to what he has affixed his labour to. He uses the analogy of the oak to drive home this point:

> He that is nourished by the acorns he picked up under an oak, or the apples he gathered from the trees in the wood, has certainly appropriated them to

[199] Locke, *supra* note 163 at 115.
[200] Locke, *supra* note 163 at 118.
[201] Terry Karl, *The Paradox of Plenty: Oil Booms and Petro-States* (Berkeley: University of California Press, 1997) 34.

> himself. Nobody can deny but the nourishment is his…And it is plain, if the first gathering made them not his, nothing else could. That labour put a distinction between them and common. That added something to them more than Nature, the common mother of all, had done, and so they became his private right…. Thus, the grass my horse has bit, the turfs my servant has cut, and the ore I have digged in any place, where I have a right to them in common with others, become my property without the assignation or consent of anybody. The labour that was mine, removing them out of that common state that they were hath fixed my property in them."

Although the resources were hitherto in the commons and belonged to everybody, the labourer's effort takes it out of the hands of nature where it was held in common by everyone. The labourer is thus entitled to appropriate it. "This law of reason makes the deer that Indian's who hath killed it."[202] There are three caveats that would ensure that the private property rights of individuals do not conflict the rights of everyone else in the commons. First, no one should take more than he can use because God did not create the resources to be wasted, dissipated or spoiled. Second, appropriation out of a common pool is only acceptable where "there is enough, as good left in common for others."[203] The third, and often overlooked exception is what Waldron describes it as the "principle of charity" and a constraint on private property.[204] In Locke's words, " as justice gives every man a title to the product of his honest industry, and the fair acquisitions of his ancestors descended to him; so charity gives every man title to so much out of another's plenty, as will keep him from extreme want, where he has no means to subsist otherwise." The applicability

[202] Locke, *supra* note 163 at 117.
[203] Locke, *Ibid* at 116.
[204] Alexander & Peñalver, *supra* note 68 at 40.

of the principles enunciated by Locke shall now be considered in relation to the peculiar environment of outer space.

C. RELATING LOCKE'S THEORY TO PROPERTY RIGHTS OVER THE NATURAL RESOURCES IN SPACE

There are arguments[205] that the present legal regime for space exploration is "restrictive and suffocating"[206] and that the *res communis* principle is a clog in the wheel of progress of innovation and commercialization of extra-terrestrial natural resources.[207] Notwithstanding this, this author is of the view that while the existing legal framework for space activities does not accommodate the property rights in outer space, the very principle of *res communis* is neither inconsistent nor incompatible with the concept of property rights. In this analysis, the individuals in Locke's philosophical commons are likened to States in international arena.[208] Just like the resources in Locke's philosophical commons, the natural resources in outer space are of no intrinsic commercial value, neither can they fulfil their potential of solving the problems of humanity in their unmined state. Before resources are extracted from them, asteroids are nothing more than rocks drifting in space; they are floating objects unconnected to land.[209] Without the application of human efforts, technology and finances in the exploitation of these resources, there would not be any success in this venture. Thus, if a State makes investment of money or effort to mine space resources, it would have property rights over the resources.[210] As noted earlier, private entities like

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[205]Michael Listener, "It's Time to Rethink International Space Law" *The Space Review* (31 May 2005), online:<http://www.thespacereview.com/article/381/1>

[206] *Ibid.*

[207] *Ibid.*

[208] This is because individuals and corporations cannot explore outer space in their own right. They can only do so on through their States who have the obligation to authorise and supervise their activities. See generally, H Bittlinger, "Private Space Activities – Questions of International Responsibility" in *Proceedings of the 30th Colloquium of the Law of Outer Space* (1980) 191-194; Bin Cheng, "Revisited: International Responsibility, National Activities and the Appropriate State"(1998)27 J. Sp. L. 19.

[209]Meyers, *supra* note 161 at 192.

[210] Erlank, *supra* note 181 at 2515.

planetary resources have already invested and are still investing resources in exploring space for possible mining. This is similar to what holds in Locke's commons, where the available resources are of no value in themselves until humans mix their labour with it. Even without assurances of property rights, space mining companies are reported to have expended resources on the prospecting of mining opportunities in deep space[211] and are certain to expend more when exploitation becomes more feasible. By taking on an ambitious project of this nature, States and their private entities are embarking on a highly risky venture that may or may not be profitable. If it becomes profitable, it is the view of this author that they should be given some rights over them. But it must be admitted that this proposal, based on the Lockean property rights model, are prone to diverse challenges due to the geo-political issues that have plagued the exploration and use of space since inception and are still applicable today. The anticipated reality is that if and when mining becomes profitable with the accompanying property rights, States would have more incentives to grab as many asteroids as they can which would lead to conflicts. It is therefore important to understand the limits of property rights under Locke's theory and how it relates to the natural resources in space. The Locke-an approach with respect to space resources would give rise to the following questions: how do we ensure that States that do not have the competence and capacity to exploit resources in space are not effectively shut-out by those who do? Is there an obligation to share the benefits of such exploitation with other States? This shall now be demonstrated by using the three limitations enunciated by Locke. These exceptions will now be used to envision a property rights framework within the outer space.

[211] *Ibid.*

i. No one should take more than he can use because God did not create the resources to be wasted, dissipated or spoiled.

Locke himself identifies a possible fault in this theory – the greed of man. He anticipates the likelihood that anyone may "engross as he wills" and that the property rights granted him may be unlimited. Locke himself realizes the potential of humanity to "extend itself and engross it to the prejudice of others." That would be beyond the limits of the property rights granted. The first challenge to the property rights granted is that a person can only have property rights to what he can make use of "whatever is beyond this is more than his share, and belongs to others." If man eschews the temptations of greed and restricts himself only to those resources that would meet his immediate requirements and that are within his capacity to use, the quarrels that are likely to arise as a result of the property rights established will be reduced. Events arising from the mining of resources on earth show that it is the natural propensity of man to take more than he can use and even need at a given time and this has given rise to diverse conflicts.[212] The exploitation and use of outer space offers humanity a fresh start. Article I of the OST supports this view. It provides that space exploration "shall be carried out for the benefit and in the interest of all countries". While States are at liberty to determine what benefits them, it is clear that exploiting space resources beyond the limits of their needs cannot be for the benefit and in the interest of all countries. If this limitation is applied to the exploitation of the natural resources in space, ascertaining the needs of States would pose a challenge. This is because it is the natural propensity of States to take more than they require.

[212] *Supra* note 75.

ii. Property rights is only acceptable where "there is enough, as good left in common for others."

The second exception is that property rights in space would only be permissible where there is enough left in the commons for other States. Locke's argument that there be as much left for others finds validity in the OST. The boundaries of the positive freedom provided under Article I are delineated under Article IX of the OST which mandates States to conduct their space activities with due regard to the corresponding interests of other States. This is supported by Ogunbanwo,[213] who argues that the freedom granted States to use outer space "must find limits in the freedom of others" because the rights are 'inclusive and not exclusive'[214] Jakhu agrees that the freedom to 'use' outer space does not include the right to 'abuse' or 'misuse' it.[215]

An exception to the application of one's labour to the resources in the commons – and consequent obtainment of property rights – is that there has to be enough for everyone even after one must have conducted such exploitative activity and obtained property rights. In relation to space resources, there is a school of thought that says that the natural resources in space are inexhaustible. This inexhaustibility, they argue, is a justification for exploitative activities and the obtainment of property rights. Gorove,[216] for example, says that insisting on the non-appropriation of resources like cosmic rays or gases which are available in inexhaustible quantities would be unhelpful and improper due to the their inexhaustible nature.[217]

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[213]Ogunsola Ogunbanwo, International *Law and Outer Space Activities* (The Hague: Martinus Nijhoff, 1975) 66.
[214]*Ibid.*
[215]Jakhu *supra* note 129 at 13; Ian Brownlie, *Principles of Public International Law* (Oxford; New York: Oxford University Press, 2008) 301 ("…the emphasis on State discretion is contradicted by the views of the International Court in the Fisheries and Nottebohm cases, which concerned the comparable competences of States, respectively, to delimit the territorial sea and to confer nationality on individuals."
[216]Gorove, *supra* note 65 at 350.
[217] See further,Stephen Gorove, "Utilization of the Natural Resources of the Space Environment in the light of the Concept of Common Heritage of Mankind" in R.J. Dupuy (eds.) *The Settlement of Disputes on the*

Assuming the resources are indeed inexhaustible, it must be pointed out that there are factors that could make them inaccessible, and render their perceived 'inexhaustibility' inconsequential. The uncontrollable navigation of debris in orbit, the militarization and gradual weaponization of space, contamination of extra-terrestrial environments etc. are all factors that could make the resources inaccessible despite the inexhaustibility. Inexhaustibility of space resources is a function of space activity and not intrinsic characteristic of the resource.[218] Thus, the mere fact that the resources are by their nature inexhaustible does not meet the functional requirement of inexhaustibility. Philip De Man expounds this view when he observes that the availability or scarcity of a space resource is not a perpetual state of affairs. It would be determined, he argues, by the physical supply of the resource, its location and accessibility, whether or not the resource is of interest to more than one State etc., among other factors.[219] A State mining the resources would be in violation of Article IX of the OST if it conducts its activity in a way that constrains the access of other States to the resources. Hobe cautions that States that have the capacity to explore and use space should not do so in a way that jeopardises the rights of States that do not presently have the capacity.[220]

There are contrary views on this point. For example, Tronchetti contends that "States are entitled to appropriate outer space (sic) natural resources…until such activities do not prevent other states from the doing the same."[221] Tronchetti's submission contradicts Locke's argument and is not the right reading of Article I and IX of the OST. Article I and IX prescribe conditions precedent, rather

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New Natural Resources (The Hague: Martinus Nijhoff, 1983) at 109 ("to subject solar energy to the constraints of the common heritage provision would appear to be against reason and common sense because it is an inexhaustible source of energy")

[218] Lotta Viikari, *From Manganese Modules to Lunar Regolith: A Comparative Legal Study of the Utilization of Natural Resources in the Deep Sea Bed and Outer Space* (Rovaniemi: Faculty of Law, University of Lapland, De Series, 2002) 25.

[219] Philip De Man, *Exclusive Use in an Inclusive Environment: The Meaning of the Non-Appropriation Principle For Space Resource Exploitation* (Switzerland: Springer, 2016) 154.

[220] Hobe, *supra* note 9 at 34-37.

[221] Tronchetti, *supra* note 12 at 221.

than conditions subsequent. The appropriation and/or property rights envisioned by Locke is not one that would exist "until such activities do not prevent other states from doing the same." In arguing that there must be enough for everyone, Locke calls for an evaluation of the entire scope of the exploitative activity to be embarked upon in order to ascertain whether such activity unduly restricts other States. If it is found that it would, then the resources must be left in the commons as any exploitative venture would be illegal. As Jakhu rightly notes in relation to the GEO, "the lack of prohibition against appropriation, especially of natural resources in space does not mean that they may be appropriated in total disregard of applicable principles and rules of international space law."[222] Likewise, Gal, citing Lachs with approval, observes that "in international law, the rights of those who act are determined by the rights of those who may be affected by their exercise. Space law is not an exemption from this rule."[223] Outer space law, though a unique genre of law, cannot be divorced from the larger body of law. The legality of any activity relating to the exploitation of space resources must be determined by putting the interests of all space faring States into consideration. Under Locke's theory, though everyone has a right to his/her "individual labour" and has the freedom to apply the labour to the resources in the commons, he/she is under a legal obligation to put other people's interest into consideration of any exploitative activity. As Oliver Wendell Holmes puts it, "the right to swing my fist ends where the other man's nose begins."[224] Mike LaBoussiere,[225] employs the analogy of a buffet party to put this point beyond doubt:

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[222] Ram Jakhu, *The Legal Regime of the Geostationary Orbit* (Unpublished DCL Dissertation, (McGill University, 1983) at 177.
[223]Gál, *supra* note 183 at 121.
[224] Cited in Quote Investigator: Exploring the Origins of Quotations, online: <http://quoteinvestigator.com/2011/10/15/liberty-fist-nose/>
[225] Mike LaBoussiere, "Owning Asteroids" *Talking Philosophy* (25 December 2015), online: <www.blog.talkingphilosophy.com/?p=9151>

> "Suppose I am first in line at a buffet. This does not give me the right to devour everything I can with no regard for the people behind me. It also does not give me the right to grab whatever I cannot eat myself in order to sell it to those who had the misfortune to be behind me in line. As such, these resources should be treated in a similar manner, namely fairly and with some concern for those who are behind the first people in line."

iii. The "Principle of Charity" and its compatibility with Property Rights over space resources.

Locke enthuses that "charity gives every man title to so much out of another's plenty, as will keep him from extreme want…" This is somewhat a controversial point because Locke argues that "charity" is a restraint on private property. Locke's argument here is that those who have acquired private property rights by virtue of their labour should render support to those who do not have the capacity to affix their labour to resources and consequently unable to sustain themselves; essentially commending the haves to reach out to the have nots because:

> "God, the Lord and father of all, has given no one of his children such a property in his peculiar portion of the things of the world, but that he has given his needy brother a right to the surplusage of his goods; so that it cannot justly be denied him, when his pressing wants call for it...it would be a sin, in any man of estate, to let his brother perish for want of affording him relief out of his plenty."

Private property rights can exist even in a global commons, like outer space, while still catering for the interests of the States that do not have the capacity to participate in the exploitation of space resources. In essence, the application of this principle to the envisioned legal regime for the exploitation of space would mean that States that do not have the capacity and means to participate

in the mining of space resources would assist States that do not have. Recall that Article I of the OST states that the exploration and use of space ought to be for the benefit and in the interest of all countries. There are divergent views on the binding nature of Article I of the OST with some contending that it is nothing but an expression of a desire and devoid of any modicum of legal force. Gorove argues that the common benefit provision Article I(1) of the OST confers no legal obligation on States and is only "an expression that the activities should be beneficial in a general sense"[226] Others have argued, *per contra*, that it is a positive legal obligation and not merely a moral pronouncement.[227] It is the submission of this author that Article I of the OST has a binding force for a number of reasons. First, Article I is an integral part of the OST. In line with the principle of *pacta sunct servanda*, the OST is binding on all States that have ratified it.[228] Since it is the entire treaty that States have ratified, they cannot choose, pick or chop which part of the treaty will be binding on them. Second, from a historical perspective, it is seen that at the drafting stage of the OST, parties understood that Article I imposed a binding obligation upon them. For example, the US delegate remarked that "spirit of compromise shown by the space powers and the other powers had produced a treaty which established a fair balance between the interests and

[226]Stephen Gorove, "Implications of International Space Law for Private Enterprise" (1982) 7 Annals Air & Sp L 319; see also Boris Maiorsky, "A Few Reflections on the Meaning and Significance of 'Province of All Mankind' and 'Common Heritage of Mankind' Notions" in *Proceedings of the 29th Colloquium of the Law of Outer Space* (1986) 58, 59; V. M. Postyshev, "On the Question of Space Exploration for the Benefit of Humanity: A Modest Proposal"(1990) Proceedings of 33rd the Colloquium of the Law of Outer Space 236, 238.

[227] Stephan Hobe, Article I in Hobe et al (eds.) Cologne Commentary on Space Law: Volume 1, Outer Space Treaty (Koln: Carl Heymanns Verlag, 2009) 25-43 at p. 36-39; see also "Marco G. Markov, Implementing the Contractual Obligation of Article 1, Par. 1 of the Outer Space Treaty 1967" in *Proceedings of the 17th Colloquium of the Law of Outer Space* (1975) 136, 137.

[228]*Ibid;* VCLT, art 26.

obligations of all concerned, including the countries which had as yet undertaken no space activities"[229]

Finally, Article 31(3)(b) of the VCLT allows that subsequent practices of States after the application of a treaty be a useful aid in interpreting it. This State practice, according to Brisibe, can be seen from "both physical and verbal acts; the practice of the executive, legislative and judicial organs of a State; the practice of international organizations; the negotiation and adoption of resolutions by international organizations or conferences, together with the explanations of voting…"[230]The delegate of the Soviet Union remarked that Article I was designed ''to guarantee that the interests, not only of individual States, but of all countries and of the international community as a whole, would be protected'' [231] In search of the appropriate interpretation of Article I, Aganaba-Jeanty identifies the weak and strong variants as the major competing approaches in the explanation of the common benefits principle in literature.[232] While the weak variant agrees that there is a general duty to share benefits, they contend that access to space would invariably produce benefits. [233] At a Conference attended by this author, the representative of a company investing in the mining of asteroids remarked that benefits sharing can manifest in different forms, including his company hiring staff from States that do not have

[229] Official Records of the UN General Assembly, Twenty-First Session, First Committee, Summary Records of Meetings, 20 September -17 December 1966, U.N., New York cited in Jakhu and Buzdugan, *supra* note 13 at 228. Similarly, the Soviet delegate stated that Article I, Paragraph 1, was not ''a mere statement of the rights of States'' but to "guarantee that the interests, not only of individual States, but of all countries and of the international community as a whole, would be protected'': UN DocumentA=AC.105=C.2=SR.57, 20 October 1966.
[230] Tare Brisibe, Customary International Law, Arms Control and the Environment in Outer Space Chinese J. Int'l L. (2009) 8:2. 383.
[231] *Ibid.*
[232] Timiebi Aganaba-Jeanty, *Cosmopolitan Approaches To International Law: Finding The Right Lens To View The Freedom Of Outer Space*, Unpublished DCL Dissertation, (McGill University, 2016) 53
[233] *Ibid.*

the capacity.[234] This is a practical manifestation of the weak variant. A space activity is not illegitimate merely because it is not structured to bring benefits to *all countries.* The strong variant, on the other hand, holds that "there must be a literal and practical demonstration of benefit for all space activities"[235] The freedom of access can only be carried out in accordance with the law where a State shows that benefits have been produced and shared.[236] Arguing for the strong variant, Gerhard Hafner[237] contends that Article I(1) of the OST mandates "obligatory cooperation, automatic transfer of financial and technological resources from North to South and obligatory access to relevant knowledge and information"[238]

Ordinarily, giving a share of one's possession/property to the less privileged is only a moral duty which cannot be enforced and for which they must be grateful. [239] But the context in which charity is used by Locke makes it a constraint on property rights. Anyone who denies charity "cannot claim to be exercising property rights" because "the sin of un-charitableness simply vitiates the exercise of the rights in question" [240] Charity ameliorates the "disproportionate and unusual possession of the earth"[241] and ensures a "safety net for the poorest members of the society."[242] Locke's argument on the charity discloses a version of the symmetrical theory, that is, "when considerations of desperate need are present, property rights must give way, because the

[234] Kfir, *supra* note 39.
[235] *Ibid.*
[236] *Ibid.*
[237] Gerhard Hafner, "The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States" in Irmgard Marboe (ed.) *Soft Law in Outer Space* (Cologne: Bohlau Verlag, 2012) 271.
[238] *Ibid.*
[239] Jeremy Waldron, "Locke to Nozick: Filling the Space of Rights" in Ellen Paul, Fred Miller & Jeffrey Paul (eds.) in *Natural Rights Liberalism from Locke to Nozick* (Cambridge: Cambridge University Press, 2005 Volume 22, Part 1) 89-90.
[240] *Ibid.*
[241] Locke, *supra* note 163 at 125.
[242] Waldron, *supra* note 239 at 90.

fundamental definition of property rights is, in the last analysis, organized around the principle of satisfying *need*."[243] The Space Benefits Declaration appears to project this idea by providing that:

> "States with the relevant space capabilities and with programmes for the utilization and exploration of outer space should share with the developing countries on an equitable basis of the scientific and technological knowledge necessary for the proper development of programmes oriented to the more rational utilization and exploration of Outer Space."

This provision, however, is not binding on States because it is not contained in a treaty and there is no evidence that it has crystallised into customary international law. Thus, while the Space Benefits Declaration is an attempt to interpret Article I of the OST, it falls short of presenting a charity model that suits Locke's theoretical approach. In fact, "it adds, very little, if anything to the body of international law and state practice."[244]

CONCLUSION

Locke opens our minds to the suitability of property rights in a *commons*. With respect to the natural resources in outer space, thus author agrees with Lockean theory. This author agrees with Locke that States should be entitled to property right over the natural resources in outer space, including the Moon and other celestial bodies. A State that invests its efforts and resources in the exploitation of space resources should be entitled to property rights over the resources. This is not

[243] *Ibid* at 89.
[244] Gordana Milinic Djapo, *Outer Space Activities, International Cooperation and the Developing Countries* (Unpublished LLM. Dissertation, McGill University, 1998) 82; Timiebi Aganaba-Jeanty, "Exposing The Intended Justice Outcome of Space Law" (2015) *The Space Review* (16 November 2015), online: <www.thespacereview.com/article/2865/1>

the same with property rights over outer space and celestial bodies. Locke does not agree that property rights over the resources in the commons is tantamount to sovereignty over the commons.

The property rights to be granted would, however, be subject to three cardinal exceptions all of which are consistent with the current legal framework for space activities. The charity exception is the most controversial. It is a rehash of the common benefits clause in Article I of the OST. But there is no international consensus on the scope of the principle. It should be noted that the exact terms of the principle of charity will have to be agreed by States. What would be the constituents of the common benefit clause? How would the benefits be shared? How would it be structured so that the 'haves' do not take undue advantage of the 'have-nots' in the commons? These are questions that would be addressed under any regime for the exploitation of the natural resources in space. However, it should be noted that the current politics of outer space may not allow for a regime that would entitle a State or a group of States to reap benefits from the efforts of others. As the saying goes, "there is no free lunch, even in Freetown."

CHAPTER IV

MULTILATERALISM AS THE APPROPRIATE STANDARD FOR ENVISIONING A LEGAL FRAMEWORK FOR THE EXPLOITATION OF THE NATURAL RESOURCES IN OUTER SPACE.

A. INTRODUCTION

The previous chapter used the Lockean theory of property right to lay the outlook for the legal framework for property rights over the natural resources in outer space, including the Moon and other celestial bodies. While it is generally understood that a legal regime for property rights is imperative, space faring States have different and often times, fundamentally conflicting views on how the international legal regime on the exploitation of space resources ought to be structured. More often than not, these views are influenced by the respective domestic laws governing the exploitation of natural resources within areas under the sovereignty of States. But the outer space is not subject to the sovereignty and jurisdiction of any State. The previous chapters have considered the need for the exploitation of natural resources in space and attempted to apply Locke's classic theory of property rights to the exploitation of natural resources in space.

Locke's position is that the existence/creation of property rights must necessarily be accompanied with 'government' whose duty is to ensure the protection of the rights acquired and the enforcement of the limitations placed on those rights. The influx of the application of individual labour and the attendant acquisition of property rights will invariably exert pressure on the natural resources. This makes it less likely that an individual will find "enough as good" left over after appropriation by others.[245] The inevitable consequence of this would be property disputes and concern for personal safety.[246] It is of great advantage for men to congregate in order to form a

[245] Karen Vaughn, "John Locke's Theory of Property: Problems of Interpretation", online: <willoll.libertyfund.org/pages/locke-on-property-a-bibliographical-essay-by-karen-vaughn>
[246] *Ibid*

contract and establish a system of governance.[247] Government, therefore, is formed to protect property. Acknowledging the fact that men, and in this case States, are "no great observers of equity and justice",[248] their ability to individually apply the stipulated rules of property and the exceptions thereto are limited. The governance system must comply with acceptable standards of international law, in providing for the contours of property rights. Property owners are obliged to "submit their property to those regulations and taxes supported by the majority"[249]

The preference of some States for unilateral legislation over property rights in outer space brings the constant conflict between unilateralism and multilateralism into focus. This chapter will first examine the theory of multilateralism, its merits and demerits, by drawing distinction between unilateralism and multilateralism. Thereafter, the applicability of the theory of multilateralism to space exploration shall be explored. This chapter would conclude that multilateralism and not unilateralism is appropriate law making pathway to a legal regime over property rights in outer space.

i. Multilateralism and unilateralism defined.

The noun 'multilateral-ism' stems from the adjective 'multilateral'. 'Multilateral' becomes a noun with the addition of 'ism', which connotes the existence of "a belief or ideology rather than a straight forward state of affairs."[250] In international relations, a State can choose to act together with other States, act alone or not act at all. Such behavioural decisions are often projections of a State's self-interest, even if justified through rhetoric referring to 'the interests of humanity or 'the global community'. Multilateralism and unilateralism are two points on the spectrum of foreign

[247]Locke, *Second Treatise*, *supra* note 163 at 377.
[248]*Ibid* at 159.
[249]Alexander & Peñalver, *supra* note 68 at 51.
[250] James Caporaso, "International Relations Theory and Multilateralism: The Search for Foundations." (1992) 46: 3 Int'l Org. 599 at 600-601.

relations and affairs. Unilateralism refers to a situation where a State acts in an individualistic manner outside the structure of collective decision making at the international level. It may be a decision to wage armed conflict against another State, a decision opt for a domestic legal regime in place of an international framework in addressing a common problem or a decision to pull-out of a multilateral regime.

Nollkaemper's caution[251] that unilateralism should not be misconstrued as 'unilateral act by States' is very vital. Unilateral acts of States "comprises unilateral declarations 'formulated by a State with the intent of producing certain legal effects under international law.'"[252]Unilateralism, on the other hand, is not limited to declarations. It is "broader in that it does not necessarily involve acts with the intent to procure legal effects."[253] Certain actions which clearly demonstrate unilateralism do not meet the parameters of unilateral acts under international law.[254] For example, the prefix 'uni' may convey the impression that the concept refers to a singular State acting alone, but it is more embracing. It also refers to "some powerful states or a group of powerful states"[255] who act without recourse to the "equal sovereignty of their partners." Unilateralism manifests the will of one subject of law which may be a State[256] or group of States clothed with legal personality[257] and comprising entities with a common objective.

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[251]André Nollkaemper, "Unilateralism/Multilateralism" *Max Planck Encyclopedia of Public International Law [MPEPIL]* (March 2011), online:<www.opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e1682 >

[252]*Report of the International Law Commission's*, 58th Sess., May 1-June 9, July 3-Aug. 11, 2006, at 407–23, U.N. Doc. A/61/10; GAOR, 61st Sess., Supp. No. 10 (2006) Principle 1; see also *Nuclear Tests Case (Australia v France)* I.C.J. Reports 1974, p. 253

[253] Nollkaemper, supra note 251 at.

[254] *Ibid.*

[255]Pierre-Marie Dupuy, "The Place and Role of Unilateralism in Contemporary International Law" (2000) 11:1 EJIL 19.

[256] In this case, individual unilateralism. *Ibid.*

[257] In this case, collective unilateralism. *Ibid*

In 1945, the foreign policy of the United States identified the central theme of multilateralism as the "opposition of bilateral and discriminatory arrangements that were believed to enhance the leverage of the powerful over the weak and to increase international conflict."[258] This definition was a reflection of the state of international affairs at that time. Much of the world had been decimated by World War II, and States had come to the realization that it was only through the "international governance of the many"[259] that the world could be set on a pedestal of peace and tranquility. As noted most aptly by James Caporaso, a leading scholar on multilateralism,

> "As an organizing principle, the institution of multilateralism is distinguished from other forms by three properties: indivisibility, generalized principles of conduct, and diffuse reciprocity. . . [it] adjusts the utilitarian lenses for the long view, emphasizing that actors expect to benefit in the long run and over many issues, rather than every time on every issue."[260]

Caporaso's perspective identifies a significant aspect of the principle of multilateralism. The assertion that multilateralism helps "adjust utilitarian lenses for the long view" and that actors should view their interests and benefits to be attained "over many issues, rather than every time on every issue" is very apt. States need not worry that their self–interests will be subsumed under the multifaceted views and interests of all other States. 'Global governance' is not the same as 'global government.' This is because multilateralism does not demand that States should surrender their sovereign powers, will, authority and self-interests. It is a theory that allows for collective participation in international governance. This definition helps States that wish to project their

[258] Miles Kahler, "Multilateralism with Small and Large Numbers" (1992)46: 3 Int'l Org. 681 at 686.
[259] *Ibid.*
[260] Caporaso, *supra* note 250 at 601.

rational self-interest, it should be understood that multilateralism is the only method that has the authority and acceptability to address their interests in an egalitarian and effective manner. The governance of many as opposed to imposition by one State is vital for international tranquility and cohesion. It is the way out of the deluge of problems, like climate change, terrorism etc., that plague the developing and developed world. More importantly, some of these problems are not restricted to a part of the world. These challenges do not know the distinction between developed and developing countries.

B. MULTILATERALISM: THE OBLIGATION TO COOPERATE IN INTERNATIONAL LAW

Among other lofty goals, the UN was set up to "save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind."[261] Pursuant to this, member States undertake to 'develop friendly relations among nations', 'achieve international cooperation in solving international problems of an economic, social, cultural or humanitarian character...' and the maintenance of international peace and security. This is the tripod upon which the entire gamut of international law rests. These principles are conjunctive and cannot be divorced from one another. Cooperation is the heartbeat of goals outlined in the Charter and without it, there is no pathway to the promotion of friendly relations among nations or maintaining international peace and security. [262] It is submitted that the obligation to cooperate has crystallized into a rule of customary international law because it meets the parameters outlined in *Nicaragua v United States of America*[263] There is abundant evidence of State practice with regard to international cooperation; it is also clear that by so acting, States intend to be bound. Most bilateral and

[261]United Nations, *Charter of the United Nations*, 24 October 1945, 1 UNTS XVI, Preamble.
[262]Dupuy, *supra* note 255 at 22.
[263] *Supra* note 103.

multilateral agreements in diverse fields of international relations point to the willingness of States to cooperate. There is hardly any internationally negotiated agreement that does not amplify the principle of international cooperation in its preamble.[264] In the field of space law, international cooperation is reiterated in the relevant treaties and UNGA Resolutions. It is also "the basis for the whole post-war international legal order."[265] Allied to this is the principle of 'sovereign equality'[266] of all members of the UN which gives legal endorsement to the fact that no State, no matter how strong, is permitted to lord its will over State or group of States, no matter how weak.

C. MULTILATERALISM IN THE EXPLORATION AND USE OF THE OUTER SPACE

As shown in earlier chapters, international space law is presently sourced from five major treaties. These treaties are products of painstaking negotiations among States. As early as 1957, when the Soviet Union launched the first satellite (Sputnik 1) to space, States realized that the only way to stem the tide of the space race was for all States to agree on certain common principles that should govern the exploration and use of outer space. The absence of such agreement would have prompted States to choose which laws to apply and which to ignore. This realization led to the 1963 Declaration on the Exploration and Use of the Outer Space[267] which was followed by the Outer Space Treaty. The OST is itself the product of compromise, primarily between the United States and the Soviet Union – the only two States who had the capability to launch satellites to space.

[264] *Ibid* at 22.
[265] *Ibid* at 4.
[266] Article 2(4) of the UN Charter.
[267] *Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space* UN General Assembly Resolution 1962 (XVIII) on the (1963) (Space Principles Declaration).

In the light of this, it becomes clear that it was international cooperation, as opposed to unilateral action, that set the foundations for the jurisprudence of outer space. The Space Principles Declaration, clearly states that activities in outer space must be for the "betterment of mankind and for the benefit of States."[268] To ensure this, it is further stated that there will be mutual understanding and the strengthening of friendly relations between nations and peoples."[269] First, it provided an authoritative interpretation of Article I of the Outer Space Treaty. Second, it reminded space-faring States to fulfil their obligations under Article I of the Treaty. Third, it led to the avoidance of future ideological debates.[270] As reiterated by Judge Bruno Simma of the ICJ, the purpose of international law, in whatever context is the desire to control international conflicts and the maintenance of international peace and security.[271]

This is not the first time the international community will experience this kind of unilateral legislation in a common area. As a result of the controversies that characterized the negotiating stages of the UNCLOS, the US chose not to bind itself to the treaty. Rather, it enacted the Deep Sea Bed Hard Mineral Resources Act[272] which authorizes private companies to exploit mineral resources in the sea beyond the limits of national jurisdiction.[273]As far back as 1984, the U.S. granted four licenses for the exploration of the deep sea bed.[274] Thus the space Act appears to be

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[268] *Ibid.*, Space Principles Declaration Preamble, para. 2.
[269] *Ibid*., Preamble, para. 4.
[270] *Ibid.*
[271]Kuan-Wei Chen, "The Legality of the Use of Space Weapons: Perspectives from Environmental Law (Unpublished LLM Dissertation, McGill University, 2012) 30; Bruno Simma, "From Bilateralism to Community Interest in International" (1994) 250 *Recueil des cours* 217, 236-237.
[272] 30 U.S.C. $ 1401 (2002).
[273]Thomas Simmons, "Deploying The Common Law To Quasi-Marxist Property On Mars" (2015) Vol.51:1 Gonz L Rev 124. See also Restatement (Third) Of The Foreign Relations Law Of The United States § 521. Just like the section 403 of the Space Act, the Deep Sea Bed Hard Mineral Resources Act provides that in licensing private mining activity does not "assert sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of any extraterrestrial sea bed areas" – almost a carbon copy of the section 403 of the Space Act.
[274] Simmons *supra* note 137 at 124.

a rehash of the Sea Bed Hard Minerals Act. While I am not trying to question the legality of the US Deep Sea Bed Act, I wish to point out that such a unilateral legislation should be discouraged with regard to outer space. The lack of wide international support for the unilateralism in relation to the deep sea bed regime was evinced in the disapproval of States, especially the developing ones.[275] More so, the Space Act ignores does not offer any solution to the issue of competing claims which is likely to arise when two States show interest in the same resource.[276]

Compared to other areas of human endeavour, international cooperation is particularly essential for space activities. The majority of States, particularly developing ones, are dependent on international cooperation to be able to use space and benefit from its exploration.[277]Activities like satellite remote sensing, satellite communications and earth observation require international coordination amongst States if the benefits of space exploration are to be equitably dispensed. The preamble to the OST provides that one of the purposes of the treaty is to, *inter alia*, "contribute to broad international cooperation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes" and "believing that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and people…"Article I of the OST provides that "…States shall facilitate and encourage international cooperation in such investigation" and that space activities "shall be carried out for the benefit and in the interests of all countries." Article III of the Treaty states that space activities shall be carried in accordance with international law, including the UN Charter,

[275]Gennadiĭ Danilenko, *Law-Making in the International Community* (The Netherlands: Martinus Nijhoff, 1993) 269.
[276]Fabio Tronchetti, "Put Private Property Rights on Asteroid Resources: Assessing the Legality of the ASTEROIDS Act" (2014) 30 Space Pol'y 194. As stated earlier, States like Luxemburg and the United Arab Emirates are have already indicated interest in passing the legislation.
[277] N. Jasentuliyana, "International Space Law and Cooperation and the Mining of Asteroids" (1990) McGill University Annals of Air and Space Law Vol. XV – 1990 343.

"in the interest of maintaining international peace and security and promoting international cooperation and understanding." Finally, Article IX of the treaty mandates that State Parties to the treaty "shall be guided by the principle of cooperation and mutual assistance and shall conduct all activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other State Parties to the Treaty. Outer space law pays more attention to the interest of the international community rather than state sovereignty.[278] The OST is one of the first multilateral treaties which mandates States to have due regard to the corresponding interests of other States. By implication, the freedom to use outer space "is neither absolute nor unqualified" but limited by the rights and interests of other States.[279]

As argued earlier, there could either be individual unilateralism or collective unilateralism. While instances of individual unilateralism abound and would be discussed shortly within the context of space exploration, collective unilateralism is not as common. The Bogota declaration, discussed in a previous chapter, presents evidence of the disapproval of collective unilateralism in outer space. The equatorial States sought to exploit a perceived lacuna in the international legal order, regarding the delimitation of the boundaries of outer space, to claim sovereignty over the GEO in defiance to the OST. The disapproval of the Bogota Declaration by most space faring States validates the fact that absence of a legal regime is not an excuse for a State or a group of States to act unilaterally where the law and legal norms prescribes collective action. States must not act in a way that will be injurious to the rights of other States.[280] The aggregate of these provisions endorses multilateralism and discredits the principle of unilateralism in outer space.

[278]Detlev Wolter, *Common Security in Outer Space and International Law* (United Nations, 2006) 23
[279] Manfred Lachs, *supra* note 135 at 117.
[280]Jakhu, (2006) *supra* note 129 at 41-43.

D. BRIDGING UNILATERALISM AND MULTILATERALISM: UNILATERALISM AS THE DOORWAY TO MULTILATERALISM

While unilateralism may not be the acceptable standard of law making in the context of space exploration, it should be noted that unilateralism has some inherent benefits which should not be ignored. Two benefits stand out. Unilateral acts of States help to spur international awareness and action where States would otherwise not have acted. Unilateral actions can help facilitate the creation of international law where multilateral approaches fail to work In fact, unilateralism can be channelled to create a multilateral regime.[281] Gardner contends that unilateralism can be a boon rather than a bane of the international order.[282] Despite the criticisms that greeted the Bogota Declaration, it drew attention to the challenges faced by developing States in the use of the resources of the GEO.[283] Significantly, the 1985 report of the Legal Sub-Committee which opposed the claim by the equatorial States noted that the system of 'first come, first served' (which was the applicable ITU rule for claiming orbital slots) could not "be condoned if equatorial access to the geostationary orbit is to be guaranteed to all countries."[284] Consequent to this, the ITU engaged in several administrative radio frequencies to review the method of allocating radio frequencies[285] in order to ameliorate the concerns of developing States.[286] This led to the introduction of the *a priori* allotment plan which granted all ITU member States to operate

[281] Maggie Gardner, "Channeling Unilateralism" (2015)56:2 Harv. Int'l L.J. 297.
[282] *Ibid*.
[283] Tronchetti, *supra* note 12 at177.
[284] Oduntan, *supra* note 109 at 304.
[285] Philip De Man, "The Commercial Exploitation of Outer Space and Celestial Bodies – A Functional Solution to the Natural Resource Challenge" in Mark Sundahl & V. Gopalakrishnan, eds, in *New Perspectives on Space Law Proceedings of the 53rd IISL Colloquium on The Law of Outer Space* (2011) 64.

[286] *Ibid*

satellites in planned fixed satellite service (FSS) bands.[287] Though the Bogota Declaration may not have directly impacted the creation of the *a priori* procedure, one cannot ignore the influence it may have had on the discussions at the radio conferences. This is evidence that unilateralism and multilateralism can enjoy a symbiotic relationship. The US Space Act can thus be seen in a positive light as a catalyst for multilateral negotiations of an international regime for the exploitation of space resources. It is not difficult to deduce that the enactment of the legislation led to extensive debates on the issue of space resources during the 55th Session of the Legal Sub-Committee of UNCOPUOS. The report of the Session stated in part that:

> Some delegations expressed concern that the national legislation of some countries unilaterally enacted to protect private property rights in resources extracted from the Moon or any other celestial body may amount to either a claim of sovereignty or a national appropriation of those bodies and thus could constitute a violation of the Outer Space Treaty.

The debate of the legal issues arising from the Act at the Legal Sub-Committee is a welcome development. The immediate benefit is that the subcommittee resolved that a new single item[288] on the issue should be slated for discussion at its fifty-sixth session. Thus the unilateral legislation has created a pathway to multilateral action. Also, a confluence of unilateral actions by States can

[287] *Ibid* at 63. Article 44(2) of the ITU Constitution also declared that the special needs of developing countries and the geographical situation of particular countries shall be taken into consideration in using frequency bands and radio services.

[288] The report reads in part:
"The Subcommittee agreed that a new single issue/item for discussion, entitled 'General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources, should be included on the agenda of the Subcommittee at its fifty-sixth session. The Subcommittee also agreed that the inclusion of that item would provide an opportunity for a constructive, multilateral exchange of views on such activities, including their economic aspects, among States members and permanent observers of the Committee."

help to create customary international law if such actions exist long enough and fulfil parameters for the creation of international custom or a general practice accepted as law.[289]

E. CONCLUSION

This chapter argues in favor of multilateralism as the appropriate procedure for the enactment of a legal framework for property rights over the natural resources in outer space, including the Moon and other celestial bodies. It has been contented that that Section 51303 of the Space Act negates the international obligations of the US, particularly Article II of the Outer Space Treaty. It is submitted that section 51303 of the Space Act violates the principle of multilateralism as it applies to space exploration.It has not been argued that it is illegal for the US to enact a domestic legislation that would regulate the activities of its citizens and commercial entities in the exploitation of space resources. It is indeed legal and appropriate for a State to put in place the necessary legal machinery to authorise and supervise commercial entities interested in this venture in compliance with Article VI of the Outer Space Treaty. Such commercial entities would need to be licensed by the State to carry out such activities and the licensing system would have to be governed by a domestic legislation and not international law. The illegality lies in the fact that section 51302 of the Space Act purports to grant property rights over parts of the global commons to US citizens. This is a blatant violation of international law. After all, no State can use the existence of a domestic rule of law as an excuse to eschew a binding international obligation.[290]

Imagine a situation where individual space faring nations have different domestic legislations governing the exploitation of space resources and property rights over same. The picture is gloomy

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[289] Danilenko, *supra* note 275 at 269.

[290] VCLT, article 27.

and it would certainly give rise to a situation whereby only the States that have the requisite technological wherewithal will be able to exploit these resources and exercise property rights over them. Even among such powerful States, property rights over these resources would have to be determined by the State that first 'captures' the resources. This will lead to an eventual re-enactment of Hobbes' state of nature, which is a State of "all against all". This is clearly what the international community sought to legislate against when the Outer Space Treaty was negotiated. While States can enact national legislations to regulate the space activities of their private entities, the appropriate law making process for property rights in outer space is a multilateral framework and not a unilateral one.

SUMMARY, RECOMMENDATIONS AND GENERAL CONCLUSIONS

i. Summary.

(a) At the outset of this thesis, attempts were made to highlight the abundant natural resources in outer space, including the Moon and other celestial bodies. The point was also made that the present dearth in the laws governing the exploitation of the resources ought to be urgently remedied if the resources would be exploited in a sustainable and equitable manner. It was argued that failure to do so would make States lord unto themselves and may eventually give rise to conflicts over resources in space like none ever seen on earth. Allied to this is also the fact that the existing framework does not eventually cater for the current spate of private commercial entities who are gearing up to exploit the natural resources in outer space. A major impediment in the existing framework is Article II of the OST which prohibits any form of acquisition of property rights over the resources in space. Yet, outside of property rights, there is little or no incentive for States to participate in this venture.

(b) This led to the question: how can the interests of the States (or entities acting at their behest), especially property rights, be secure while still preserving outer space as a global commons. In interrogating this issue, help was sought with John Locke's age-long theory of property rights due to its potential applicability to contemporary property discussions. Also Locke' property was formulated for an environment which has some striking similarities with the legal status of outer space since everyone has the legal freedom to exploit the natural resources in both environments. Essentially, whenever an individual mixes his labour with the resources in the commons, he is vested with property rights over such resources. When applied to the natural resources in outer space, it is seen that the Locke-an approach provides a model for a property rights regime in outer space. But Locke

identifies three exceptions that would balance property rights with the status of outer space as a global commons. Applying the Lockean approach, this thesis argues that it is possible to have property rights, even in a global commons while still ensuring that the interest of every State is catered for. While this thesis argues for the property rights, it does not attempt to structure all the contents of a legal regime. Rather, the thesis looks to the system that would birth such a legal regime. It is argued that multilateralism, and not unilateralism, is a more acceptable approach in bringing about property rights. The US Space Act appears to be a veiled attempt to apply Locke, but it is not the acceptable approach because it takes a unilateral route. In keeping faith with the maxim that "what concerns all must be approved by all", it is recommended that a multilateral approach should be used to structure a Lockean model for property rights over the natural resources in space. The concept of property rights and the doctrine of global commons are not mutually exclusive.

ii. **Recommendations and General Conclusions.**

(a) Not everyone who sees a need for a regime of property rights over the natural resources in space is in agreement that humanity has arrived at an auspicious time that would make such regime meaningful. It has been argued that, given the fact that the technology for the exploitation these resources is still evolving, it may not be appropriate to put a regime in place "until the field matures further, i.e., until the field defines itself through actual operations and demonstrations."[291] This argument sounds plausible, but it undermines the role of law in a society. The truth is that the technology for the exploitation of these resources would continue to evolve and outgrow whatever regime is put in place at whatever time. If States had given-in to such arguments at the inception of space exploration, the OST may not have been born, because the technology for the exploration

[291] The quote appears in Jakhu & Buzdugan, *supra* note at 228.

of space has continued to evolve ever since. If we fail to evolve a legal regime before actual exploitative activities commence, it may open the floodgate to conflicts and disagreements. In any event, as Lord Denning puts it, it is not possible for a statute to "foresee the manifold sets of facts which may arise..."[292]

(b) Since the existing the framework does not provide for property rights, States that desire to engage in the exploitation of these resources could either amend the treaty or even withdraw therefrom[293] and subsequently assert property rights over the resources. Even if this is done, it would not preclude the application of the principle of non-appropriation which, as argued earlier, has already crystallised into customary international law. It is, therefore, more plausible to consider either amending the OST or instituting a new treaty.

(c) The Moon Agreement has received only 16 ratifications thus far. Any amendment to it can only be made by State Parties. Even if the 16 parties come together to amend the Moon Agreement, it is very likely that it would not be acceptable to the other States who do not participate and may hold such amendment in contempt. Since most objections to the Moon Agreement are baseless, it is recommended that States ratify the Agreement. It should be emphasised that the Moon Agreement offers a plausible path to multilateralism.

(d) Further and in alternative to (c) above, a new treaty or an optional protocol to the OST is therefore imperative. While the Conference for the negotiation of such treaty may draw inspiration from Article 11(5) of the Moon Agreement (which encourages a new regime

[292] *Seaford Court Estates Ltd v Asher* [1949] 2 KB 481.

[293] Jakhu &Buzdugan, *supra* note 13 at 224. Article XV sets out the procedure for the amendment of the treaty. Article XVI of the OST provides that a party "may give notice of its withdrawal from the Treaty one year after its entry into force…"

when exploitation becomes feasible) care would have to be taken so it doesn't appear to be a rehash of the Moon Agreement.

(e) The regime for property rights should reflect the theoretical propositions of John Locke on property rights over the natural resources in a *commons*. The starting point would be for such regime to establish or recognise an international institution to oversee the administration of the property rights to be conferred. Scholars like Tronchetti and Lee have proposed an international Authority patterned after structure of the International Deep Sea Bed Authority.[294] Those proposals are plausible. However, it should be noted that deliberately structuring the regime of property rights over space resources like that of the international deep sea bed could give rise to some potential problems. One of such problems is the likelihood of applying the interpretation of the rules of procedure applicable to the International Deep Sea Bed Authority and transplant the reservations that were[295] (and still are) associated to the regime of the law of the sea and its administrative processes to outer space. The preference of this author is an institution that is clothed with the regalia of the law of the sea.

(f) As far back as 1959, the UNCOPUOS conveyed the impression that "some form of international administration over celestial bodies might be adopted."[296] The UN can be organised to serve as a public trustee of these resources with the entire humanity serving as a beneficiary of such trusteeship. This proposal for saddling the UN with the responsibilities of a public trustee re-echoes Kofi Anan's recommendations for the establishment of the UN Trusteeship Council as "the forum through which member States

[294]See generally, Tronchetti, *supra* note 12 at 246-249; Lee, *supra* note 19 297-302.
[295] See generally, Nelson, *supra* note 137.
[296]Cited in Pop, *supra* note 81 at 71.

exercise their collective trusteeship for the common areas…such as outer space."[297] Pop has criticised this approach because "it would transcend its current powers."[298] But this criticism is overly speculative and presumptuous. In fact, this is consistent with the broad goals of the UN which includes the development of "friendly relations among nations"[299], "to achieve international cooperation in solving international problems of an economic, social, cultural and humanitarian character."[300] The mission of the UN is, among others, "to convey to future generations the material and cultural heritage that we hold in trust for them."[301] The question that arises at this point is whether the recommendation of a public trustee institution is compatible with Locke's theory of property rights. Locke's theory agrees that 'government' is necessary to ensure that individuals in the state of nature cannot exploit resources equitably without a form of 'governmental authority' overseeing them.

(g) Locke allows property rights over resources to be vested in an individual who affixes his labour thereto, but he does not agree that such individual will have sovereignty over the *commons*. Thus, States would only have property rights over resources exploited and not property rights over outer space or celestial bodies. This can exist *pari passu* with Article II of the OST. Should any contradiction arise, it is a cardinal rule of interpretation that *generalia specialibus non derogant* i.e the provisions of a general law must yield to those of a special one.[302] In any case, the new treaty would amplify the prohibition against the appropriation of outer space or celestial bodies. The treaty should make it clear beyond

[297] *Ibid.*
[298] *Ibid* at 78.
[299] UN Charter, article 1(2).
[300] UN Charter, article 1(3).
[301] Kofi Annan, cited in Pop, *supra* note ….. at 72.
[302] See generally, Joost Pauwelyn, *Conflict of Norms in Public International Law: How WTO Law Relates to other Rules of International Law* (Cambridge: Cambridge University Press, 2003) 404-407.

doubts that the property rights would only be granted to States. States may then assign their rights and interests to their private entities, non-governmental entities or intergovernmental institutions of which they are members. As it is under extant international space law, States would remain internationally responsible for the activities of entities to which their interests/rights are assigned.

(h) Environmental regulations are important and must be built into such a regime because it is consistent with Locke's proposition that property rights must be granted only on the condition that States do not waste, dissipate or spoil the environment. Contamination and/or harmful interference in the extra-terrestrial are major reasons why a State would not be granted property rights or have its rights revoked.

(i) The constituents of the property rights granted would include – (a) the exclusive right to appropriate and use resources within the area granted it (b) the right to control the activities of all natural persons and legal entities within the space area granted it and its related facilities (c) a State would also have the right to sell real property rights to other natural persons or legal entities associated with it.[303]

(j) The application of Locke's charity principle to the new regime of property rights should be handled delicately because of its potential for breeding controversy. As shown earlier, the debates around the appropriate formula for benefit sharing continue to rage on. It is recommended that that States should be allowed to determine specific incidences of benefit sharing and how they want to go about it. This is in line with principle 2 of the Space Benefits Declaration.

[303]See Wayne White's "Proposal for a Multilateral Treaty Regarding Jurisdiction and Real Property Rights in Outer Space" *Space Future* (2001) online: <www.spacefuture.com/archive/proposal_for_a_multilateral_treaty_regarding_jurisdiction_and_real_property_rights_in_outer_space.shtml>

(k) This thesis is only a modest attempt to explore the possibility of applying the Lockean theory of property rights to the space environment. Further study, which this author is interested in, would be devoted to discussing the specific details of the regime. Property rights is not the only legal question that could arise before during or after an exploitative activity. Other issues include, but not limited to liability, environmental contamination, dispute resolution, creation of market for the sale of the resources etc.

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