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ANALYSIS OF THE LEGAL REGIMES OF OUTER SPACE ON OWNERSHIP OF SPACE OBJECTS

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Abstract

Unlike the regime of sovereignty on earth, outer space is a no man's land. The pristine environment is neither subject nor capable of being owned, hence, the non-appropriation status provided by the major space laws regulating human activities in space. The determination of the international community that the environment of space and its resources are to be used for the benefit of mankind informed stricter provisions in the Moon Treaty of 1979 with respect to the principle of common heritage of outer space. It therefore means that Outer Space and its natural resources do not belong to anybody be it states, individual (juristic or natural), inter-governmental organisation etc. Again, ownership of real property, in this regard, space object, on earth undoubtedly resides in the person with title whether as a result of manufacture, sale or transfer. Outer place is a different clime with its special regimes. What then is the status of a space object launched to outer space? Is the non-appropriation regime in space applicable to whatever object that is also launched into the environment from the earth notwithstanding its status on earth? The intention of this paper is to discuss the attitude of the international legal regimes on space on ownership of objects or real property launched into space.

KEYWORDS: regimes, ownership, object, outer space, launch

1.Introduction

It is trite that outer space is a common property evidenced in series of the international legal regimes regulating human conduct in space activities. Majorly, outer space is regulated by the; The Outer space Treaty 1967,[1] Moon Treaty 1979,[2] Liability Convention 1976,[3] Registration Convention 1972[4] and the Rescue Agreement 1968.[5]

Ownership can generally be defined as the legal right to own (title) something, that is, the total body of rights to use and enjoy a property, to pass it on to someone else as an inheritance, or to convey it by sale. It implies propriety right, regardless of whether or not the owner personally makes constructive use of it.[6] How questions of property in space are settled affects the nature and extent of exploration, science and commerce as well as wealth distribution here on earth. The space property regime adopted determines the incentive structure facing states and private companies interested in exploiting space resources, exploring other celestial bodies, and placing satellites in earth's orbit.[7]

Ownership encourages people and organisations to 'make the most productive use' of land and resources.[8] The idea, which emerges in different ways in the philosopher John Locke's enlightenment, is that

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[1] "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the Outer Space Treaty, adopted by the General Assembly in its resolution 2222 (XXI)), opened for signature on 27 January 1967, entered into force on 10 October 1967

[2] The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the Moon Treaty), adopted by the General Assembly in its Resolution 34/68), opened for signature on 18 December 1979, entered into force on 11 July 1984.

[3] The Convention on International Liability For Damage Caused By Space Objects (the Liability Convention adopted by the General Assembly In Its Resolution 2777 (XXVI)) Opened For Signature On 29 March 1972, entered Into force On 1 September 1972

[4] The Convention On Registration Of Objects Launched Into Outer Space (The Registration Convention) adopted by the General Assembly in its Resolution 3235 (Xxix)), opened for signature on 14 January 1975 and entered into force on 15 September 1976

[5] The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launch into Outer Space (the Rescue Agreement), adopted by the General Assembly in its Resolution 2345 (XXII)), opened for signature on 22 April 1968, entered into force on 3 December 1968.

[6] Ojienda T.O, '*Conveyancing Principles and Practice*' (Law Africa. Nairobi Kenya 2010)

[7] Daniel Munro, 'Who owns Outer Space and Everything in it ? ' (2022) Centre for International Governance Innovation <https:www.cigionline.org> accessed 28 September 2022

[8] Ibid

ownership ensures that one can enjoy the benefits of one's efforts, rather than have them arbitrarily appropriated by another. [9]Ownership provides the certainty needed to make more productive, long-term use of land and resources. That space tourism, mining, communications systems and other activities are, or have the potential to be, profitable, also means there are more resources available for space exploration and science.

However, ownership can have negative consequences as well. Although ownership may create incentives for productive use, it may also, in some cases, generate *less* productive use. Assuming an explorer was to secure sole rights to mine an asteroid or develop a network of satellites, the public's access to the ensuing benefits could conceivably be slowed, because the urgency for the explorer to act before others do is removed. Moreover, whether ownership incentives productivity or not, it clearly risks exacerbating inequality on Earth. Those with the opportunity to claim ownership of space resources or locations are those who already hold massive wealth such as a handful of advanced economies and private sector companies. Under present circumstances, allowing ownership of space may simply enable the rich to get richer.[10]

Although, current circumstances suggest that ownership of space and its resources will be determined by "first mover advantage" with resources claimed by those who grab them first. This approach is not consistent with the 'aspirational' ideals articulated in earlier treaties. Space exploration is usually and ideally, defended as an opportunity to expand our understanding of the universe and ourselves.

Indisputably, ownership of the surface of the Earth is within the exclusive jurisdiction of the State upon such land,[11] and within the power of that State to distribute such land as it deems fit, in most cases, such distribution is regulated through statutory instruments. This sovereign right over territorial limit is recognised, observed and respected internationally as well.

[9] John Locke's Theory of Property <https://www.gutenberg.org/files7370/7370-h/7370.h.htm> accessed 30 September 2022
[10] Daniel Munro, 'Who owns Outer Space and Everything in it? (2022)
[11] Art. 2 Chicago Convention 1944, Paris Convention 1919

According to Outer Space Treat 1967 'the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.'[12]

2. The Status of Outer Space Itself

Outer Space has been defined as "any region of space beyond limits determined with reference to the boundaries of a celestial body or system, especially (a) the region of space immediately beyond Earth's atmosphere (b) Interplanetary or interstellar Space."[13] It is the common term used for the areas between celestial bodies and outside of the atmosphere. This environment immediately precedes the airspace, though controversies abound on the actual delimitation of outer space, that is, where does Outer Space begin? This controversy[14] would forever be an issue until there is a specific legal regime to define the boundary. Its resources[15] cannot be over-emphasised starting from the launching of satellite for different purposes and advantages which include communication transmission of wireless radio, communication as it relates to television signals, telecommunication,[16] the use of GPS[17] systems in automobile, earth surveillance, weather forecast from remote sensing satellite, military and war advantages and natural

[12] See Art. I Outer Space Treaty

[13] American Heritage Dictionary of English Language, 5thEdition 2013. www.freedictionary.com/outer> accessed 15 Sept 2022

[14] Oduntan G. '*The Never Ending Dispute: Legal Theories on the Spatial Demarcation Boundary Plane Between Airspace and Outer Space*' (2003)1 (2) 64-84 *Hertfordshire Law Journal*. See also Cheng B, '*The Legal Regime of Airspace and Outer Space: The boundary Problem: Functionalism Versus Spatialism'* (1980) 5, ANNALS of AIR & SPACE LAW.

[15] See also Robert P.M and Glenn H.R, '*Space Resources, Common Property and Collective Action Problem*' (1997)6 107-125 Environmental Law Journal N.Y.U

[16] "Satellite Telecommunication refers to the use of Satellites for the variety of communications, broadcasting, navigation and position location purposes. Most commercial Satellites in operation today are majorly used for television program transmission or distribution, private voice, data and video networks and International telephony via the public switch
< <https://www.collinsdictionary.com/dictionary/english/satellite-telecommunication> accessed 18 May, 2022

[17] Global Positioning System (GPS) is a system that uses signals from satellites to find out the position of an object online <https://www.collinsdictionary.com/dictionary/english/global-positioning-system> accessed 18 May, 2022

resources like asteroids known to be rich in valuable elements such as neodymium,[18] iridium,[19] yttrium,[20] platinum,[21] scandium[22], and palladium[23] which are regarded as limited and rare resources on earth and; which have informed calls for[24] ownership[25] in Outer Space.

It is pertinent to state that just like the earth surface, space is also an environment[26] and suggestions have been made from various quarters that man should be given the opportunity to situate[27] and claim portions of outer space just as land is acquired on earth.[28] Because of the importance and high advantage that this unique environment possesses, states at international level have severally come together to create certain

[18] "A bright , silvery, reactive element of the lanthanide series, found in the mineral monazite and bastnaessite and use for colouring glass, for doping laser and crystals and in materials with strong, permanent magneticproperties that make them useful for computer and audio equipment" American Heritage Dictionary of English Language fifth Edition, 2016 <http://www.yourdictionary.com>accessed 13 June 2022

[19] An element used to boost the strength of magnesium and aluminum alloys. American Heritage Dictionary of English Language fifth Edition, 2016<http://www.thefreeedictionary.com/yttrim> accessed 13 June 2022

[20] An element used to boost the strength of magnesium and aluminum alloys. American Heritage Dictionary of English Language fifth Edition, 2016<http://www.thefreeedictionary.com/yttrim> accessed 18 June 2022

[21] "A heavy precious metallic element; grey-white and resistant to corroding; occurs in some nickel and copper ores and is also found native in some deposit" Vocabulary.com Dictionary <http://www.vocabulary.com/dictionary/platinum> accessed 13 June 2022

[22] "A rare light silvery-white-metallic element occurring in minute quantities in numerous minerals." Collins Dictionary 2012 Digital Edition <http://www.dictionary.com/browse/scandium >accessed 18 June 2022

[23] "A rare metallic element of the platinum group, silver-white, ductile and malleable, harder and fusing more readily than Platinum: Used chiefly as a catalyst and in dental and other alloys"Dictionary.com <http://www.dictionary.com/browse/palladium> accessed 20 June 2022

[24] E.g the United States of America and Russia.

[25] Rand S, "*Property Rights In Space*' A Journal of Technology and Society." (2012) www.TheNewAtlantis.com>accessed>30 September 2022. See also Glenn R and Robert M, 'Outer space: problems of Law And Policy' (1997) Boulder; Westview Press Vol.3 xvi 349.

[26] Mark Springel, 'The Human Body in Space: Distinguishing Facts from Fiction' 30 July 2013 Science in the New, Harvard University <https://sitn.hms.harvard.edu/flash/2013/space-humam-body/> accessed 05 October 2022

[27] Micheal Greshko, 'Humans have been living in space for 20 years straight' Science News:National Geographic 28 October2020https://www.nationalgeographic.com/science/article/humans-have-lived-on-international-space-station-20-years-straihgt accessed 01October 2022

[28] Olatinwo K.Y, ' The Legal Definition of Outer Space' (2015) 1 Ife Juris Review, Journal of Contemporary Legal and Allied Issues. Ife Juris Review. Pg 244-257,

legal regimes[29] at International level[30] to guide and regulate the activities of man in outer space and even for the purpose of sustaining its utility.[31]

Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.[32] The seriousness of the principle of *res communis* is further extended to the moon, hence, 'the moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article. The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means. Neither the surface nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organisation, national organisation 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.'[33]

Deducible, outer Space, moon and celestial bodies are free to be used by all for the benefit of mankind.[34] Space based technology has been adopted for various technological advancement in recent times from communication, transportation, environmental, navigation, earth monitoring and weather forecasting

[29] "Treaty Banning Nuclear Weapon Tests in the Atmosphere in Outer Space and Under Water of 1963, Outer Space Treaty of 1967, Convention on International Liability for Damaged caused by Space Objects 1972, Convention on Registration of objects launched into outer space (1975), Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space 1968, Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1979"

[30]. This has not hindered states like United States of America, Japan, Russia and China to put in place their own local Laws on space activities

[31] How well these treaties have gone to preserve the environment of space for sustainable development is another serious discuss

[32] Art. II Outer Space Treaty

[33] Art. 11 (1-3) Moon Treaty 1984

[34] Olatinwo Khafayat, 'Space Resources and Developing Nations: The Innuendo of Parallel Benefits' (2021) 2(1) KWASU Law Journal. Pg 48-57

services through satellites launched in the Geo Stationary Orbit. The need to encourage State to utilise space based resources is responsible for the open access regime in the space treaties. [35]

3. How is the space object viewed then?

Space object was first identified in 1961[36] as 'any object launched by state into outer space.' This description is further reflected in outer space treaty while both Registration Convention and Liability Convention opt for 'space object'. The Registration Convention[37] defines space object to "include component parts of a space object as well as its launch vehicle and parts thereof."[38] This same definition was repeated in the Liability Convention[39] while space object was used interchangeably with "object launched into outer space" in the Rescue Agreement[40] (without giving any definition)

The Australian Space Activities Act[41] defines space object to mean "a thing consisting of (a) a launch vehicle and (b) a payload (if any) that the launch vehicle is to carry into or back from an area beyond the distance of 100km above mean sea level; or any part of such a thing, even if: (c) the part is to go only some of the way towards or back from an area beyond the distance of 100km above mean sea level, or (d) the part results from the separation of a payload or payloads from a launch vehicle after launch."[42] China's Measures for the Administration of Registration of Objects Launched into Outer Space[43] defines the term "space object' to refer to an artificial satellite, crewed spacecraft, spacecraft, space probe, space station, launch vehicle and parts of thereof, and other human-made object launched into outer space." It further provides that "the sounding rocket and Ballistic missile that temporarily crosses outer space shall not be

[35] United Nations Office for Space Affairs. <http://www.unoosa.org/oosa/en/benefits-of-space/communication.html>accessed on 10 June 2022
[36] General Assembly Resolution 1721, International Cooperation in the Peaceful uses of outer space, XVI
[37] 1975, Art I
[38] Art. I
[39] 1972, Art I
[40] 1968, Art 5
[41] An Act about Space Activities and for Related Purposes. Act No. 123 of 1998 (as amended). Applicable to Australian nationals within and outside the territory.
[42] See Section 8
[43] Measures for the Administration of Registration of Objects Launched Into Space. Order No. 6 February 2001

regarded as a space object."[44] Obviously, this provision does not consider any object which is not intended to be permanent in space as a space object.

The United States, National Aeronautics and Space Act[45] did not define Space object but states objects such as launch vehicles and Experimental Aerospace vehicles as space object. It can be safely suggested that space objects and its component parts is an object designed or intended for the purpose of space related activities which would include Space Station, launch vehicle, artificial satellite, crewed spacecraft, spacecraft, spaceship, space vehicle space probe, space station and payload[46]

None of these regimes, either international or domestic envisages object, classified as space object, not manufactured on earth nor found its way into space but manufactured in the environment of space with space based materials.

4. Who then owns space objects once it enters outer space?

Outer space is absolutely free for exploration and use and the freedom has been utilised by man in several ways through the launching of Satellites and stationing of Space Station which is habitable for space research. Again, access to Outer Space does not include the opportunity to assert any right of ownership to any part of outer space. The question then is, what is the ownership status of a space object, obviously owned by man on earth, in a free territory? Does a space object automatically become free for all once it is in orbit?

Space object envisaged here are simply ***man-made object*** which finds its way to outer space from the surface of the earth or constructed on celestial bodies but excludes any object, including space resources, which finds its way to space by natural means. This description of space object given here appear clearer to the definition given in the space regimes.

[44] See Article 2, Measures for the Administration of Registration of Objects Launched Into Space. Order No. 6 February 2001
[45] Section 308 (f) (i) & 309
[46] An object which a person undertakes to place in outer space by means of a launch vehicle and includes sub-component of the launch vehicle specifically designed or adapted for that object. Section 2465 of the National Aeronautics and Space Act pub. L. No. 111-314 124 Stat. 3328 (Dec 18, 2010)

The provision of Article VIII of the Outer Space Treaty provides as follows:

> A State Party to the Treaty on whose registry an object launched into outer space is carried shall *retain jurisdiction* and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.

In the same spirit, the 1998 Space Station Agreement provides that 'pursuant to article VIII of the Outer Space Treaty and Article II of the Registration Convention, each partner shall retain jurisdiction and control over the elements it registers … and over personnel in or on the Space Station who are its national…'[47]Therefore, title to space object is not affected by the fact that they are in outer space. The owner still retains title to the object which is under the jurisdiction and control of the state of registry. Therefore, what is yours on the earth surface is still yours in outer space and it would be wrong to construe the provision on registration to mean a denial of the real owner's continued enjoyment of property even where it is carried on the spacecraft of another state.

The owner (i.e State) of the space object is therefore required to register it on its own registry (where it is an individual or non-governmental entity, the territory which it belong or the launch territory as the case may be) and that of the United Nations. A space object is registered nationally which means that the registration State retains jurisdiction and control over it and calls, legally speaking, for solution of salvage problems similar to those in the Law of the Sea.[48] Ownership of space object is not for certain duration, it

[47] Art. 5(2)
[48] Art. IV

also extends beyond the life span or operational span of the space object and even where it malfunction in space or refuses to reach its destination in orbit (for whatever reason), the owner still retains the title.

5. Transfer of Title in Space Object

Accompanying the rule that ownership in Space Object does not change merely because of its being launched into space, presence in space or upon its return to the Earth, is also the ability of the owner of the space object, not only to use the object for its intended purpose and in any other manner consistent with the State of registry laws and international law on space, but also to insure, sell, lease, mortgage and assign the space object. In essence, an owner of a space object retains the power to convey title in the space object.

As a result of influx of private operators in the satellite area, the attendant industry consolidation coupled with the need to access spectrum, space objects are increasingly being transferred in orbit between entities and often, they live in different jurisdiction. The state that launches or procures the launching of the space object is expected to provide necessary information for the purpose of the transfer as described in the Registration Convention 1974. This does not affect the registration on the state of registry as the state of registry still retains jurisdiction and control over the space object. The only reservation to this convenience of conveyance is the absence of a regime for the transfer of registration of space object, Joanne Wheeler, believes that 'there is no express legal provision in the existing international legal framework which would permit the transfer of the registration of a satellite from one State to another during its operation in orbit. There is also currently no international mechanism by which a satellite owned by a company domiciled in the State of registry can be transferred, during its operation in orbit, to a company domiciled in a foreign State. This is currently carried out informally between States without any binding internationally agreed provisions'[49]

[49] Joanne Wheeler, 'Transfer of Space Object' (2011) at the meeting of the Legal Subcommittee of the UN Committee on the Peaceful Use of Outer Space from 29 March to 2 April 2011 as an expert representative for the UK Government.
< https://www.cms-lawnow.com/ealerts/2011/06/the-transfer-of-space-objects?cc_lang=en > accessed 05 October 2022

The concept of conveyance of space object was informed by the celebrated incidence of Westar-6 AND PALAPA-B2. These two insured space objects were launched into space by NASA space shuttle and destined for GSO but failed to reach its destination as a result of mechanical failure. These two Satellites remained and left hanging in low-earth orbit by their respective owner. The Insurance Company deemed the Satellite as a complete loss, paid the money accrued under the Insurance policies and obtained title to the Satellites as agreed between the parties. The insurance company then arranged for the Satellite to be brought back to the Earth, fixed, and then sold them [50]

Consequently, the transfer of title would necessarily dictate some changes in the registry be that of the state or United Nations on the identity of the new owner. (Registration and Deregistration under the Registration Convention). AsiaSat 1 & 2 deregistered from UK registry and reregistered in China Registry. Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies.[51]

6. Nigeria and its Space Law Framework

Nigeria is one of the leading countries in the African space sector. During the tenure of the former President Olusegun Obasanjo[52], he, in an unprecedented move by any African leader at the time, began discussing the future of Nigeria as one that extended beyond our planet and into space. As a result of these discussions, a staggering sum of $93,000,000 was directed into the creation of the National Space

[50] *When a Satellite circles close to Earth, it means it's in low Orbit* (LEO). Satellites in LEO are just 200-500miles (320-800 kilometers) high. The Tech Museum < http://www.thetech.org/exhibits/online/satellite/4/4a/4a.1.thml> accessed 15 August 2022

[51] Liability Convention 1972

[52] Chief Olusegun Obasanjo was the president of the Federal Republic of Nigeria from May 1999- April 2007

Research and Development Agency (NASRDA) at the federal level in 1999[53]. In 2001 Nigeria's National Space Policy was approved.

These strides resulted in the launch of the country's first satellite Nigeriasat-1[54] in 2003, which is the Nigerian contribution to the international Disaster Monitoring Constellation (DMC) project. The country also launched its telecoms satellite Nigcomsat-1 in 2007. In 2010, the National Space Research and Development Agency (NASRDA) Act 2010 was passed into law. Nigeria is also in the process of revising its national space policy and strategy[55] and in enacting further regulations – the Regulations on the Licensing and Supervision of Space Activities 2015 Draft. The NASRDA Act 2010 and the Draft Regulations, make Nigeria one of the African countries to have national space legislation and one of the even fewer African countries to have national legislation and policy regarding outer space. In 2016, Nigeria announced its desire to send a man to space by 2030[56]. Nigeria is signatory to four international space treaties which consequently imposes obligations on the country. These treaties include:

6.1 The Outer Space Treaty 1967:

This is the foundation of international space law for signatory nations. It provides that the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind; outer space shall be free for exploration and use by all States; and States shall be responsible for national space activities whether carried out by governmental or non-governmental entities[57].

6.2. **The Rescue Agreement 1968:**

[53] Omotayo Oyewole, 'The Nigerian Space Conundrum' (2019) *The Republic* <https://republic.com.ng/june-july-2019/nigerian-space-conundrum/> accessed 30 September, 2022

[54] Gunter's Space Page <https://space.skyrocket.de/doc_sdat/nigeriasat-1.htm> accessed 30 September, 2022

[55] Nigeria to Revise its National Space Policy and Strategy, (2020) *Space in Africa*< https://africanews.space/nigeria-to-revise-its-national-space-policy-and-strategy/ >accessed 30 September, 2022

[56] Nicolas Giacomin, 'The Nigerian Space Vision' (2021) *Space Legal Issues*<https://www.spacelegalissues.com/the-nigerian-space-vision/ >accessed 30 September, 2022

[57] Kofo Olabalu, 'Space Law in Nigeria – A Call for the Review of NASRDA Act' (2019) <https://oal.law/space-law-in-nigeria-nasdra-act/ >accessed 30 September, 2022

This Agreement imposes an obligation on any State party that becomes aware that the personnel of a spacecraft is in distress to notify the launching authority and the Secretary-General of the United Nations and provides all possible assistance to rescue the personnel of a spacecraft.[58] This regime sets out the legal framework for the provision of emergency assistance to astronauts.[59] It makes provisions as regards the immediate notification of the launching authority or public announcement regarding astronauts in distress as well as immediate assistance. The Agreement also covers the search and rescue operation and prompt return of the astronauts and recovery of space objects. The agreement deals with space objects likely damaged and or posing certain threats to cause damage in the course of their return to earth. The purport of the legal regime provided by the Agreement, however, is to provide for assistance-related obligations and a safe and expeditious return home of the space object and possible astronauts on board, not to deal with any potentially harmful aspects of such space objects in their possible quality of space debris.[60]

The purpose and essence of the Agreement is to call on states parties to render prompt assistance to astronauts in the event of emergencies and ensure the safety of astronauts and space objects.[61]

6.3 **The Liability Convention 1973**:

This Convention imposes responsibility on any member party for all space objects launched within its territory which cause any damage to the earth, aircraft, space object or personnel of another state regardless of who launched the object in question.[62] The Law is borne out of the acceptance of the inevitability of space accidents by the International community[63] as damage by space objects is inevitable. The Convention observes that notwithstanding that precautionary measure might have been taken by a

[58] The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launch into Outer Space (the Rescue Agreement), adopted by the General Assembly in its Resolution 2345 (XXII)), opened for signature on 22 April 1968, entered into force on 3 December 1968.
[59] Article V, *Outer Space Treaty* 1967
[60] Von der Dunk.F. *Space Debris and the Law. Law, College of Space and Telecommunications Law Program* Faculty Publications. 2001. University of Nebraska-Lincoln. http://digitalcommons.unl.edu/spacelaw/4>accessed 11 October 2022
[61] Preamble to the Rescue Agreement 1968
[62] The Convention on International Liability For Damage Caused By Space Objects (the Liability Convention adopted by the General Assembly In Its Resolution 2777 (XXVI)) Opened For Signature On 29 March 1972, entered Into force On 1 September 1972
[63]Britton. E, *"The Corpus Juris Spatialis"* http://www.suit101.com >accessed 11 October 2022

launching State, damage may still be caused and such calls for rules concerning responsibility for space accidents and prompt payment of compensation to be put in place.[64]

6.4 **The Registration Convention 1976**:

This Convention requires state parties to furnish the United Nations with information about space objects launched within the Earth's orbit[65]. The register is kept by the United Nations Office for Outer Space Affairs (UNOOSA). The Rescue Agreement of 1968 and its regime may become relevant once private manned space flights in Nigeria become feasible. The other three treaties however are most relevant to Nigeria as they provide the main structural principles for any national law dealing with private space activities[66].

6.5 The NASRDA Act 2010

The National Space Research and Development Agency (NASRDA) Act 2010 is Nigeria's foremost legislation on space and its related activities. As such, it is the focal point between Nigeria and outer space regulation. This Act is divided into six parts as follows:

Part I: This part establishes the National Space Research and Development Agency (the Agency) and the National Space Council (the Council). It sets out the members of the council, tenure and cessation of office and remuneration of non-ex-officio members of the Council.

Part II: This part sets out the functions of the Agency and the powers of the Council. An explicit function of the Agency is to 'develop national strategies for the exploitation of outer space and make this part of the overall national development strategies, and implement strategies for promoting private sector

[64] See the Preamble
[65] Article II, Convention on Registration of Objects Launched into Outer Space 1976
[66] Frans G. von Der Dunk, 'The Second African National Space Law: The Nigerian NASRDA Act and the Draft Regulations on Licensing and Supervision' [2017] Vol. 59 *Proceedings of the International Institute of Space Law* 547-559

participation in the space industry'[67]. Also to strengthen capacity building in space science technology development amongst others. The Council on the other hand, is conferred with power amongst others to approve opening of domiciliary accounts for the Agency, for the Agency to partner with third parties on space-related activities and to appoint consultant technicians to advise it from time to time.

Part III: This part addresses and puts in place the structure of the Agency and mandates that a register of space objects be maintained by the Agency. This part also states that to achieve the objectives of space policy, the Agency shall operate through the following development centers:[68]

i. National Center for Remote Sensing, Jos
ii. Center for Space Science and Technology Education, Ile Ife
iii. Center for Satellite Technology Development, Abuja
iv. Center for Space Transportation and Propulsion, Epe
v. Center for Geodesy and Geodynamics, Toro
vi. Center for Basic Space Science and Astronomy, Nsukka

Part IV: This part provides for the staff of the agency, specifically, the duties, tenure and qualification for the office of the Director General.

Part V: This part contains the financial provisions of the Act. It establishes a fund for the Agency and provides for how this fund should be disbursed.

Part V1: This part contains miscellaneous provisions.

The NASRDA Act is a significant landmark in Nigeria and Africa's space development as it expresses Nigeria's commitment to the development of its space capabilities. It also implements most of the

[67] Section 6(k), NASRDA Act 2010
[68] Section 7, NASRDA Act 2010

country's international obligations. The Act provides an excellent foundation upon which Nigeria may build a solid space law framework, but no more[69]. Despite the Act's relatively progressive nature, it is only a skeleton and cannot be relied upon for the continued development of the Nigerian space sector[70].

From the summary of its parts highlighted above, it is obvious that the legislation is more administrative than it is technical because it addresses primarily how the Agency should be run and managed. The Act's definition of "space activities" is limited to remote sensing satellite data and nothing regarding core activities relating to space travel or spacecraft. As Frans[71] puts it, "While the NASRDA Act thus established the basic competence of the Agency to issue licenses as well as the general framework for compliance with the major international obligations of Nigeria and still left more detailed questions in this regard unanswered."[72]

6.6 The Regulations on the Licensing and Supervision of Space Activities 2015 Draft.

Perhaps in recognition of the loopholes or inadequacies present in the NASRDA Act and in light of the evolving space sector, a regulation on licensing and supervision of space activities is in the works. This is the first major effort to fill the gaps in the NASRDA Act.[73]

The first and most commendable aspect of this regulation is its attempt to define "space activities". The Draft Regulations define space activities within its regime to include "space objects and their control" and "the operation, guidance, and re-entry of space objects into, in and from outer space and other activities essential for the launch of, operation, guidance and re-entry of space objects into, in and from outer

[69] Joshua Faleti, 'The NASRDA Act; Beyond a Domestic Implementation of International Space Obligations' (2021) Space in Africa.<https://africanews.space/the-national-space-research-and-development-agency-act-beyond-a-domestic-implementation-of-international-space-obligations/ > accessed 30 September, 2022

[70] Ibid

[71] Frans G. von Der Dunk, 'The Second African National Space Law: The Nigerian NASRDA Act and the Draft Regulations on Licensing and Supervision' [2017] Volume 59

[72] Ibid

[73] The draft Regulation on the Licensing and supervision of space activities 2015.<>http://africanews.space/the-national-space-research-and-development-agency-act-beyound-a -domestic-implementation-of-interntional-obligations/> accessed 11 October 2022

space. This means that scope of space activities recognised by the law has broadened and is not limited to remote sensing satellite operations anymore. Also, the Draft Regulations define ‘outer space' as ‘anything beyond 100km above sea level', effectively making Nigeria the fourth state to offer a distinct number as regards altitude. This falls in line with a broader trend of recognising the virtual 100km altitude line as the most appropriate lower boundary of outer space.

The Draft Regulations have specific provisions on licensing space activities and granting launch permits to private individuals. Furthermore, the draft mandates licensees to provide insurance (to a sum not exceeding US$5,000,000) with respect to damages that may trigger the Liability Convention's application. This is to protect the Federal Government of Nigeria from any liability resulting from the activities of private persons. This provision is in itself essential as an expansion of local private participation directly links to an increased risk of liability borne by Nigeria, resulting from accidents in engaging in space activities.[74] As commendable as this regulation may seem, it is still a draft and has not been passed into law or given any enforcement power. It is imperative that the regulations be passed into law to give the country an even playing field in the space sector. There is still a lot to be done in drafting regulations for the Nigerian space sector to meet up with emerging trends in this field.

7. Conclusion

As gathered from above, ownership of space object is not affected by the fact of their presence in orbit and does not take away the right to convey such space object. The lacuna as far as the international regime on outer space in respect of the conveyance is what law regulates the transactions especially where the parties are in different jurisdiction, private international law. There is no room for the adoption of *lex situs* as the international regimes on space law do not make provision as regards transfer of title of space object in orbit. The main option of the parties is to fall back on their respective domestic laws of conveyance.

[74] The draft Regulation on the Licensing and supervision of space activities 2015

On the definition of space object, the world community should avert their minds to the possibility of space manufacturing satellites or object generally especially with the present realities of space colonisation. A time would come where space object would not only be launched into space but will be manufactured right in space by space manufacturing companies using materials sourced and manufacture in space. Private entities and individuals are seriously discussing making outer space the next habitat such as Elon Musk's mars colony. If material used to build this colony is sources right from space materials, such object, even though termed space object will not fall within the definition of space object envisaged under the existing space regimes. Hence, the need for an amendment on the expansion of the definition of space objects in the current regimes regulating human activities in outer space.

It is worthy to note that Nigeria has participated in space activities and its domestic law on outer space, National Research and Space Development Agency Act, does not provide exhaustive definition and list of what may be categorised as space object. NASRDA Act requires complete overhauling and it is suggested that cue can be taken from the Australian Space Activities Act for the purpose of such inclusion in the 2015 Regulations on the licensing and supervision of space activities. Hopefully the draft of the amendment would be passed into law as some of its provision sounds progressive. For instance, S. 3 & 43 of the 2015 draft regulation on the Licensing and supervision of space activities extend space activities from remote sensing to include space object and their control, operations, guidance and re-entry of space object into, in and from outer space and other activities essential for such operations.