Contemporary Legal Issues and Loopholes in the Outer Space (OS): Critical And Analytical Overview

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Abstract

Currently, we are witnessing the unstoppable and prompt growth of the space industry. However, outer space (OS) has become a place for competing major space powers, and its militarisation has become a fait accompli, especially in light of the growing hostile feelings between states. By using doctrinal legal research methodology, the article is devoted to provide a holistic understanding of the contemporary legal issues and loopholes in the OS, with particular emphasis on such issues as the increased utilisation of OS for military purposes and operations; the growing involvement of the private sectors and entities in the OS activities; space mining activates; the lack of an enforceable mechanism in the OST-1976. The primary and secondary data are collected using a library approach, and both are critically and analytically scrutinised and interpreted. It is found that there is a need to improve and upgrade international space treaties because they are legally insufficient to achieve their purposes and targets. This would enhance the peaceful use of the OS and bring benefits to humankind.

Keywords: *Outer Space, International Space Law, OST-1976, Moon-1979, LIAB-1972.*

Introduction

International Space Law (ISL) is considered a new domain of Public International Law (PIL). It is based on several legal precedents. Several multinational agreements and treaties, including the Antarctica Treaty System (ATS), the United Nations (UN) Charter, the Law of the Sea Treaty (LST), aviation law (AL), and the different Conventions, including but not limited to the Chicago, Warsaw, and Montreal, regulate and handle International Air Transport (IAT), the International Telecommunications Union (ITU), and the International Geophysical Year agreement (IGYA). Other essential agreements include nuclear defence and arms, intellectual property, and commercial transactions. Lastly, Customary International Law (CIL) applies to OS cases where necessary or appropriate.

In 1960, OS legislation was created. Specifically, five (5) treaties were negotiated and entered into force between 1960 and 1980. They specifically compromised an agreements between the two leading space powers during that time, namely, the United States of America (USA) and the Soviet Union (USSR), to address the critical issues encircling the exploration and utilise of OS. Specifically, they aimed to evade conflict and confrontation in the OS [1]. From the time of their creation, the fundamental objective of ISL has been to ensure humanity's unhindered, unrestricted, equitable, and fair access to OS to maintain peace [2]. This played a vital role in underpinning the leading position of nations in OS exploitation and exploration.

The five (5) main treaties and an overview of the ratified parties are;

(i) The Treaty on Principles Governing the Activities of States in the Exploration and Use of OS, including the Moon and Other Celestial Bodies (OST-1976). The OST-1976 is the founding treaty of the ISL. It was adopted in 1966 and came into force in 1967, with one-hundred twenty-two (122) ratifications and twenty-three (23) signatures.

(ii) The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (ARRA-1968) was adopted in 1967 and entered into force in 1968; with ninety-nine (99) ratifications and twenty-three (23) signatures.

(iii) The Convention on International Liability for Damage Caused by Space Objects (LIAB-1972) was adopted in 1971 and entered into force in 1972, with ninety-eight (98) ratifications and twenty-three (23) signatures.

(iv) The Convention on Registration of Objects Launched into Outer Space (REG-1975) was adopted in 1974 and entered into force in 1976, with seventy-two (72) ratifications and three (3) signatures.
(v) The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon-1979) was adopted in 1979 and entered into force in 1984, with eighteen (18) ratifications and four (4) signatures [3].

The main general principles guiding the above-mentioned five (5) treaties are embodied in [4]:

(i) OS is the "province of mankind." It is available to and accessible to all nations, states, and people and must be utilised for their benefit. No state should have the legal right to claim sovereignty or ownership of the Moon and other celestial bodies.
(ii) The right of "the freedom of scientific exploration, utilise, and investigation of the OS by all nations, states, and peoples. Also, the states are motivated to help others in terms of sharing the findings and results obtained from scientific research on the OS."
(iii) Nations should be legally responsible and accountable for the actions of their citizens and for their behaviour and actions in the OS. This principle creates the push element for the states to establish their national laws that guarantee they will be held liable for damages or harm caused by their space equipment.
(iv) OS must be utilised for peaceful objectives and purposes and be free from weapons of mass destruction (WMS).

Regardless of the above, several years have passed since the creation and ratification of OST-1976, Moon-1979, and LIAB-1972. These years opened the door in front of several problems that negatively affect stability and peace in OS and show that the previous treaties are insufficient to ensure their objectives and purposes. This argument is supported by Tronchetti (a well-known writer in (SL) domain), who argued that there is a need for improving spacy treaties and including new principles. This is because of three (3) fundamental elements: (1) increased ability to launch satellites directly into orbit; (2) technological advances; and (3) the existence of new legal and technical developments issues that were not expected when the UN Space Treaties were created and ratified [5]. Specifically, many issues were found unaddressed in the OST-1976, Moon-1979, and LIAB-1972, namely; (1) the increased utilisation of OS for military purposes and operations; (2) the growing involvement of the private sector and entities in OS activities; and (3) space mining activates.

Methodology

The article employed doctrinal legal research methodology. Primary and secondary data are used. The primary and secondary data are collected through the library approach. Specifically, the primary data are collected from the three (3) main space treaties, such as OST-1976, Moon-1979, and LIAB-1972. The secondary data are sourced from legal documents, books, articles, and online resources. Finally, both types of data are critically and analytically examined and interpreted.

Findings and Discussion

The Increased Utilisation of the OS for Military Purposes and Operations

The peaceful use of OS has become a growing concern within what has become known as the "space economy," which means commercial and economic exploitation of natural resources beyond the borders of the earth or planet. The size and extent of this interest are evidenced by the fact that in 2020, the amount of the global space economy reached 446.9 billion U.S. dollars [6]. This number increased from 428 billion U.S. dollars in 2019 [6]. In contrast to peaceful use, recent decades have witnessed a similar increase in global interest in what is known as OS militarisation [7] [8]. The use of OS for military purposes for the first time had its roots back to 1942 when Nazi Germany launched the first "V2" rocket, but the greater use of OS for military purposes appeared in the Cold War 1940s between the USSR and the USA, and concerned with developing weapons and technologies for military uses in OS [9]. But while the race for OS arms is accelerating, some treaties seek to slow it down, or at least limit it, such as the OST-1976, which bans all military activities and operations in the OS. Specifically, article IV of OST-1976 prohibits the states parties from placing NW or other WMS in OS, on the surface of the moon, planets, and other space objects.

In the same vein, Article 4(1) of Moon-1979 indicates (similar to the OST-1976) that "The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development." Furthermore, article 3 of Moon-1979 contains provisions relating to military activities on the moon and other celestial bodies. Specifically, articles 3(1), 3(3), and 3(4) of the Moon-1979 duplicated the articles included in article IV of the OST-1976. On the other hand, article 3(2) of Moon-1979 is a new amendment. It is purposed to forbid the threat or utilise of force from and on the moon, including the celestial bodies. However, it was witnessed after closer analysis of the OST-1976 that the article IV does not prohibit the use of conventional missiles and weapons in OS or the use of terrestrial missiles and weapons against objects in OS, such as satellites and orbital stations. Concerning the Moon-1979, it is also apparent that article 3 does not appear to control and prevent possible threats to OS. This is perhaps because

article 3 endeavors to address and provide protection only from extreme threats, therefore leaving several kinds of threats without regulation, such as the presence or provocation of weapons systems.

The previous loopholes lead to violate and breach of OST-1976 and Moon-1979 and show issue of militarisation and weaponisation of the OS is not science fiction [10]. This is evidenced, in 2021, when Russia destroyed a satellite with an anti-satellite missile, and the USA condemned that test because it left dangerous pieces scattered in OS, threatening the lives of crews of international space stations carrying out scientific missions [11]. The reason behind the Russian test is to prove to the USA that its military power in space has significantly escalated. In the same vein, in 2019, former President of the USA, Donald Trump, announced the launch of a US Space Command (SPACECOM) tasked with ensuring US hegemony threatened by China and Russia. The Pentagon stated that SPACECOM would supervise space, satellites, and high-flying aircraft. Trump argued during the inauguration ceremony of this command that;

> "The SPACECOM leadership will ensure that America's dominance in space will never be threatened. The new command will defend America's vital interest in space, the field of the next war, and we will deter aggressively any aggression and ensure our superiority over all competitors by far" [12].

In the same year, the North Atlantic Treaty Organization (NATO) declared a new policy known as the "NATO Overarching Space Policy"[13]. This new policy aimed to extend the NATO's defense to the OS, including the collective military response to a supposed attack from the OS on any of the NATO countries.

Based on the above, it is argued that there is serious shift from utilising and exploring OS for the benefit and in the interests of all countries, as stated in article I of the OST-1976, to military uses and purposes in the OS. This would negatively affect global peace. So, there is a need to remove or reduce the vague and uncertainty in the military restrictions included in the OST-1976 and Moon-1979, otherwise the wrong interpretation and application of the previous two (2) treaties could lead to more military activates and conflicts in OS.

The Growing Involvement of the Private Sectors and Entities in the OS Activities

Previously, the OS activities and operations are conducted by the government representing the public sector because of the OS legal framework regulates the space governments but not private entities and sectors. However, this is not the situation in the current days where the private sectors and entities are allowed to pursue space operations and activities on their own [14]. This might occur because launching or carrying out exploring missions in the OS is not expensive compared with before. This, in turn, increases the risk of disregarding or violating international space treaties [15].

In the context of this article, article II of the LIAB-1972 stated that "a launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight". In the light of this, it is important to note that article II of the LIAB-1972 constitutes an essential restriction on states' activities in OS. However, it is failed to address the involvement of private entities and sectors in OS activities along with the words and norms characterise and describe the "launching state". For instance, who does the launching, and in the case, the launching operator is made by the private entities, what are its duties and responsibilities?

On the other hands, article VI of the OST-1976 stated that;

> "States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization."

Based on the above, it is clear that article VI of OST-1976 was designated in a way that creates a dual-structure where private actions in the OS are allowed, but the legal obligation stays in the hands of the states' parties to the OST-1976. This, in turn, means that the states' parties are still legally responsible for the actions carried out by their domestic private sectors and entities. Such responsibility exposes states to a high hazard of recompense unless otherwise strict national rules are introduced. Therefore, it is suggested that since the states are responsible for regulating access to OS, they have to take the necessary steps before licensing the activities of the private sectors and entities in the OS. Doing so would protect the states from being responsible for damages caused by their private entities and sectors.

Space Mining Activities

One of the most futuristic exploitations of the OS is the field known as space mining, specifically the mining of asteroids and comets [16]. The operations aim to mine precious metals, gold, silver, iridium, platinum, and

tungsten, and then using it for industrial purposes and building space stations. In the context of this article, the moon and other celestial bodies, including their natural resources, were declared the "Common Heritage of Mankind," as indicated in article 11(1) of the Moon-1979. However, it was discovered that article 11(1) of the Moon-1979 employs the term "the heritage" regime rather than "the province" as stated in article 4(1) of the Moon-1979, as well as article 11(1) failed to provide rules for applying this legal regime.

Furthermore, article 11(2) of Moon-1979 that it stipulated that: "The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means." Also, article II of the OST-1976 stated that; "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

From the above, it is argued that all kinds of appropriation in the OS are not allowed, even for private sectors and entities. However, the use of the natural resources existing in the OS constitutes a legal issue. This is because the USA introduced the Space Resource Discovery and Use Act 2015 and the Use of Space Resources Act of July 2017. Both these laws established a regulatory framework in order to enable private entities and sectors to commercialise and exploit the resources of the celestial bodies. The justification for this action is that the exploitation of the celestial body' resources is legal, unlike the appropriation of the celestial body [17]. Specifically, the rule of the non-appropriation does not relate to natural resources. Therefore, if the appropriation of a celestial body is prohibited, it would be fully legal to utilise its resources. Based on the previous dilemma, there is a need to find a mechanism that aims to organise the exploitation of natural resources existing in the celestial bodies and the moon. The suggested mechanism should comply with the Moon-1979.

Conclusion and Recommendations

Currently, we are witnessing the unstoppable and prompt growth of the space industry. However, OS has become a place for the competition of major space powers, and its militarisation has become a fait accompli, especially in light of the growing hostile feelings between states. SL is a relatively new branch of IPL, involving a combination of customs and treaties. The legislative framework of the space industry is expanding accordingly to the subject that is regulated.

This article found several issues unaddressed in the OST-1976, Moon-1979, and LIAB-1972—regarding the increased utilisation of OS for military purposes and operations, it is argued that there is serious shift from utilising and exploring OS for the benefit and in the interests of all countries, as stated in article I of the OST-1976, to military uses and purposes in the OS. This would negatively affect global peace. So, there is a need to remove or reduce the vague and uncertainty in the military restrictions included in the OST-1976 and Moon-1979, otherwise the wrong interpretation and application of the previous two (2) treaties could lead to more military activates and conflicts in OS.

In the light of the growing involvement of the private sector and entities in OS activities, the states parties are still legally responsible for the actions carried out by their domestic private sectors and entities. Such responsibility exposes states to a high hazard of recompense unless otherwise strict national rules are introduced. Therefore, it is suggested that since the states are responsible for regulating access to OS, they have to take the necessary steps before licensing the activities of the private sectors and entities in the OS. Doing so would protect the states from being responsible for damages caused by their private entities and sectors.

Concerning the space mining activates, it is recommended that there is a need to find a mechanism that aims to organise the exploitation of natural resources existing in the celestial bodies and the moon. The suggested mechanism should comply with the Moon-1979.

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References

[1] Muhammad, A. N. (2018). Revisiting US-China aggressive use of outer space: A comprehensive international law outlook towards military activities in outer space. Indonesian Journal of International Law, 16(4), 473-503.

[2] Grimal, F., & Sundaram, J. (2018). The incremental militarization of outer space: A threshold analysis. Chinese Journal of International Law, 17(1), 45-72.

[3] Committee on the Peaceful Uses of Outer Space. (2022). "Status of International Agreements relating to activities in outer space as at 1 January 2022." [Internet]. Committee on the Peaceful Uses of Outer Space. https://www.unoosa.org/res/oosadoc/data/documents/2022/aac_105c_22022crp/aac_105c_22022crp_10_0_html/AAC105_C2_2022_CRP10E.pdf. [Accessed 28 October 2022]

[4] Kostenko, I. (2022). Current problems and challenges in international

space law: Legal aspects. Advanced Space Law, 5(1), 49-58
[5] Bernat, P. (2019). The inevitability of militarization of outer space. Safety & Defense, 5(1), 49-54.
[6] Statista. (2022). “Global turnover of the space economy from 2009 to 2020.” [Internet]. Statista. https://www.statista.com/statistics/946341/space-economy-global-turnover/ [Accessed 28 October 2022].
[7] Stojanović, B. (2021). The transformation of outer space into a warfighting domain in the 21st century. Medjunarodni problemi, 73(3), 433-454.
[8] Muhammad, A. N. (2019). The usage of non-nuclear weapon in outer space: A Legal Outlook and Recent Developments. Indonesian Journal of International Law, 16(4), 11-52.
[9] Geppert, A. C., Brandau, D., & Siebeneichner, T. (Eds.). (2021). militarizing outer space: Astroculture. Dystopia and the Cold War. Palgrave Macmillan.
[10] Taft, E. (2016). Outer space: The final frontier or the final battlefield?. Duke Law & Technology Review, 15(1), 362-372.
[11] National Geographic. (2021). “Russia just blew up a satellite—here’s why that spells trouble for paceflight.” [Internet]. Statista. https://www.nationalgeographic.com/science/article/russia-just-blew-up-a-satellite-heres-why-that-spells-trouble-for-spaceflight [Accessed 28 October 2022].
[12] Aljazeera. (2021). “Space map: between provocations and Biden's limited options.” [internet]. Al Jazeera.https://www.aljazeera.net/news/politics/2021/11/19/%d9%83%d9%84-%d9%85%d8%a7-%d8%aa%d8%ad%d8%aa%d8%a7%d8%ac %d9%85%d8%b9%d8%b1%d9%81%d8%aa%d9%87-%d8%b9%d9%86-%d8%b9%d8%b3%d9%83%d8%b1%d8%a9-%d8%a7%d9%84%d9%81%d8%b6%d8%a7%d8%a1-%d8%a8%d9%8a%d9%86[accessed28 october 2022].
[13] NATO. (2022). “NATO’s overarching space policy.” [Internet]. NATO. https://www.nato.int/cps/en/natohq/official_texts_190862.htm [Accessed 28 October 2022].
[14] Svetlichnyj, O., & Levchenko, D. (2019). Commercialization of space activities: Correlation of private and public interest in the pursuit of outer space exploration. Advanced Space Law, 4(1), 21-29.
[15] Hazelrigg, G. A., & Hymowitz, M. E. (1985). Space commercialization: Lessons from history. Space Policy, 1(2), 187-201.
[16] Svec, M. (2022). Outer space, an area recognised as res communis omnium: Limits of National Space Mining Law. USA:Space Policy.
[17] Jakhu, R. S., Pelton, J. N., & Nyampong, Y. O. M. (2017). Space mining and its regulation. UK: Springer International Publishing.