MILITARIZATION OF OUTER SPACE AND ITS IMPLICATION FOR THE SECURITY OF SATELLITE SYSTEMS: AN EXAMINATION OF THE LEGAL ISSUES

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APPROVAL

We certify that this project work was completed and written by Ewoma Amos UGOLO with Matriculation Number PG/LAW1715440 in partial fulfilment of the requirements for the award of the Master of Laws (LL.M) Degree of the University of Benin.

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CERTIFICATION

I, Ewoma Amos UGOLO (Mat. No. PG/LAW1715440) hereby certify that apart from references made to other people's works as duly acknowledged herein, this entire project is the product of my personal research, and has neither in part nor in whole been presented for another degree elsewhere

…….
Ewoma Amos UGOLO

DEDICATION

This Thesis is dedicated to my wife Ugolo Favour, my sons Omoghene and Oghenekaro, for their unflinching love, support, understanding, encouragement and patience during my research for this thesis. I also dedicate this to my late father Chief Ugolo Thomas and my mother Ugolo Etabuno Martha, for their uncommon love, belief and ever-constant support.

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LIST OF ACRONYMS

ABM	Army Ballistic Missile
ABMA	Army Ballistic Missile Agency
ASAT	Anti-Satellite
BITT	Beijing Institute for Telecommunications and Tracking
COPUOS	Committee on the Peaceful Uses of Outer Space
GPS	Global Positioning Systems
GRAB	Galactic Radiation and Background
ICBM	Intercontinental Ballistic Missile
ILC	International Law Commission
IGY	International Geophysical Year
JSPOC	Joint Space Operations Center
LEO	Low Earth Orbit
NASA	National Aeronautics and Space Administration
NDIA	National Defense Industrial Association
NSC	National Security Council
PAROS	Prevention of an Arms Race in Outer Space
TCP US	Technological Capabilities Panel
UNGA	United Nations General Assembly

ABSTRACT

On 4th October, 1957 the Soviet Union launched the world's first artificial satellite, Sputnik 1. The United States of America followed by successfully launching its own satellite in 1958. Since then, satellites providing services in different fields ranging from scientific and research, earth observation, global communication services, Global Positioning Systems (GPS) services, banking services e.t.c. At the early stage of the development of space activities, there was a consensus amongst States that the outer space should be for the use and benefit of all States, to to avoid issue of a possible arms race in space in the future. This general understanding culminated in United Nations (U.N.) Outer Space Treaty, 1967, which provides that the exploration and use of outer space, including the moon and other celestial bodies shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. The Treaty further provides that States shall not place nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies or station them in outer space.

While satellites have become very useful for many civilian services, the fact that they can also serve military purposes, has led to the issue of possible militarization of the outer space. The recent development of Anti-Satellites (ASAT) and other weapons by states, is posing a threat to the security of space assets. There is now the view that an arms race may soon be underway, since existing treaties did not impose a ban on use of other conventional weapons in space. The United States has in the past opposed the development of a new legal regime, since that may place some kind of restrictions on its activites in space. However, because of the vulnerability of of space assets, United States and France are taking steps to contemplating establish Space Command Force to protect their national interests. These devepment has led the United Nations

General Assembly to express concern that there had been insufficient progress in recommending ways to prevent militarization in outer space.

This thesis discusses the concept of the militarization of outer space from the perspective of the Outer Space Treaty 1967, issues arising therefrom and legal implication for the security of satellite systems and other space assets, and concludes that the current international space treaties provides insufficient safeguards against the militarization and weaponisation of outer space and made useful suggestions in this regard.

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This present an overview of events of the 1950s, with respect to the growth and development of the law of space, after the launch of the first satellite, named Sputnik 1 in 1957, by the United Soviet Socialist Republic (USSR) and emergence of infamous era of rivalry (cold war) involving the USSR and United States of America (United States) assumed a dangerous dimension in dealings and relation in international affairs. Issues of militarization of outer space and military activities undertaken by the super powers during and after the cold war era also received attention. The chapter further discusses the global efforts to develop rules of engagement in space, which culminated in the Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies Treaty, 1967 (refeerred to as Outer Space Treaty), as well as challenges arisng from activities of State actors, and in particular resistance of some active nations to review the existing laws and its implications for space based assets. The chapter climax with a brief exposition of the contentious issue of anti-satellite weapon test conducted by some States and how **space** law has struggled to address the issue of militarization in a meaningful and effective way, as demonstrated by the lack of progress made at the United Nations General Assembly and its organs, in terms of enthronement of new legal regime that will address some of the perceived challenges in the existing space law treaties, so that the imminent threat to space assets and space environment is prevented.

1. 2 Background

Like any other area of public international law, Space law originated from the need to initiate rules and codes of operations relevant for States in the outer space realm.[1] From earliest time, there have been several efforts to avoid militarization of space, but after World War II, competition in outer space invovling Soviet Union and United States became the defining characteristics of the cold war period. During and after this period, many States including United States and Russia began to substantially increase their Outer Space efforts and technical capabilities, and began to formulate policy that would give them advantage over potential adversaries in the event of a conflict, by either incapacitating or denying them the use of space.[2] At present, many nations have developed advanced space technology and capability, which was possible in the 1950s.[3]

Although war in space has always been an issue and concern for many States since World War I, the development of advanced technology through innovation, especially in the development of missile technology and its deployment/usage during World War II, caught the attention of governments, lawyers as well as academic.[4] These concern grew as a result production of weapons of mass destruction, and other technological innovations. It soon became obvious that absence of rules to guide activities in outer space could threaten global peace and security. Magnitude and effects of first atomic

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1 Walter A. McDougall, "The Heavens and the Earth: A Political History of the Space Age" (1985) 187-88.

2 Michael N. Schmitt, "International Law and Military Operation in Space," Max Planck UNYB, 10 (2006), 92

3 Ibid, 93

4 Abbas Sheer, Li Shouping, Emergence of the International Threat of Space Weaponization and Militarization: Harmonizing International Community for Safety and Security of Space, Frontiers in Management Research, Vol. 3, No. 3, July 2019. https://dx.doi.org/10.22606/fmr.2019.33003, 104

bomb dropped on Hiroshima and Nagasaki, added to the fears that outer space could become the ultimate battle ground in the future if no steps are taken to create international rules that guide space activities. Consequeuntly, there was an urgent need for the adaptability of existing international law to provide guiding rules for Space domain, pending whwn formal treaties are developed for outer space.[5]

1.3 Outer Space in Post World War II and Development of Satellite Systems

Year 1948 ushered in significant and several interesting developments in the realm of space affairs.[6] A report titled "Preliminary Design of an Experimental World-Circling Spaceship" became a public discuss in 1948 during the annual report of James Forrestal (then Secretary of Defense). That same year, General Hoyt Vandenberg, was quoted as declaring that "*the Air Force sought no less than exclusive rights in space, seeing that it had already been in charge of strategic air weapons*."[7] This report generated interest from American Journalists, who began to write on the subject and pose such questions as "*Will America possess moons of war*.[8]

Not long after World War II, political difference began to emergence in the relationship between United States and Soviet Union. As a result of the differences and rivalry involving the two nations, the United States started searching for ways to

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5 Gyula Gal, Space Law 129 (1969), 130; Walter A. Mcdougall, The Heavens and the Earth: A Political History of the Space Age (1985) 187-88. See also Jesse Londin, Who Owns Mars? The Law in Outer Space, Rocket Law. (Aug. 20, 2012), https://www.rocketlawyer.com/blog/who-owns-mars-the-law-in-outer -space-98425

6 Peter Pindjak, The Eisenhower Administration's Road to Space Militarization, 20 (Thesis submitted to the Faculty of Graduate School of Public and International Affairs in partial fulfillment of the requirement for the degree of Master of Public and International Affairs, University of Pittsburgh 2011), http://d-scholarship.pitt.edu/7698/1/Thesis_PindjakPeter2011Updated.pdf

7 Ibid 21, (The Douglas Aircraft Company Report of 1946; General Hoyt Vandenberg was the Air Force Chief of Staff at the time),

8 Ibid, 20

obtain and gain information on the Soviet Union's military activities, bases and installations. At the material time, the US President Dwight D. Eisenhower's administration could only gain access to information on Soviet Union through aerial photographs which were obtained during overflight of Soviet Union territory, using high-altitude aircraft and information from defectors.[9] However, with increased Soviet ability and proficiency at interception of fighter jets as well as its development of anti-aircraft missile, such surveillance became very risky and dangerous, the United States started contemplating using satellites for such reconnaissance.[10]

A report submitted by the United States' Technological Capabilities Panel (TCP) in February 1955, titled, "Meeting the Threat of Surprise Attack" emphasized the need for the United States to embark on the development of a reconnaissance satellite.[11] Furthermore, during the International Geophysical Year (IGY), of that same year, United States conveyed its intention to launch a small earth-circling satellites. Shortly afterward, Soviet Union also indicated intention to launch its own scientific satellite. This mark the beginning of an era of arms race between United States and Soviet Union,.[12]

To achieve its space aspiration, the United States National Security Council (NSC) produced NSC 5606 on 5th June, 1956. The policy thrust was to provide a comprehensive defense plan that guarantees United States security and serves as

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9 P. Norris, Logica, The Political Impact of Spy Satellites, ISU 13th Annual Symposium – 'Space for a Safe and Secure World', 1; Johannes M. Wolff 'Peaceful Uses' of Outer Space has Permitted its Militarization—Does it also mean its Weaponization? (Disarmament Forum- Making Space for Security?) One 2003, 5-6

10 Norris, supra 9, 1

11 Pindjak, supra 6, 46 (the US Technological Capabilities Panel (TCP) was headed by James Killian at the time)

12 Ibid, 48

deterrent to its adversaries. This new policy also provides the United States with the ability to meet any present or future threat.[13]

While the United States was vigorously pursuing its national policy agenda, the concerns for world peace, necessitated the United States delegation to United Nations General Assembly (UNGA) in 1957, to propose testing and inspection of outer space vehicles under international auspices and supervision.[14] This proposal was at the time in tandem with United States policy on use of space. Notwithstanding the above position, it has opined by some that within the United States space policy, "peaceful" was not intepreted to have the implication of preventing the United States from having military related applications in its satellite.[15]

This United States position was maintained until the second term of Eisenhower administration, when the United States began to formulate clearly its policy on legitimacy of satellite communication and overflights. During this period United States administration started to take steps to launch satellites into space, with the first one scheduled for October 1957. One of the quick-win options at the time, was for the US Navy to begin work on its satellite proposal - the Vanguard- a small scientific satellite, which weighed only 1.5 kilograms.[16]

While United States leadership was planning and debating best approach to achieve its space aspiration, the Soviet Union was already working on its space program, leading to successful launch of Sputnik1 on 4th October, 1957.[17] Following this,

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13 Ibid, 53

14 Ibid, 62

15 Ibid, 2

16 Ibid, 58

17 Ibid, 59

Soviet Union successfully launched a second satellite, Sputnik 2 (weighing almost 509 kilograms) on 3rd November, 1957 and carried a dog- Laika. The successful launch of Sputnik1 and 2, was an indication to many states that the Soviet Union may have the capability to launch weapons into space in the near future.[18] This concern led the setting up of the National Aeronautics and Space Administration (NASA) by the United States governmnet, to drive and coordinate its space activities.

To show that it was at par in term of capabilities, the United States began to expedited its space programme. After securing approval, United States Navy developed a satellite "Vanguard TV-3" and proceeded with a launch on 6th December, 1957, but after the rocket ignited, the first engine lost thrust and exploded. With the failure of Vanguard TV-3, the United States government finally authorized the US Army Ballistic Missile Agency (ABMA), to commence work on its own satellite proposal. The United States Army commenced work on its version of satellite. The United States Army took successfully launched its satellite "Explorer I" on 31st January, 1958.[19]

On the otherhand, Soviet Union's success in launching the first and second satellite, as well as other missile test, made it to begin a campaign of propaganda against United States governemnt, while praising its own regime.[20] In the circumstance, Soviet Union began to oppose proposal brought to the United Nations Disarmament

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18 McDougall, supra 1, 178

19 Pindjak, supra 6, 62; see also Irmgard Marboe, Militarization of outer space: present and future challenges from the international legal perspective, 1 https://acuns.org/wp-content/uploads/2012/06/Militarization-Outer-Space-Irmgard-Marboe-AM-2010.pdf

20 Pindjak, supra 6, 60

Committee in 1958, by the United States, on arms control and on-site inspection, fearing that it might expose its military vulnerability.[21]

Nothwithstanding Soviet Union consistent opposition to any on-site inspection, United States in December 1958, convinced the General Assembly to establish an Ad Hoc Committee - Peaceful Uses of Outer Space (COPUOS). This action was condemned by Soviet Union, on the ground that state members of the Ad Hoc Committee were mostly United States preferred member. Accordingly, the Soviet Union was not willing to take part in the Committee, without having equal representatives.[22] In view of above, in 1959 the UN through Resolution 1472, established another standing COPUOS, compring of states that were aligned to Soviet Union. The committee then comprised of additional nations considered acceptable to Soviets. Notwithstanding the re-constituted membership, the Committee did not take off immediately, due to issues concerning the designation of officers, voting and other arrangement.[23]

In this period of stalement, a lot was happening in terms of space policy initiatives. By August 1959, the NSC issued a new policy that included its space policy into its national security strategy. The mandate was to "continue actively to pursue programs to develop and exploit outer space as needed to achieve scientific, military, and political purposes." The principal objectives also includes "a military space program designed to extend U.S military capabilities through application of advance space technology".[24]

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21 Ibid 64

22 Ibid 66

23 Ibid 66

24 Ibid 67

Following committed space initiatives, in 1959 the United States commenced launch of its reconnaissance satellites. Expectedly, Soviet Union started using COPUOS platform to accuse the United States of carryout military activities in space. Using campaign of propagadan, the Soviet Union started to portray the United States space's policy as aggressive, and design to seek military superiority. This was the prelude to the era of space militarization, which is characteristic of the Cold War period.[25]

With its achievement in space, the United States's policy started to move from the earlier position which supported peaceful uses of space**.** The United States delegates in the Ad Hoc COPUOS, although still dispose to international scientific cooperation in space, began to insist that additional legal provisions were not needed to regulates States' action in space, since the United Nations Charter contains adequate principles and codes to regulate activities in outer space.[26]

In bid to further enhacnce the United States space program, President Eisenhower in December, 1960 approved another space policy, NSC 6021, which was primarily on missiles and military space programme. The aforementioned policy included a provision on Anti-Satellite (ASAT) weapons programme.[27] It is worthy to note that prior to this new policy, United States's military services came up with different ASAT proposals after the launch of Sputnik. One of such proposal was "BOLD ORION" developed by the Air Force, and using a guided missile it was tested and launched in October 1959, from a B-47 bomber. This guided missile moved so close

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[25] Ibid 67

[26] Ibid 66

[27] Ibid 71

to the Explorer VI satellite, that if activated to strike it would have been able to destroy the satellite.[28]

To further improve its intelligence gathering capabilities, the United States in 1960, started lauching intelligence satellite. The first was a Galactic Radiation and Background (GRAB) satellite which was successfully launched on 22nd June, 1960 at Cape Canaveral, Florida The GRAB's classified sensor was activated on 5th July, 1960, after Presidential approval was granted.[29] This was the first time an intelligence satellite, with dual satellite package was used to produced valuable intelligence on Soviet air defences.[30]

Once it became obvious that United States was having an edge or advantage over Soviet Union with regards to military capability, the Soviets started insisting at the United Nations, on ban on all military use of space. However, with the help of its allies United States once again managed to pass a Resolution in December 1961, that reiterated and re-emphasized the understating of states on use of space. It further confirmed that the United Nations Charter principles, particulary Article 51, applies to the outer space and celestial bodies.[31]

Following United States successful military adventures in space, Soviet Union launched its own military reconnaissance satellite called "Cosmos IV" in 1962, thereby setting the stage for acceptance of use of military related applications in satellites by super powers.[32]

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[28] Ibid

[29] Ibid 73

[30] Ibid 72

[31] Ibid 74

[32] Ibid

1.4 Post 1967 Space Treaty Era and Satellite Systems Development

It is pertinent to state that to allay the concern of States on arm race, there was a consensus amongst States early on use space for the benefit of all nations. This general understanding culminated in the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty). Article 1 of the above mentioned Treaty provides that

> that 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." The Treaty further provides that "States shall not place nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies or station them in outer space in anyway.

It is geneally agreed by many writers that the above provisions imposes ban on weapons of mass destruction, the setting up any form of military bases on the Moon and other planets. Conversely, it is argued that there is no ban against conventional weapons.[33]

The 1967 Space Treaty is the main or principal space legislation, but there are additional support treaties that compliment this treaty, namely (1.) the Astronaut Rescue Agreement 1968; (2.) Convention on Registration of Objects Launched into Outer Space 1976; (3.) Convention on International Liability for Damage Caused by Space Objects 1972; (4) and Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1979.

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[33] Outer Space Treaty, Articles I, II and III

Whilst there is no evidence at the moment from avaliable information that any State has so far deployed any form of weapon in Space or attacked the assets of any other states, the outer space has become a very contested sphere. It is worthy to note that, since launch of Sputnik 1, a number of other satellites have been launched into space and their importance in terms of civilian and military use has grown significantly. For example, the reliance on space assets by United States in the first Iraqi War (1991 Gulf War) shows the importance of these satellites for military use. Furthermore, the Iraq War in 2003 involving a coalition of nations was prosecuted heavily through reliance on space assets. That war tagged "Operation Desert Storm" heralded the beginning of military satellite use and shows the importance of space asset to modern day battle.[34] The satellite in operations are now over 1,300 active and over 2,500 inactive satellites. Of this total number, United States owns over half, while Russia and China accounts for about 130 each.[35]

As pointed out above, these satellites have continued to be useful for civilian purposes ranging from Scientific and Research, Earth Observation, Communication, Navigation, Weather etc. However, the fact that they could also be used militarily, has led to the debate over the possible militarization of outer space. These satellites now provides different services in areas such as Global Communication Services, Global Positioning Systems (GPS) Services, media and communication services, amongst others.[36]

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[34] John Pike, quoted in Vincent Kieman, 'War Tests Satellites' Prowess: Military Space Systems Put to Work during Desert Storm Conflict', Space News (New York), 21 January 1991, 1. Everrett C. Dolman, U.S. "Military Transformation and Weapons in Space," *SAIS Rev.* 26 (1) (2006); 163, 165

[35] Emily Taft, "Outer Space: The Final Frontier or the Final Battlefield?," *Duke Law & Technology Review,* No 1, Vol. 15, 363

[36] Alvin M. Saperstein, Weaponization" vs. "Militarization" of Space, Wayne State University

Present reality suggests that various States are developing space capabilities and other defensive capabilities.[37] United States being being very reliant on these satellite more than any other nation, is worried about the vulnerabilitiy of these assets and is considering the establishment of a space military force to protect and maintenace dominance in space, to counter the perceived threat from Russian, China and others to its space assets, due to their assets current state of vulnerability.[38] Others are also taking steps to safegaurd their space assets. French government is presently poised to establish a space high command to forestall potential threats to its infrastructure in space from states like China, Russia and India.[39] Some other States also plans to deploy weapons in the near future to protect their space assets.[40]

Advancement in technologies available today makes it possible to use launching vehicles guidance and operations system for dual puposes, i.e. civil as well as military uses, which can be in positive or negative ways. Radar System also can be used for dual purpose. GNSS/GPS system may also be used for civilian as well as military purposes.[41] Again, some satellites that are used to monitor and intercept telecommunications traffic can be used for military coordinated attack. The above highlights the fact that space has been militarized and the era of potential confrontation in space between the great powers may not be too far in the future. Accordingly, space may in the future not remain as it were the common heritage of

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37 Robert L. Pfaltzgraff, Jr., Presentation to the Boston Council on Foreign Relations 18th June, 2007, 2

38 ibid, 2

39 Michael Peck, "Lasers and Machine Guns: Why Russia Should Fear France's Killer Satellites" (The National Interest Newsletter) 18th August 2019

40 Abbas Sheer, supra 4, 100

41 Ibid, 103

mankind, where there is international cooperation amongst states for the common benefit of mankind.[42]

In the light of the above, there is a strong presumption that warfare may one day extend to outer space, since it is now possible to use ASAT system based on Earth (missiles or high energy laser weapons) or carried by a satellite (weapons on board satellites) to attack satellites in space.[43] Therefore the concept of warfare waged in outer space and on earth has become an issue, which demands serious attention to stem further escalation of military activites in outer space.[44] Against this background, doomsday proponent see the United States's withdrawal in 2002from its commitment under the Anti Ballistic Missile Treaty, as an indication that United States intents to remove existing obstacles and limitations to its space programme, therefore warfare in this realm is not far-fetched.[45]

All these and the increase in space exploration, technological advancement as well as commercialization of outer space has created new challenges, which are in conflict with existing treaties. It is estimated that by 2012, more than 85 percent of satellite communications and almost 25 percent distant sensors satellites that would be in operation would be owned by private companies.[46]

Another concern is the development of Non expensive ASAT-like options that are easily more affordable and ease to develop. These ASAT-like options includes-

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42 Ibid 101

43 Rebecca Johnson, 2003, Missile Defence and the Weaponization of Space, ISIS Policy Paper on Ballistic Missile Defence, No. 11, 3.

44 Rick Rozoff, Militarization of Space: Threat of Nuclear War on Earth (Media Monitors Network) 20th June, 2019

45 Emily Taft, supra 35, 365

46 Abbas. supra 40, 106

kinetic laser warfare, cyber warfare e.t.c, which can that cause temporary, as well as permanent damage to space assets. Again, the space environment has become more and more congested, which means there is an increased risk of collisions resulting from space debris in the outer space.[47] This situation is occasioned by the more than fifty (50) years of space activity, resulting in the number of space objects and space debris created which have now reached an alarmingly point. If there was a space war today and a great proportion of the current satellites destroyed, the space debris that would be created might make it impossible to operate or launch new satellites into space, without hindrance.

Yet in all this, the existing treatise seems inadequate to prevent the threat to space systems posed by ASAT weapons, electronic and cyber capabilities, as well as other negative activities now being developed by States, individuals or groups. The aforementioned situation therefore requires that a new measures that can deal with the current situation is necessary.[48]

This paper is to interrogate the identified deficiencies in existing treaties and attempt providing solutions with respect to the issue of ongoing militarization of space This paper will further seek to highlight the consequences inherent in the inaction of the international community, as a situation that allows several states to take unilateral actions to protect percieved threat to their national assets in space would lead to serious world crisis. Based on the aforesaid, the following questions would be posed and disccused in this work:

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47 Rajeswari Pillai Rajagopalan, Electronic and Cyber Warfare in Outer Space, (May 2019-Space Dossier 3), 1: www.unidir.org

48 Michael Sirak, Air force Leadership: Chinese ASAT marked turning point: Space No Longer Sanctuary, Defense Daily. (February 12, 2007)

1. Is there a sufficient existing legal framework for outer space?
2. Is the existing space law capable of preventing military activities in space?
3. Is there potential threat to space assets?
4. Should States be allowed to develop and deploy both offensive and defensive weapons in space to counter these threats?
5. What is the future for satellites and other space assets?
6. What should be the response or approach of States and United Nations to threat in outer space?
7. Is there need for different legal regime for space to deal with these threats?
8. Should space continue to be viewed as a common heritage for all mankind or a new international principle required?

1.5 Conclusion

In this chapter, several issues were raised for discussion. Firstly, the state of affairs of space law, it appears is ineffective to deal with the many issues created by technological advancement in space. Secondly, many States have undertaken actions which seek to undermine the existing space laws through activities like setting up space commands, taking unilateral actions, the development of Anti-Satellite weapons and other capabilities to compromise space based assets of other nations in the event of a war. These actions which are unilateral and outside the coordination of the United Nations has further created more challenges. Thirdly, the United States which has more space assets and advance space capabilities than any other state has been unwillingness to join in the creation of new legal framework, because of the fear that it could limit its present exploration activities in space.

This thesis therefore will examine the existing space law, militarization of space and threat to space assets/systems, and whether existing space law can adequately deal with issues created after the first satellite was launched. Furthermore, the following posers will be discussed - Is the perceived threat to space based assets real? What should be the response of the international community in order to avoid a space war and finally, what is the best course of action for the international community.

CHAPTER TWO

REVIEW OF THE INTERNATIONAL SPACE LAW

2.1 Chapter Overview

From the inception, space is generally accepted as common heritage of all nations, to be used for peaceful purposes. This understanding was adopted by generally over the years without any reservation. However, in recent years some States seems to be positioning themselves in a manner that suggest that they intend to dominant space, to the detriment of others. This chapter aims to provide insights into the existing treaties, and primarily on Outer Space Treaty 1967, in terms of its effectiveness and guarantee for this settled principle of peaceful use. The chapter will further attempt to assess the shortcommings of the current laws and the preceived gaps.

2.2 Review of Interntaional Space Law

As stated in the introduction, with increase in exploration activities in outer space, notable challenges started emerging, which were in conflict with international law and treaties as these challenges were not envisaged at inception of space law. In the circumstance, it became imperative to develop rules or code(s) for the regulation of the activities of states in Space. Based on urgency of the situation, recourse was made to existing sources of international law, such as: International Treaties, International Customary Law and Declarations of the UN General Assembly amongst other sources. The scope has since increased with some other UN entities now contributing to broadening understanding of the outer space law.[1]

As pointed out earlier, one of the major challenges was the issue of engaging in military related activities in space. To address the issue, the Outer Space Treaty, which is

[1] Abbas, supra 40, at 103

considered the major foundation or regulation for space activities was formulated and codified.

2.3 1967 Space Treaty

Article IV of the Outer Space Treaty provides as follows:

> the Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes.

In addition to reference to peaceful purposes, Article I provides "exploration and use of outer space shall be the province of all mankind." The term "peaceful" is not defined anywhere in the Outer Space Treaty.

As stated earlier, although the Outer Space Treaty imposes ban on nuclear weapons, weapons of mass destruction and the stationing of such weapons in outer space in anyway, the treaty the not make reference to ban on any other weapon. Thus, the provisions have been generally accepted as imposing a ban on weapons of mass destruction, nuclear weapons, as well as prohibiting any form of military bases on the Moon and other planets. However, it is also accepted that there is no ban against conventional weapons in space.[2] This proposition it is argued, supports Article IX which requires "State party to undertake appropriate international consultations before proceeding with any such activity, when it has reason to believe that carrying out this activity in outer space would cause potentially harmful interference with activities of other States parties".

Article IV, paragraph 1, specifically provides that:

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[2] Rajeswari, supra 47, 12 see also B.S. Kuplic, "The Weaponization of Outer Space: Preventing an Extraterrestrial Arms Race", *North Carolina Journal of International Law and Commercial Regulation,* Vol. 39, No. 4, (2014), https://scholarship.law.unc.edu/cgi/viewcontent.cgi

> States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

Although above provision prohibits the use of weapons of mass destruction, it did not expressly or impliedly contain any ban on placement of any other weapon in outer space. The prohibition clearly is on establishment of military bases, installations, testing of any type of weapons and the conduct of military manoeuvres on celestial bodies.

In view of aforementioned, it seems that the delpoyment of any proscribed weapon or engagement or setting up military facilities or stations in space, is inconsistent with the generally accepted understanding of outer space legal regime, since such activity are deemed as non-peaceful.[3] However, it has been argued that a review of Article IV undermines such a conclusion or position. It is submitted Article IV anticipates military activity and only proscribed specific military activity, and therefore regarded as inadequate to prevent the militarization.[4]

It has been submitted that, from inception of the Outer Space Treaty, United States and Soviet Union have been involved in military activities in space, by the use of military surveillance satellites and actual test of ASAT weapon. Jinyuan Su, in his article is of the opinion that "military use of space was permitted, or at least tolerated for the conduct of peacetime military activities that did not offend understandings of the operative provisions of the Outer Space Treaty". From State practices, it has come to be understood that "peaceful" means "non-aggressive," and consistent with the United

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[3] Dale Stephens, "The International Legal Implications of Military Space Operations: Examining the Interplay between International Humanitarian Law and the Outer Space Legal Regime," *International Law Studies*, Vol 94, (2018);80

[4] ibid

Nations Charter as required by Article III of the Outer Space Treaty,[5] as well as prevailing regime of peaceful, cooperative activity in outer space".[6]

Outside this peacetime application, there is the question of which rules applies with regards to Outer Space Treaty, during time of armed conflict.[7] In view of the fact that there is no precendent, and it is difficult to categorically predict States reaction to application of the Outer Space Treaty during a period of armed conflict. In its report on impact of armed conflict on the application of treaties, the International Law Commission (ILC), states that traditional rules relating to treaty interpretation as contained within the 1969 Vienna Convention of the Law of Treaties would apply. Thus, the ILC fully acknowledged in the aforementioned report that states can exercise their inherent right of individual or collective self-defense during a time of conflict, as provided under the Charter of the United Nations by suspending the a treaty either in part or in whole, as long as that operation of the treaty is incompatible with exercise of its right.[8]

To this end, it has be argued that "in a time of either international or non-international armed conflict,[9] reference first needed to be made to the relevant treaty itself to ascertain whether provision had been made, for its continued application in armed conflict. In the

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5 Jinyuan Su, "Use of Outer Space for Peaceful Purposes: Non-Militarization, Non-Aggression and Prevention of Weaponization," *Journal of Space Law,* Vol 36, No. 1(2010), 253, Report of the Commission to Assess United States National Security Space Management and Organization, January 11, 2001, Executive Summary, p.17

6 Ibid, 253

7 Michael, supra note 2, 100

8 Ibid, 81; see Int'l Law Comm'n, Draft Articles on the Effects of Armed Conflicts on Treaties, with Com-mentaries, Rep. on the Work of Its Sixty-Third Session, U.N. Doc. A/66/10, at 175–211 (2011) (noting that the Draft Articles and Commentaries were also published in volume 2 of the 2011 Yearbook of the International Law Commission)

9 Ibid, 81

absence of such a reference, there is still a presumption that the treaty would continue to apply unless there was a reason for non-application."[10]

It is been stated however that some treaties create a presumption that they would survive, notwithstanding whether it is a time of armed conflict or peace.[11] These are treaties that relates to private rights; human rights; environmental protection; watercourses and aquifers e.t.c.[12] It has been further submitted by legal scholars that of all the different categories of treaties, lawmaking treaties survive the outbreak of war,[13] being a law-making treaty he Outer Space Treaty is considered as falling under this category. Consequently, the Outer Space Treaty it is submitted terminates by the outbreak of war or during time of armed conflict.[14] Accordingly, any provision of the Outer Space Treaty which tends to interfere with rights of self-defense guaranteed under the United Nations Charter is inapplicable to the extent of its inconsistency.[15]

2.4 1975 Convention on Registration of Objects Launched into Outer Space

The Convention on the Registration of the Objects Launched into the Outer Space, came into effect on September 15, 1976 and creates obligations for registration of space objects launched into space. The launch of the space weapon in earth's orbit or outside of it triggers the obligations.[16]

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[10] Ibid, 83

[11] Ibid, 82

[12] Ibid, 82

[13] L. Oppenheim, International Law: A Treatise, Volume II Disputes, War and Neutrality 303-04 (H. Lauterpacht ed. 303-04) (1952). 304

[14] Sergio Marchisio, "The Evolutionary Stages of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)," 31 *J. Space L.* 219, 226 (2005)

[15] Ibid, 83

[16] Article VII

2.5 Anti-Ballistic-Missile (ABM) Treaty

The Anti-Ballistic-Missile (ABM) Treaty between the United States and the Soviet Union places a limitation on United States and Soviet Union's ABM systems and further prohibits the deployment of such systems by both states. It is worthy to note that United States in December 2001, pulled out of this treaty, during the administartion of President George W. Bush.[17]

2.6 United Nations General Assembly

One body that assist in the development of codes for space operations is the United Nations General Assembly (UNGA) sometimes through its Organs and Committees. The UNGA and its Committees level, have made several efforts to address perceived gaps in the 1967 Outer Space Treaty. In particular, UN Committee on the Peaceful Uses of Outer Space (COPUOS), has consistently submitted proposals to the UN General Assembly to address soe of the issues. To capture the perspection of some member state of the committee, the Indian Delegates to the United Nations Conmmittee on the Peaceful Use of Outer Space in 1962, stated the following during one of the its session, "my delegation cannot contemplate any prospect other than that outer space should be a kind of warless world, where all military concepts of this earth should be totally inapllicable". This Indian position was however rejected by both United States and USSR. These Committees has drafted a lot of legal documents later passed by the UN General Assembly and ratified by some States. Notwithstanding, efforts of COPUOS has been fruitless, due to the requirement of unanimous decisions. Over time, member of the Committee has increased with Bolivia and Switzerland becoming latest members.[18] The

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17 Rick Rozoff, supra 44

18 Ibid, 3

COPUOS has been very useful in providing primary legal documents, UN treaties, resolutions that govern conduct in outer space.[19]

2.7 Conclusion

From the exposition above, the problem with the current space law relates mainly to two factors. Firstly, the issue of lack of definition of key words in the 1967 Outer Space Treaty. This gave rise to the many interpretions adopted by different States to suit their national policy. For example, “peaceful”, has been interpreted to mean non-aggressive.

Secondly, the rapid progress of space technologies, has made it difficult for the law to catch up with current trend in space activities. This slow mechanism of creating new rules has resulted in a situation whereby the law has lagged behind technological advancement. For example, the main space treaties were formed in the 1950s and 60s, when people thought the prohibition of weapons of mass destruction would be good enough to make space a safe place. However, the reality today has proven that assumption wrong. Technological tools hitherto unknown, such as -jamming, hacking spoofing, kinetic laser amongst other things, which can interfere with or even disable a rival’s satellites has exposed the lacuna in current space law. Unsurprisingly, existing space law, especially the Outer Space Treaty did not envisage any of this possibilities.

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[19] UN Doc. A/AC 105/PV.3 (March 20 1962), 63 see also The militarization of Outer Space, International Relations and Security Network, ISN Special Issue August 2008, 2

CHAPTER THREE

MILITARIZATION AND WEAPONIZATION OF SPACE

3.1 Chapter Overview

This chapter looks at the issue of militarization in the light of highly advanced technologies available today, and how assets in space have made substantial contribution to modern day civil operations and warfare (civilian services, military operations and making crucial decisions).

As has been highlighted in Chapter 1 and 2, militarization of space started in the late 1950s through actions of United States and USSR. Today other States have followed in this stead, thereby jeopardizing any future attempt to have a non-militarized space. These actions which are threatening global security, could well lead to further escalation of militarization and weaponization. As some States like the United Staes assumes a dominant position, other states are attempting to develop the capability to undermine the advantages of the super powers, to guarantee the security of their national assetss. These actions has pushed the United Nations to raise fears about militarization in space. UNGA is mow frustrated by the lack of progress by its Committee on the Peaceful Uses of Outer Space in making acceptable recommendations, which is now undermining international cooperation in the exploration and peaceful uses of outer space.

This chapter concludes by examining risks inherent in introducing weapons into outer space and the legal implications of militarization of space on safety of space assets.

3.2 What is Militarization of Space

The concept of militarization of space has a deep root and has become a concern for the global community since 1957, when Sputnik 1 was launched, leading to serious discussion on the issue over the years. In the same breath, weaponization of Outer Space has also become an equally a serious concern.[1] As discussed earlier, the word "peaceful purposes" generated different interpretations. Some writer have suggested that it should be intepreted "non-military", or "non-aggressive". However, most States now assume "peaceful purposes" to mean "non aggressive"or non-hostile.[2] Proponenent of this view have argued that Article IV prohibits only military entities, weapons testing and other related activities, but does not contemplate prohibition of other weapon which are not nuclear or weapons of mass destruction or military space stations or weapons testing in orbit.[3]

3.2.1 Definition of Militarization

As pointed out, one of the problem with the various space treaties is that none defined "peaceful use of outer space."[4] Some commentators involved in space law debates used the term "peaceful purposes" interchangeably with "non-militarized." The United States and Soviet Union has come to realize that such interpretation could limit their space operations and deny them immense potential offered by space. Hence the need to adopt a

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1 Outer space: Militarization, weaponization, and the prevention of an arms race, http:www. reachingcriticalwill.org

2 Supra note 3, 101

3 Ibid, 104

4 Supra note 80, 1

more liberal interpretation "non-aggressive."[5] It is argued that it is difficult to distinguish between actions termed military andthose that are peaceful use.[6]

Militarization of outer space is defined as use of space assets to enhance the military effectiveness of military activities. Consequently, systems in space which aids, support or enhance military activities have been term militarization.[7]

The problem of adopting the above definition stricto sensu is that, there are space based assets that have dual purpose. In this category is Global Positioning Systems, which can deployed for both civil and military activities. As has been stated before to draw a demarcation line. Similary, there are satellites that services useful civilian puposes that can also be used to coordinate bombing raids and other military activities.[8]

Article III, Outer Space Treaty states as follows:

> States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestail bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

It has been argued that the above applies only to activities that are in violation of space law, but does not prohibit weapons launched from earth against space based assets or any

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5 Blair Stephenson Kuplic, "The Weaponization of Outer Space: Preventing an Extraterrestial Arms Race," *N.C. J. Int'l L. & Com. Reg*. vol. 39, 1123 (2014), 1144

6 The militarization of outer spaceInternational Relations and Security Network ISN Special Issue August 2008, 1

7 Jinyuan Su, supra 66 at 255, Matthew Mowthorpe, The Militarization and Weaponization of Space 3 (Lexington Books) 2004

8 Emily Taft, supra 35, 363

other form of attack on space asset, provided it falls within the exceptions authorized United Nations Charter on self-defense.[9]

In view of above, and in order to forestall arm conflict, the United Nations General Assembly (UNGA) is making efforts to prevent the militarization of space. In 2004, the UNGA expressed concern that there had been insufficient progress in recommending ways to prevent military activities in outer space.[10] The need for such effort has become even more imperative due to the importance of space, as well as services and information now provided using space assets for national and economic reasons. The continued use of these assets has however under increased risk, due to the development of Anti-Satellites Missiles (ASAT), which could now be used to destroy space assets of other nations and as a result of increase of orbital debris from different activites.[11]

It is in the light of the above, that some writers are questioning the effectiveness of existing international treaties regarding outer space, wondering whether the existing treaties are adequate to handle many of the challenges occasioned by current technological breakthrough. It has been opined that the militarization or weaponization of space may undermine international peace, and would have grave implications for existing arms control measures.[12]

These actions points to the fact that space has been militarized and warfare may soon extend into space. That threat has been rapidly growing and has reached a point that the

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9 Michael, supra note 2, 102

10 Essays, UK. (November 2018). Militarization And Weaponization Of Outer Space Politics Essay. Retrieved from https://www.ukessays.com/essays/politics/militarization-and-weaponization-of-outer-space-politics-essay.php?vref=1

11 Frank A. Rose, "Safeguarding The Heavens: The United States and the Future of Norms of Behavior in Outer Space" (June2018), 1. https://www.brookings.edu/wpcontent/uploads/2018/06/FP_20180614_safeguarding_the_heavens.pdf

12 LaToya Tate, The Status of the Outer Space Treaty at International Law during War and Those Measures Short of War, 32 J. Space L. 177 (2006), 178 https://www.law.upenn.edu/live/files/7852-tatestatusotrspcjrnlspclawpdf.

safety of space-based assets like satellite, which are critical for providing valuable information, data and services.

3.3 Threat of debris to Safety of Assets in Outer Space

Decades of space activity have created a situation were the space is now littered with pieces of debris and inactive satellites. Various states have continued to undertake inimical activities that are counter productive for peaceful use of space, thereby complicating the situation and creating the chances in the near future of collision with existing satellites or other space assets.[13] This problem of debris has continue to grow as a result of more activities in space, as well as unintended accidents[14] The test conducted by China in 2007 generated a lot of debris. That single test was reported to have created over 2,300 debris which may in future present serious threat to space systems. Similarly, India's successful test of a weapon designed to destroy satellites has also raised the fear that resulting debris field may threaten orbiting space objects, the list of States developing similar weapons is increasing.[15] It is reported that the United States has been tracking some of these space debris.[16]

To curtail the menace, and make earth orbit safe, several multilateral efforts have been adopted to develop norms of behavior, one of such efforts finally resulted in the Debris Mitigation Guidelines in 2007.[17] These guidelines were to serve to help with reduction debris in space and also assist to reduce the threat to activities and operations in space.

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13 Emily Taft, supra 35, 375

14 Rose, supra 78, 2

15 Kelsey Davenport, Indian ASAT Test Raises Space Risks (May 2019) Arms Control Association, www.armscontrol.org

16 Rose, supra note 78, 2

17 Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space," (Vienna: U.N. Office for Outer Space Relations, 2010), http://www.unoosa.org/pdf/ publications/ st_ space_49E.pdf.

There was further effort in 2010, to develop more practice guidelines for space environment, but was unsuccessful.[18]

3.4 Anti-Satellite (ASAT) Weapons and Micro-satellite

Whilst United Nations strives to develop codes to regulates activities in space, the actions of some states have not been much helpful. As noted above, the test conducted by China tested attracted global condemnation. Notwithstanding, Chinese and Russian have carried out further ASAT tests after the 2007 test within the proximity of United States intelligence satellites. Both countries are also alleged to be developing weapons that can disrupt or destroy satellites. David A. Deptula,in his article has this to say:

> Threats are rapidly growing to U.S. space-based capabilities that are critical for intelligence, banking, communications, transportation, accurate weapons employment, and a host of other areas to name but a few. In 2007, a Chinese anti-satellite (ASAT) test destroyed its target orbiting the earth. Additional Chinese and Russian ASAT tests since then suggest an ability to reach geosynchronous orbit, where most of the U.S. intelligence satellites are located. Russia and China are also developing co-orbital systems that can disrupt or destroy our satellites. Because these systems are "dual-use," meaning that they may be used either for peaceful purposes or for counterspace operations, hostile intentions are difficult to detect.
>
> The U.S. must respond quickly and strategically to this new reality. Space-based systems are now fundamental to the conduct of war, and the U.S. military cannot fight effectively without them.[19]

The aforementioned Chinese's test has added a new twist to the issue of a possible conflict in space. In fact, the United States while condemning the aforementioned test,

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[18] Rose, supra note 78, 3

[19] David A. Deptula, The Militarization of Space & the Path Way Forward for the US, The Ripon Forum, Volume 53, No. 3, June 2019 (*General Dave Deptula is the Dean of the Mitchell Institute for Aerospace Studies in Arlington, Virginia), https://www.riponsociety.org/article/the-militarization-of-space-the-path-forward-for-the-u-s/*

has categorically made it clear that it will continue development of its space and missile defence projects to safeguard its assets. Gen. Mark Welsh, was quoted as saying that "the U.S. Air Force needs to be ready to engage in space combat. Other nations are also preparing to use space as a battlefield, a big battlefield, and we'd better be ready to fight there."[20]

Similarly, the French government which also condemned the China's action, has also indicated its intention to have a space high command to prevent potential threats to its space assets.[21] The United Kingdom and some other states also condemned the action and fears that China is gradually developing better weapons that it can use to compromise their national interest in space.

The aforementioned test being the first test, since the cold war era, when Soviet Union and United Sstaes conduct such test, shows that several states are secretly developing weapons capable of undermining other states' assets in space.[22] In 2019, India which considers China as a threat, undertook similar missile test action and is poised to be active in space activities.[23]

These dangerous escalation and the development of nonnuclear ASAT micro-satellites, for performing a number operation both civilian and military, has made the possibility of

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20 Bryant Jordan, "Air Force Chief: US Must be Ready to Fight in Space", Defense Tech, June 1, 2016, http://www.defensetech.org/2016/06/01/air-force-chief-us-must-be-ready-to-fight-in-space/ (Gen. Mark Welsh was the US Air Force Chief of Staff,)

21 Michael Peck, Lasers and Machine Guns: Why Russia Should Fear France's Killer Satellites (The National Interest Newsletter) 18th August 2019

22 Todd Harrison, Kaitlyn Johson & Thomas G. Roberts, Space Threat Assessment 2019 (Center for Strategic & International Studies 9), 14

23 Kelsey Davenport, supra 83

imminent threat to space assets more dire.[24] It has been stated that, "microsatellites could be used for counterspace operations by being flown alongside a target until commanded to disrupt, and then disable or destroy the target".[25] A former special assistant to Secretary of Defense Rumsfeld, Stephen Cambone, has been quoted as saying that, "There are many number of companies, both in the United States and abroad, that are preparing to deploy micro-satellites."[26]

In a newspaper reported published by "The Sing Tao*"* Chinese sources indicated that China may be developing a new ASAT weapon "parasitic satellite." These new Chinese ASAT weapon could be attached to an enemy satellite and activated to destroy the satellite during conflict within a moment.[27]

3.5 Other Potential ASAT Threats

There are also other kinds of weapon like Laser that are being developed that can disable, damage or destroy a satellite.[28]

3.6 Electronic Warfare

Another potential weapon to compromise Satellites in space is electronic warfare. Evidences abound today of States embracing electronic warfare as an essential front in warfare and future combat. It has been reported that China "dazzled" a United States satellite using a ground based laser, leading to temporary disruption of some of its military operations. In response, the United States Air Force says it wants to identify

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[24] Charles V. Peña and Edward L. Hudgins, Should the United States"Weaponize" Space? Military and Commercial Implications; Policy Analysis (March 18, 2002) , 8 https://www.cato.org/sites/ cato.org/files/pubs/pdf/pa427.pdf

[25] Ibid, 15

[26] Ibid, 8 (Stephen Cambone is former special assistant to Secretary of Defense Rumsfeld)

[27] Ibid, 8

[28] 1bid, 9

electronic warfare capabilities which "could be applied to counter-space missions, or space based electronic warfare.[29] Heather Wilson was quoted as saying "The United States is dependent upon space and our adversaries know it. We must organize and train forces to prevail in any future conflict which could extend into space."[30]

More recently, Russia was alleged to have use electronic weapon to disrupt communications of Chechen rebels. Iran has also been acuused of using electronic jamming against Western satellite broadcasts.[31]

The problem is that most commercial and civilian satellites can be attack with jamming tools easily since thay are currently not equipped with anti-jamming capability. As highlighted above, electronic jamming has become a a big problem, in view of the fact that it can be done with relative ease and without huge cost.[32] Prof. William C. Martel, was quoted as saying, "A nation with the capability to destroy satellites can also threaten to severely disturb essential daily functions—from financial transactions to telephone communication to power grids—controlled by timing signals sent by Global Positioning Satellites (GPS). We could be propelled back into the nineteenth century by such a disruption."[33]

3.7 United Nations efforts at Prevention of an Arms Race in Space

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29 Carin Zissis, China's Anti-Satellite Test, Council Foreign Relatins.- org/backgrounder/ China's-Anti-Satellite-Test (27th February, 2007)

30 Brett Tingley, The US Air Force is Preparing for War in Space, 20th June 2017. http:www.mysteriousuniverse.org

31 Barry D. Watts, The Military Use of Space- A Diagnostic Assessment, Center for Strategic and Budgetary Assessments (February 2001), 11

32 Charles V. Peña and Edward L. Hudgins, Should the United States"Weaponize" Space?Military and Commercial Implications; Plocy Analysis (March 18, 2002) , 5

33 Carin, supra note 13 (William C. Martel is a Professor of International Security Studies at the Fletcher School of Law and Diplomacy)

In early 1980s, after Reagan administration escalated its space ambition, the UN started to intensify actions to tackle the issue of militarization between the two superpowers, in order to forestall an arms race. This led to adoption of the Prevention of an Arms Race in Outer Space (PAROS), which recommended ban on deployment of weapons to space, although the United States oppose the resolution. The proposal has been re-introduced annually and adopted by majority of member States, with the United States either opposing it or abstaining whenever the proposal is presented.[34]

Due to deadlock resulting from United States' opposition, the Soviet Union introduced a proposal *"Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space, UN GAOR, 36th Sess, UN Doc A/36/192, Annex (1981)",* which was adopted by the General Assembly with 154 voting in support while the United States voted against.[35]

In 1990, the UN General Assembly constrained by the lack of success in providing any meaningful solution to gaps identified in existing Space Law on the issue of militarization and weaponization called for a renew approach to enhance the effectiveness of existing agreement:

> The legal regime applicable to outer space by itself does not guarantee the prevention of an arms race in outer space, that this legal regime plays a significant role in the prevention of an arms race in that environment, [expressed] the need to consolidate and reinforce that regime,.. enhance its effectiveness, and [emphasised] the importance of strict compliance with existing agreements, both bilateral and multilateral. The resolution called upon the major space faring States to 'contribute actively to the objective of the

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[34] Ray Acheson & Beatrice Fihn Outer space: Militarization, weaponization, and the prevention of an arms race Reaching Critical Will: www.reachingcriticalwill.org

[35] Colleen Sullivan, 'The Prevention of an Arms Race in Outer Space: An Emerging Principle of International Law' *Temple International and Comparative Law Journal* 211, 234 (1990);4.

> peaceful use of outer space' and to 'take immediate measures to prevent an arms race in outer space.[36]

On the United States's side, the importance of space for its military operations as well as vulnerabilities of space assets began to create concern in the mind of military analyst state. This concern was expressed in the report to Congress in 2001, by Donald Rumsfeld, who stated that "the 600 satellites the US military depended upon for photo reconnaissance, targeting, communications, weather forecasting, early warning and intelligence gathering were highly vulnerable to attack from adversaries"[37]

At present the United States is becoming increasing concerned for the security of its space assets. This fear is captured in the United States' national space policy, to the effect that it is now developing capabilities to protect its space asset and where necessary deny any potential adversaries access to space.[38] It was also recommended that the US should be a step ahead of others in terms of space capabilities through continuously development so that no other state actors would be able to rival the United States[39]

It must be stated that in recent years, some states including China and Russia, have tried initiating new proposals that would if adopted prevent weaponisation in outer space. One such proposal was submitted in 2002, and another in February 2008 titled "Draft Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects".[40] Objectives of these proposals were to create a

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36 Prevention of an Arms Race in Outer Space, GA Res 45/55, UN GAOR, 45 th sess, 54th plen mtg, UN Doc A/RES/45/55 (1990)

37 Report of the Commission to Assess United States National Security Space Management and Organization (2001) US Department of Defense<http://www.defenselink.mil/pubs/space2001011 l.html> at 28 March 2006

38 Report of the Commission to Assess US National Security Space Management and Organisation, 2001; The Parliamentary Office of Science and Technology, Postnote December 2006 Number 273, Military uses of space, 4

39 Supra 104

40 David C. DeFrieze , Defining and Regulating the Weaponization of Space, JFQ 74, 3rd Quarter 2014, 111, https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-74/jfq-74_110-115_DeFrieze.pdf

treaty that places a ban on deployment of any form of weapons in space, as well as prohibition of the use of force against space assets in any form whatsoever. If this proposal had been accepted, it would have impose a ban on ASAT and other weapons, whether deployed from ground bases or otherwise.[41] Although past attempt has been unsuccessful, Russia has continued to push for a multilateral treaty in this regard, notwithstanding United States opposition.[42]

Conversely, during this period, the United States Administrations has maintained contrary views on the subject. The following Policy release, captures the mind of successive the United States governments:

> The United States will oppose the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space. Proposed arms control agreements or restrictions must not impair the rights of the United States to conduct research, development, testing, and operations or other activities in space for U.S. national interests[43].

Another international effort to address the issue of militarization was the 2008 European Union proposal, titled "Space Code of Conduct,". This proposal was intended to create rules of conduct for operations in space. It was however rejected by some of the key and notable players on the ground that it could unduly limit their future activities in space.[44]

Again, the United States reportedly rejected all four resolutions passed by the United Nations General Assembly's First Committee during its meeting in 2018, regarding

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41 Ibid

42 **Militarization, Weaponization, and the Prevention of an Arms Race**, Reaching Critical Will (a project of the Women's International League for peace and freedom) www.reachingcriticalwill.org

43 Office of Science & Technology Policy, Executive Office of the President, National Space Policy of the United States of America 2 (Aug. 31, 2006)

44 Michael Listner, "U.S. Rebuffs Current Draft of EU Code of Conduct: Is There Something Waiting in the Wings?" The Space Review, January 16, 2012, available at <http:// thespacereview.com/article/2006/1

disarmament and prevention of weapons in space.[45] However, there has been a renewed interest by some scholars in United States in highlighting benefits that a prohibition or ban on weapons in space may have for United States' national security.[46]

Nonetheless, the Trump's administration is determined to follow the path of previous administrations on the issue. The administration is insisting that it will not take lightly any interference with United States rights in space, even during peacetime. This overtly aggressive position was maintained by the US Vice President, in a recent address:

> The space environment has fundamentally changed in the last generation. What was once peaceful and uncontested is now crowded and adversarial. Today, other nations are seeking to disrupt our space-based systems and challenge American supremacy in space as never before. For many years, nations from Russia and China to North Korea and Iran have pursued weapons to jam, blind, and disable our navigation and communications satellites via electronic attacks from the ground. But recently, our adversaries have been working to bring new weapons of war into space itself.
>
> As noted above, in 2007, China launched a missile that tracked and destroyed one of its own satellites - a highly provocative demonstration of China's growing capability to militarize space. Russia has been designing an airborne laser to disrupt our space-based system. And it claims to be developing missiles that can be launched from an aircraft mid-flight to destroy American satellites. Both China and Russia have been conducting highly sophisticated on-orbit activities that could enable them to maneuver their satellites into close proximity of ours, posing unprecedented new dangers to our space systems…China and Russia are also aggressively working to incorporate anti-satellite attacks into their warfighting doctrines. In 2015, China created a separate military enterprise to oversee and prioritize its warfighting capabilities in space. As their actions make clear, our adversaries have transformed space into a warfighting

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45 Bill Gertz, US Opposes New Draft Treaty from China and Russian Banning Space Weapons, The Washington Free Beacon (2014), https://freebeacon.com/national-security/u-s-opposes-new-draft-treaty-from-china-and-russia-banning-space-weapons/

46 Ibid

> domain already. And the United States will not shrink from this challenge. Under President Trump's leadership, we will meet it head on to defend our nation and build a peaceful future here on Earth and in space.[47]

3.8 Current State of Affairs

3.8.1 United States

Present state of affairs suggest a gloomy future for the safety of satellites and other space based assets. United States officials has confirmed that they are working to create satellites or assets that could dodge missiles or other weapons. Michael Dickey, is quoted as saying that: "We have to give our mission systems an opportunity to participate in their own defence, give them a fighting chance. We've begun to introduce changes".[48]

Another option the the United States government is pursuing is the development of ballistic missile shield to counter any threat or attack from Russian, following its' withdrawal from commitments and obligations of the Anti-Ballistic Missile Treaty in 2001.[49]

The Trump administration is ready to prosecute its defense plan vigorously as indicated in the 2020 fiscal budget presented to Congress to fund space missile defense weapons. The plan is to spend about $380 million over the next five years on development of Missile Defense, to destroy enemies' intercontinental ballistic missiles.[50]

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47 Remarks by Vice President Pence on the Future of the U.S. Military in Space: https://www.whitehouse.gov/briefings-statements/remarks-vice-president-pence-future-u-s-military-space/

48 Patrick Tucker, Pentagon Wants Satellites That Can Dodge Incoming Fire (defense One) 22nd February, 2019, https://www.defenseone.com/technology/2019/02/pentagon-wants-satellites-can-dodge-incoming-fire/155088/ (Michael Dickey runs the Enterprise Strategy and Architectures Office at Air Force Space Command).

49 Rick Rozoff, supra 44

50 Kingston Reif, US Seeks New Space-Based Capabilities (April 2019)Arms Control Association, www.armscontrol.org

3.8.2 France

It is now obvious in the international arena that the US government is not alone in this, the French government has announced that it will establish an air force space command for national defense and protection of its satellites. Presently, the French military is operating three satellites that are used for communication purposes by its troops and is working on equiping and arming its new version of satellites by 2030, with weapons to enable them defend themselves and destroy enemy satellites.[51]

3.8.3 China

The report of US-China Economic and Security Review Commission in 2015, determined that China's military programme since 2000 indicates that it is developing capabilities that could be deployed against United States space assets, to serve as a deterrence for United States strike against its own assets.[52] It is also alleged that China in July 2013, placed three satellites into orbits, equipped with a robotic arm, to test their ability to seize and destroy another satellite.[53]

In 2018, the United States Director of National Intelligence also alleged that China is developing technology that it can deploy to blind or damage sensitive parts of some space based assets, may have already acquired Laser weapon capability that it can use to destroy or damage sensor of satellite.[54]

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51 Hanneke Weifering, France is Launching a 'Space Force' with Weaponized Satellites. www.space.com/france-military-space-force html;

52 U.S.-China Economic and Security Review Commission, "2015 Report to Congress of the U.S.-China Economic and Security Review Commission" (Washington, DC: U.S. Government Publishing Office, 2015), 283-284, https://www.uscc.gov/sites/default/files/Annual_Report/ Chapters/Chapter

53 Todd Harrison, supra 91, 13

54 Ibid 14

In its report in 2011, the United States–China Economic and Security Review Commission alleged that two United States satellites were compromised between 2007 and 2008, through the internet by Chinese hackers and stated that the action was consistent with China Military policy. The gravity of the attack was alarming because the hackers had demostrated the ability to command the satellite, though no physical harm was occassioned. The hackers could have also stolen useful data, or caused serious damage to the satellite, if they had intend to do so.[55]

3.8.4 Russian

The United States has been concerned about Russia's threat across all counterspace weapon categories - ASAT weapons, laser weapons, electronic weapons e.t.c. Russia is reported to have well developed cyber warfare capability which could be deployed to target satellite systems in space or their ground base that provide necessary support to the satellites.[56] A group of hackers possibly from Russian, were reported to be using a malware "Turla" to attack some categories of communication satellites.[57]

3.8.5 Iran

Iran is alleged to be developing jamming capability, which was effectively used to down a United States drone in 2011. Although the Iran's claim was not confirmed by United States official, if true demostrate that Iran has achieved some level of capability in terms of technology, which can be used against United States precision-guided weapons in the

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55 J.Wolf,"China Key Suspect in U.S. Satellite Hacks: Commission", Reuters, 28 October 2011. https://www.reuters.com/article/us-china-usa-satellite

56 Ibid 24

57 S. Khandelwal, "Russian Hackers Hijack Satellite To Steal Data from Thousands of Hacked Computers", The Hacker News, 10 September 2015, https://thehackernews.com/2015/09/hacking-satellite.html

future. Iran is also reported to have jammed several international and regional television broadcasts in the Middle East.[58]

3.8.6 North Korean

North Korea has also been reported to be developing space technology which could further feul insecurity in the region and space.[59]

3.9 Conclusion

This chapter considers the actions of States and how thes actions are threatening the safety of satellite and other space based assets. These actions which includes, militarization, development of anti-satellite weapons, space debris, electronic warfare and other related things can adversely interfere with space based assets and raises the fundamental question of existing mechanisms of space governance.

Concluding this chapter, several findings were drawn. Firstly, it appears that there is a serious threat to satellites and space assets. Secondly, several states are developing several weapons or tools to comprise the space assets of other nations. Thirdly, that the situation if not curtailed may snowball into a full blown war.

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[58] Ibid 28-29

[59] Blair Stephenson Kuplic, supra 72

CHAPTER FOUR

THE SHORTFALLS OF THE EXISTING INTERNATIONAL SPACE LAW

4.1 Chapter Overview

This chapter addresses some shortcoming in the existing space law and its implication in view of the development of new technologies and avent of commercial space enterprise. It also considers the fundamental question of space debris and further militarization outer space.

4.2 The Shortfalls of the Existing International Space Law

As indicated above, the development of offensive and defensive space capabilities has created doubt in the minds of many as to the effectiveness of the existing outer space regime, in view of the development. As noted presenting there are a number of treaties and agreements that support and provide legal framework for space law, but some gaps has been identified that requires addressing. It appears that there are huge gaps between spirit of the Outer Space Treaty and contemporary reality. Consequently, it seems that the Outer Space Treaty can no longer meet challenges created by current technological trends. It is worthy to state that while the Treaties continues to be relevant with regards to the prevention or placement of nuclear weapons in space or use of same, advancement in technology with respect to other kinds of weapons, that are equally very dangerous, but not envisaged at the material time and so not specifically mentioned in the treaty highlight its weaknesses.[1]

As stated earlier, the generally accepted interpretation consistent with current legal frameworks is that the existing treaty does not expressly or impliedly ban any weapon

[1] Emily, supra note 35, 369

other than Weapon of Mass Destruction. The above stated represents a lacuna in the Outer Space Treaty as explained earlier. The above interpretation is as a result of the disposition of key space nations to the issue of militarization and weaponization of outer space..

Secondly, the lack of clarity in terms of interpretations of key terms such as 'peaceful use' also raises a challenge for the effectiveness of the Treaty. As stated earlier, some States interpret 'peaceful' as "non-military", while some others adopted "non aggressive" as the appropriate interpretation. The differences in interpretation highlight the problem of ineffectiveness of the Outer Space Treaty as it limits its mandate to cover other areas such as electronic and cyber warfare now in use[2] Therefore to guarantee international stability and peace in space, it is imperative to draw a clear delineation line to indicate what type of weapons are allowable or not.

Another point of concern is that, because in outer space any object not is necessarily a weapon can be used to attack or destroy a satellite, a rogue state may hide under this to carry out nefarious acts, with almost the same consequences as if a weapon is used, there is reasons for concern should any state adopt such candestial means. There may be high implication in terms of resources that may be involved in clearing space debris resulting from destruction of satelllites particularly for civil and commercial satellites, should there be any arms build-up and fighting in outer space.[3]

4.2 Factors Responsible for Ineffectiveness of the Outer Space Treaty

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2 Rajeswari, supra 47, 13

3 Todd, supra 89, 5

It is pertinent to state that the 1967 Outer Space Treaty as well as other space laws came into operation in the Cold War era, when the two most powerful military nations sought to avoid an arm conflict with between them and technological advancement was still moderate. Today, technological advancement has created serious competition in space, since hitherto weaker nations are now active in space. It is therefore imperative to revisit and review the Outer Space Treaty in view of consequences that space weapons may pose for all nations[4]

It is in the light of the above, that many are calling for review of the existing treaties to prevent future catastrophic such as the World War II, which claimed millions of life, not to mention the economic damage. The United Nations must therefore as a matter of urgency take actions or put measures in place to forestall a space war, as the international community would be the ultimate loser if states are allowed to further militarize space and/or disrupt satellites or space baed assets.

One of the biggest change from the Cold war era in space matters is that the number of participant has increased and private participants are also now involved. The growing involement of commercial actors, has made space to become an innovative environment. The cost of accessing space is no relatively cheaper for both governmental and private actors unlike the high cost at inception. At the same time, the increase in number of space participart makes space even more crowded and congested today than it were.[5] This is also another factor responsible for the renewed emphasis on review of existing space treaties. Should the situation escalate to war it may be impracticable to single out

[4] Kelsey Davenport, supra 82

[5] Rajagopalan supra note 49, 3

only military satellites for attack. This accounts for the renewed attempt to set up space force command by the United States and France[6]

It is based on the above, that there is a consensus that the inaction and failure of the world body and international community to reach a multilateral agreement on any new proposal/amendment to existing international law, is a threat to world. As noted, the United States has been opposing efforts that may bring about some kind of new legal regime for space. This has occassioned lack of consensus regarding creation of a new international treaty tor amendment of the existing treaties to enhance existing international laws.[7]

4.3 Conclusion

As this chapter reveals, the attempts to create new legal regime has been encountering several drawbacks, of which the most important is attitude of the big powers. It is against this background that the current state of affairs, unless arrested through a conceited effort by the UN General Assembly, would foist upon the global community new challenges or issues which may lead to a space war. although the United Nations have been advocating ban on any form of weapon in space, the attitude and lack of willing on the part of United States, has led to the failure of such efforts.

Admittedly, it would be pointless to continue such initiative without securing the support of United States in view of its standing in military and commercial presence in space. Ultimately, the international community will need to secure concurrence from the super powers to guarantee safety in space.

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6 Ibid, 4

7 Paul Meyer, Washington sparks a space spat at the United Nations, Bulletin of the Atomic Scientists. http:/www.thebulletin.org

Thus it behooves the UNGA, to initiate a process that will enjoy support of the powerful nations to be able to review or amend the existing treaties based on the gaps identified with respect to militarization and weaponization.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Chapter overview

This chapter provides summary of findings, from the above exposition Firstly, it is apparent that the threat to "satellites and other space assets" is real, although the gravity is not not appreciated by the decision-makers of many States and the international body. Secondly, a new policy documents and legal frameworks is now necessary in order to guarantee security of satellite and other space assets. Thirdly, there is a need for multilateral approach to handle space related issues through collective measures. Fourthly, there is need for definition of certain terms like "peaceful use" in the 1967 Outer Space Treaty to provide more clarity. This chapter will make useful recommendation to address the issue of militarization and weaponization.

5.2 Summary of Findings

The following can be deduced from the exposition in this thesis.

Firstly, the fact that current space technology can serve both civilian and military, means that space has been militarized, to attempt to place any limitation on military use of such technology at this point is not practicable. As stated above, many states around the world now use satellites services for one military activity or the other, such as - communications, reconnaissance, surveillance and other capabilities is creating serious concerns, leading to a number of states developing Anti-Satellites weapons to protect and defend their national interest.

Secondly, the superpowers are adopting a hawkish and aggressive approach to protect their own national interest in space, which is creating a situation of uncertainty for the future safety of satellites systems and other space assets, instaed of a multilateral approach.

Thirdly, the response of the international community in addressing these concerns is to say the least regrettable, as no meaningful progress has been made so far by way of amendment to current treaties or adopting new legal regimes to prevent imminent threat to peaceful use of space, safety of satellites systems and other space assets.

Fourthly, it is not possible at this point to turn back the hand of time, in term of returning to pre 1950 space era, the only reasonable and practicable step is to determine the limit such military related activities in space, should be allowed by creating legal means/framework that addresses the issues to provide direction and more clarity.

Fifthly, the current state of outer space has been ineffective and seems obselete to carter for the new of the 21st century. Consequently, existing space law needs urgent review to be relevant on the question of militarization.[8]

5.3 Recommendations

The world cannot allow a situation that allows the opportunity for peaceful resolution of issue resulting to use of space to pass by, because of the ambition of a few nations that wants to optimize their military capabilities to the detriment of the international community. According the following recommendations are suggested to avoid the imminent threat to space assets:

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[8] Anél Ferreira-Snyman, "Selected Legal Challenges Relating to the Military Use of Outer Space, with Specific Reference to Article IV of the Outer Space Treaty," 18 *POTCHEFSTROOM ELEC. L.J.* 488, 490 (2015), 520

First, to address the gap in the 1967 Outer Space Treaty, the treaty should be amended to reflect current reality. This could be acheived in part by amending such words as "peaceful purposes" to "non-aggressive purposes.", since no nation would concede or interpret the definition of "peaceful purposes" to mean "non-military", in view of present reality. Under this definition, States would be able to continue or undertake passive military action in space.

Second, the United Nations can create a whole new set of treaties, which will clearly define the term "non-aggressive" use of space for clarity and guidance of all nations that are involved or intend to be involved in space exploration. It may become necceasry to establish an international body with mandate to monitor States' space related programs or launch into space.[9] Furthermore, the international community must work harder to keep things from escalating further, through compliance measures that to regulate weapons activities permissible, through an elaborate regulatory frameworks.

Third, the United Nations can establish a body that will undertake to create a process of engagement with superpowers, encourage confidence building dialogue and a process that is flexible in terms of adaptability to changes, in view of the fact that prior attempts to amend the Outer Space Treaty or initiate new proposal or treaties have been unsuccessful due to the United States resistant to potential changes or amendment of the treaties for the fear that its space activities would be limited by such agreements.[10] There is also need for establishment and determination of certain level of requirements or criteria for such actors in space.

Fourth, vulnerability of space assets as highlighted in incidents described above, shown that all nations are vulnerable including the United States. should the UNGA exploy this view it may be

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9 Emily Taft supra 35, 377

10 Ibid 378

able to get the super powers to be more dispose and willing to begin discussions on reform or engagement. Consequently, the United Nations will also do well to create a process of engagement with policy makers of key nations, with a view to persuading them to see the need for de-militarization and de-weaponization, since in actual fact no nation can at the moment provide adequate protection for its assets in space.[11]

Fifth, the United Nations General Assembly can encourage direct dialogue on space security between United States, Russian and other space nations. This will provide channel to reduce the possibility of miscalculations, prevent war and also help identify areas of practical cooperation between states. The Obama administration's engagement with China on space security issues, especially with regard to finding ways to reduce orbital debris and prevent collisions in outer space, is a pointer that such initiative are possible and practicable. The United Nations can adopt initiatives, like the United States Joint Space Operations Center (JSPOC) and the Beijing Institute for Telecommunications and Tracking (BITT) to avoid collision in space[12]

In retrospect, the United Nations has been unsuccessful in securing consensus to either develop a new treaty, amend the existing space treaty, due distrust amongst world power has not help to build dialogues. Given the increasing tensions between the United States and other states, it would be wise for the United Nations body to begin confidence building measures through dialogues initiatives, so that a peaceful future can be guaranteed for outer space and assets based in space.

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[11] Todd, supra 89, 1

[12] Sam Jones, "U.S. and China set up space hotline," The Financial Times, November 20, 2015, https://www.ft.com/content; Mike Gruss, "U.S., China will meet this year to talk space debris," *Space News*, September 22, 2016, http://spacenews. com/u-s-china-will-meet-this-year-to-talk-space-debris/ ; The Second Meeting of the U.S.-China Space Dialogue," U.S. Department of State, October 24, 2016, https://2009-2017.state.gov/r/pa/prs/ps/2016/10/263499.htm

5.4 Conclusion

It has been adequately discussed in this thesis that space has become an important domain for all nations in terms of the resources it provides. However, the development of ASAT and other means of warfare posing serious danger to the safety of satellites in orbit and ground stations as well as other space based assets, thereby creating fear that space wars is no longer science fiction. Yet in this uncertainty, the Outer Space Treaty cannot as it is prevent militarization and weaponisation of space due to technological development. It has been submitted that the Treaty has become kind of obsolete in view of the fact that a satellite can be used for civilian or military purposes. This thesis therefore advocates for a review of the space law framework to allow for amendment or creation of a new regime, to address the shortcomings of the extant treaty, to forestall space becoming a future battlefield.

Based on the above, it is finally submitted that the UNGA cannot afford to continue to take the position of a sleeping duck at this critical crossroad, and allow a few powerful states to take aggressive military action in space or introduce weapons into space, which will ultimately result in destruction of satellites systems, which will result to colossal economic damage for all nations, in view of the reliance and dependency on these space assets for various daily civilian purposes. The UNGA must therefore wake up and play its roles by impressing upon the super powers to collaborate and initiate a new generally acceptable and enforceable treaty that promotes peace amongst nations. to complement existing 1967Outer Space Treaty through amendment, so that the issue of militarization of space can be addressed properly, so that space can continue to be a sphere that serve the common good of all nations.

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