

Development of Anti Satellite (ASAT) on Modern Day: Urgency of Global ASAT Regulation

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Abstract

The recent development and testing of an ASAT system by the Indian government has been condemned widely by international communities. The condemnation is based on the fact that ASAT system tests in outer space can cause a variety of issues, ranging from creating thousands of satellite fragments which can harm other functional satellites, to posing a serious threat to global security. Generally, testing of ASAT systems is not explicitly prohibited (non-liquet) in the Article IX of The Outer Space Treaty of 1967 (hereinafter OST) which only mentions "... to avoid harmful contamination..." This article can be interpreted loosely since there is no comprehensive definition of the word "harmful", regardless of the significance of ASAT tests and development. Currently, there is no specific agreement yet to limit ASAT development and tests in outer space. This paper will look into the Indian ASAT testing case in 2019 and examine the case through international space law instruments, namely the OST, Moon Agreement of 1979, ENMOD Convention, PTB of 1963, LOAC, PAROS. Further question will arise do ASAT test should be restricted and what is possibly negative impact could be rise if there's no restricted regulation on ASAT? Ultimately, this paper pursues the creation of a new international agreement to regulate ASAT development and test, considering that the test and usage of ASAT systems pose a dangerous impact upon all countries, especially countries with active satellites. This paper also encourages the establishment of global cooperation for world peace as instructed by the OST.

Keywords: ASAT; Space Weapon Development; Peaceful Principles.

Introduction



The outer space development is sparked with human technological advancements in 1957 through the first launching of Sputnik I program to outer space by USSR and following by the U.S. in 1958 by launching Explorer I as answer to USSR and this achievement also remarks the beginning of the Cold War, and its escalated the tension between the United States and the USSR, and it turned into a space race between the two nations, resulting in more aggressive space military and weaponry development alongside nuclear test issues. The military got involved when the US took advantage of their satellites for reconnaissance of other countries, and further space weapon development began in 1950 when the Soviet Union developed its ABM (antiballistic missile) for Moscow defense system. This action triggered the US to develop a similar power to prevent threats against US interests in outer space. At the time, the Soviet Union kept using nuclear warheaded interceptors against satellites, albeit this option is acknowledged as a poor ASAT system because a nuclear explosion in outer space will indiscriminately destroy all satellites in their range and numerous satellites would perish by the increase of radiation levels in LEO (Low Earth Orbit) after several weeks of detonation. It could also potentially violate PTBT (Partial Test Ban Treaty)1963 (Grego, 2012).

ASAT systems were developed aggressively to protect each parties' interest in outer space. The US tested their ALMVs (Air-Launched Miniature Vehicle) in 1985 at the largest, and the ALMVs were launched to defunct satellites within the altitude of 555 kilometers from Earth's surface. The tests created 250 pieces of space debris and the last piece re-entered Earth in 2002. The result is part of ASAT's destructive consequences and this fact cannot be denied. After several years, both countries left the ASAT project. In the new millennium, the US and Russia began their "new" terms of ASAT weapons system and it has been followed by China who, eventually, built their very own ASAT weapon. From 2007 to 2015, there were three attempts of ASAT weapon test, starting with China shooting down their Fengyun satellite, followed by the US launching an Aegis SM-3 sea-based ballistic missile interceptors targeting inactive US satellites located 240 kilometers above sea level in 2008 (Grego, 2012), and Russia which successfully made a demonstration of their ASAT weapon (Abhijeet, 2017).

With several countries having successfully developed and tested their ASAT systems—including China, their closest neighbor, which has done so with satisfying results—India came to have the same intention to develop their own ASAT weaponry to protect their outer-space interests. Finally, on March 27, 2019, the Indian government proudly announced that the Indian military had successfully launched a ground-based antisatellite weapon from Dr. Abdulkalam launching complex. The weapon was a version of an existing ballistic missile interceptor and hit a LEO (Low Earth Orbit) satellite 300 kilometers in altitude. India commented in their statement that "the test was done in the lower

atmosphere to ensure that there is no space debris. Whatever debris that was generated will decay and fall back onto the Earth within weeks.” However, this test would probably create a “debris cloud”, such as the result of China’s ASAT test in 2007 which generated at least 2,087 pieces of debris, enough to disrupt active satellites as routinely tracked by US-SSN (Kelso, 2007).

Military activities or weaponry regulation cannot be founded as a unitary framework, the regulation can be found in several regulations such as PTBT 1963 (Partial Test Ban Treaty), ENMOD 197 (Environmental Modification Convention), the OST 1968 (the Outer Space Treaty), Moon Agreement 1979 etc. The fundamental legal terms can be referred to the UN Charter which aims to preserve international peace and security by obliging its member states to refrain from the threatening or using force against territorial integrity or political independence of states (Tronchetti, 2013) Furthermore, in international space law—especially the OST, as a fundamental treaty for all kinds of activities in space—do not prohibit weapon tests, either land- or sea-based, in outer space as long as the definition of ASAT is not included to WMD (Weapons of Mass Destruction) or nuclear weapons.

India has made a wake-up call among spacefaring nations. NASA argued that India’s ASAT test could endanger not only the ISS (International Space Station) but also all functioning satellites in orbit. India also made the regional situation more fragile, especially with Pakistan and China. India is now the fourth country capable of destroying satellites after the US, Russia, and China. Furthermore, there will be a question, do we need to restricted such of ASAT test in the future? And what is possibly negative impact could be rise if there’s no restricted regulation on ASAT? this paper method conducted by literature review from books, international journal and reviewing from existing regulation regarding “weapon” and “military use” on outer space. furthermore, chapter 1 of this paper will discuss the history of ASAT development, chapter 2 will be discussing India space program how they can achieve as new space power nation. Chapter 3 specifically will discussing about ASAT and its type and why ASAT aren’t categorized as WMD (Weapon of Mass Destruction), chapter 4 of this paper will showing and elaborate existing regulation of “space weaponry” and chapter 5 address the conclusion of this research to pursue ASAT test restriction also encourages the establishment of a global cooperation for world peace as instructed by the OST 1968.

India Space Program: From Civil Use to Military Usage

India’s space program development began in the 1950s. The space program was formerly placed under IAEC (India Atomic Energy Commission) headed by Homi Bhabha. IAEC established an Indian space research program in 1958, a year after Sputnik-I was launched into outer space. The successful launch

made India's former prime minister and space scientist Dr. Vikram Sarabhai to envision a national space program. Later, Dr. Sarabhai stated in regard to the space program that "there are some who question the relevance of space activities in a developing nation. To us, there is no ambiguity of purpose. We do not have the fantasy of competing with the economically advanced nations in the exploration of the moon or planets or manned space flights. However, we are convinced that if we are to play a meaningful role nationally and in the comity of nations, we must be second to none in the application of advanced technologies to solve problems of man and society which we find in our country." (Hussain & Ahmed, 2019) In 1962, Dr. Sarabhai initiated the establishment of INCOSPAR (Indian Committee for Space Research). After Dr. Sarabhai left the program, his predecessor Satish Dhawan turned it to serve both civilian and military purposes.

In 1969, ISRO (Indian Space Research Organization) was established, along with the creation of DOS (Department of Space) in 1972. Both organizations were led directly by the prime minister. Furthermore, the Indian government had the intention to build their communication satellite in 1970, the INSAT-I. In the early years of establishment, the programs were focused on the development and expertise of launching of light payloads up to 300 kilometers into the atmosphere (Hussain & Ahmed, 2019). At the time, India's space program was aided by European countries and the USSR. Specifically, India and USSR signed an MoU in 1970 on a collaboration to launch a Soviet sounding (meteorological research) rocket to the atmosphere from Thumba Equatorial Rocket Launching Station. India also cooperated with France in the field of space affairs in 1977 (Lele, 2017b). After developments slowed down and almost fell behind schedule in 1980, Indian scientists focused in experimental projects which later helped Indian scientists advance with the construction, operation and launching of the program. Obviously, at this time, India was focused on enhancing the capabilities of their satellites in vital areas such as communications, resource management, and meteorological purposes by designing the PSLV (Polar Satellite Launch Vehicle) and its successor GSLV (Geostationary Satellite Launch Vehicle). These vehicles were required to launch IRS (Indian Remote Sensing) and INSAT (Indian National Satellite) (Lele, 2017a). Recently, India has been capable of building their own technological advancements, such as the development of SLVs (Satellite Launched Vehicles) which are pretty similar to rocket technologies in the US.

In addition to making their own SLVs, satellites, and launch program systems, India also developed their defense system. Basically, ISRO is a civilian space research institute similar to NASA and ESA, but in terms of dual-use doctrine, military purposes can also be served through ISRO. In this circumstance, DRDO (Defense Research and Development Studies) was assisted by ISRO for technical matters. India has been including military

purposes to their space program since 1974 when India successfully detonated their first nuclear weapon, resulting in condemnation from several nations. This matter made India face a sanction over transfer of technology, not only for nuclear weapons but also including space technology. In spite of this, in 1992, Russian space agency Glavcosmos and ISRO arranged the trading of cryogenic rocket engines critical to the development of SLVs to India, without which the Indian space program would be paralyzed. However, in 1998, India tested their nuclear weapon for the second time, and this the Clinton administration reacted by imposing broader range of sanctions to India (Lele, 2017a) including increased control on all dual-use exports to entities linked with India's nuclear, missile, and SLV program.

According to Prof. Ajay Lele, there are three key challenge factors that improved India's space program development: (1) use of space technology can be used as a military advantage, such as its use in the 1991 Gulf War in conventional warfare, and its use in Iraq and Afghanistan when the US clearly showed the capabilities of surveillance satellites as "eyes in the sky" in asymmetric or unconventional warfare. (2) Future space program is not only about how to launch a satellite in old school terms. As developments in satellite technology has been growing rapidly, satellites have come to have numerous functions recently and many countries have come to be able to have their own satellites. Development of space technologies is also bringing humans into a new era in which is space can be opened for tourism. (3) China, as a neighboring state, showed significant progress in the space area, especially on development of their defense system through ASAT test on 2007. Its questionability from the perspective of space security caused India to develop a similar program.

Thus, India improvised to answer these challenges through their military, utilizing satellites to support the IGMDP (Integrated Guided Missile Defense Program) as a part of military program. The Indian military was also still dependent on dual-use satellites until it launched dedicated military satellites (Hussain & Ahmed, 2019). As of 2015, India has launched approximately 57 satellites for 21 countries, more often for commercial purposes. Since 1975, India has launched a total of more than 77 satellites, 28 of which are currently in space, operating for multiple purposes.

ASAT and WMD: Simmilar But Different.

1. WMD (Weapon of Mass Destruction)

Weapon of Mass Destruction is actually mentioned in the Article VI of the OST 1968 "...to not place any kind of nuclear weapon and "WMD" in orbit..." however there is no further explanation what WMD is, and leaving the possibility of a broader interpretation of WMD. According to CD (Committee Disarmament) resolution WMD subject generally consider to a nuclear weapon,

biological weapon, a chemical weapon with indiscriminately kills a large number of peoples whether of innocent peoples or combatant (Lyall & Larsen, 2009), and based on General Assembly resolution in 1946 defining WMD as: "...atomic explosive weapons, radio active material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above..." (Carus, 2012). It needs to be considered from the effect ASAT does not kill directly or indirectly, because ASAT target is purely dedicated to satellites in this regards.

2. ASAT

Beside concerns of WMD, we need to emphasize that ASAT weapons are part of space armament. Lengthy discussions concerning ASAT weapons were held within diplomatic grounds between the US and USSR which took place in June 1978, January to February 1979, and April to June 1979 (Petersen, 1991). Unfortunately, the negotiations between the US and USSR were completely stopped during the USSR invasion of Afghanistan. The US Congress became formally involved in ASAT weapons control in July 1983. In approval of Tsongas' amendment of DoD Act in 1984, the Senate prohibited all ASAT tests unless the president could approve two conditions Firstly, the conditions required that the US conduct ASAT arms control negotiations in good faith with the USSR. Secondly, the ASAT testing is in the interest of national security of the US (Petersen, 1991). However, negotiations regarding ASAT arms control completely failed. Through a DoD act in 1985, President Reagan certified that requirement by the Congress had been fulfilled and he made a decision to test US's MV ASAT weapons against an object in outer space. This action provoked the USSR to rescind its moratorium (US Congress, 1985), but since ASAT testing create a destructive debris cloud, both nations finally agreed to stop ASAT system tests from this point on.

In 2007, China tested their ASAT weapon to their own aging weather satellite which tremendously shocked the US government (Kaufman, Linzer, 2007). The action could trigger tensions between spacefaring nations and cause them to activate their own ASAT systems again. Through a computer model prediction, this test could result in the creation of a "debris cloud" of approximately 300.000 pieces, and even the smallest of which could severely damage active satellites in outer space (Kaufman, Linzer, 2007). In 2008 the U.S. showing their capabilities of development of ASAT system in response on China ASAT test in 2007.

Furthermore, ASAT weapons are not a part of WMDs, but indeed, its effect can be so devastating in outer space to other nation's satellites through the space debris it will create. Destruction of satellites through ASAT weapons has created a tangible global issue. While the qualitative military advantage of placing any weapon in outer space is undeniable, countries like the US are aware

that arming the atmosphere can provoke rival powers to do the same, and it can further escalate into a new arms race and destabilize global politics (Onley, 2013). By this regard, while the ASAT system may not be included to WMD or nuclear weapon categories, it will still have a devastating effect, whether directly or indirectly, to other nations.

By the data from SSN on 2010 there was 14.000 debris objects free floating on outer space within larger than 10Cm in diameter and it has been escalating up to 23.000 currently. The SSN is capable to recognizing objects between 5 and 10 Cm in LEO (Low Earth Orbit) objects above 1Cm in GSO (Dobos & Prazak, 2019), majority of debris is located on LEO and it estimated 500.000 objects larger than 1Cm freefloating with velocity speed have enough to have potential damage to active satellite system. NASA in this case has predicted amount of debris will be expanding, and increasing the level of risk colision. ASAT test in this matter, have generated much of debris as the result.

3. Type of ASAT Weapon

There is a wide variety of ASAT weapon, from cyberspace-based technology, EMP (Electro Magnetic Pulse), explosion devices, directed energy targeted weapons and targeted missile (John, 2012). Cyber attack on space system is commonly known as hijacking on satellite by using the internet/radio transmission to paralyze the target (satellite). Thus EMP or widely know as directed electromagnetic energy commonly using high powered laser or microwaves from the earth to disturb satellite function and it will affecting to electromagnetic components on its target, however this kind of ASAT type had several disadvantages from a low range of targeting and vulnerable to bad weather, however both of cyber attack and EMP doesn't resulted in any debris (Grego, 2012).

Furthermore, explosion device, directed energy or KE-ASAT, a targeted missile is using LV (Launch Vehicle) to operate, this LV commonly equipped with explosives warhead, and every LV has a maximum target range from LEO to GSO or 800Km up to 35.000Km above the earth surface. however, this kind of ASAT weapon is jeopardy to use particularly if debris generated from KE-ASAT collided with GPS satellite and it will result in defunct of GPS System as an example.

Current Legal Development to Regulating ASAT in Outer Space

1. The United Nations Charter

The United Nations Charter as one of development basis of modern international law including outer space exploration which largely governed in the Outer Space Treaty 1968 as cardinal agreement from *Corpus Iuris Spatialis*.

According to one of principles on the OST 1968 is “...in accordance with international law, including the UN Charter of the United Nations...” (the OST Art II). This provision is extends the applicability of the United Nations charter to Outer Space (Vereschetin, 1984). Using of force or threat of force against other UN member is strictly prohibited including on outer space, unless the defence action is under armed attack situation or after UN security council take any necessary measure (the U.N. Charter, 1949). However does ASAT test on this circumstances including threat of force category as Article 51 of the U.N. Charter mentioned.

2. The Peaceful Principles Under the Outer Space Treaty 1968

Using of outer space, every party shall be fulfilled the obligation has mandated by the OST 1968 as cardinal treaty of all space activities to ensure their activities are not contradicting with UN charter and the OST either (Tronchetti, 2013). the spirit of this treaty is how to make space exploration being equal for its benefits for all of mankind, and to defend future war on a Space, it was very critical, in remind 1967 United States and USSR has begun race in space technologies since 1950. Article I of the Outer Space Treaty has strictly mentioned to all states parties the right to freely explore and use of outer space, and freedom to carry out scientific purpose and it must have “benefit and interests of all countries, irrespective of their degree of economics or scientific development and shall be the province of all mankind” this provision provides the philosophy that is at core of space law (Tronchetti, 2013) refer to “benefit and interest of all countries” which all space activities by space countries shall be responsible under international law, and also its must have benefits for all countries irrespective their degree of economics and scientific, because not all of countries could develop their own space system.

Regarding Article I it must have tied with article III which is “States Parties shall carry on activities in the exploration and use of outer space, including the Moon and other Celestial Bodies, in accordance with international law, including the UN Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding” (The OST Art II). Furthermore, at Article IX mentioned regarding international consultation before proceeding its experiment, this article emphasised for any kind of space activities by states in outer space which may causing harmful effect or interference to other states parties in outer space (the OST Art IX) in the Article IX of the OST also mention “...to avoid harmful contamination...” which is no further explanation what is “harmful” mean exactly, in this regards if ASAT test will be questioned does ASAT test is generated space contamination which causing harmfully effect, unfortunately through Article IX will not show clearly the exact criterion of what is contamination and harmful, with this fact the ASAT contamination might be

is not considered as contamination and harmful in Article IX purpose, however if we take a look to one of principle laid down in Article III "...states that activities in outer space have to be carried out "in accordance with international law." As "international law" it highly possibility the Environmental law and LOAC (Law of Armed Conflict) and other related agreements can be applied in this circumstance.

Referring to Article III that was mentioned "in the interest of maintaining international peace and security and promoting international cooperation and understanding" and it's have tied with Article IV " States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapon or any kinds of weapons of mass destruction, install such weapons on celestial bodies, or stationed weapons in outer space in any other manner, and the Moon and other Celestial Bodies shall be used by all States to the treaty exclusively for peaceful purposes, the establishment of military bases, installations and fortifications the testing of any type of weapons and the conduct military manoeuvre on Celestial Bodies shall be forbidden"(the OST Art IX).

Moreover, the combination of Art III and IV contemplate such any kind military activities would be permitted as long as following the U.N Charter in any manner (Stephens, 2018). If were looking carefully into terms "moon and other celestial bodies" in Article IV that meant restricted area or we called are with prohibition of placing any kinds of WMD and Nuclear are just only located in the moon and celestial bodies area, which it could be meaning aren't covered all area or void space area (Abdurrasyid, 2011). The void space area in this circumstance are also should be free from any kind of military activities, if we're referred to the Article I of the OST there was mentioned "...benefit and interests of all countries...". Because the military activities just served a state or a group of states, and will never become benefit of all mankind, thus contradicting the legally-binding obligations of the OST if a "non-military" interpretation is not applied (Aoki, 2017).

3. Moon Agreement 1979

At Moon Agreement 1979 there has few points been made regarding terms of using moon and other celestial bodies under peaceful circumstances which shall be followed by all nations. Moon Agreement applied not only for the Moon and other celestial bodies, but also beyond within solar system this term can be found at Article I. At Article II mentioned "all activities on the moon and other celestial bodies shall be carried out in accordance with international law, in particular the charter of United Nations, in the interest of maintaining international peace and security". In this regards Moon Agreement just only reiterate that provision of the OST, except perhaps to clarify the omission of the reference to the moon in the second sentence of the latter by making it clear now that enumerated prohibitions under Moon Agreement apply to the Moon and

other celestial bodies within the solar system apart from the Earth (Cheng Bin). Furthermore, the presence of prohibition of using force power at the Moon and other celestial bodies can be looked at Art III para 2 mentioned "...any threat or use of force any other hostile act on the Moon is prohibited..." however this article may only reiterate from United Nations charter at Art II para 4 whilst same manner gilding lily the peaceful principles (Cheng) At para 3 mentioned "...state parties shall not place in orbit around or other trajectory to or around the Moon objects carrying nuclear weapons or WMD..." "trajectory" could be as possible interpreted as "void space" and if so, it would be milestone for demilitarization of outer space (Aoki, 2017). But in this regards trajectory meant between the Earth and the other celestial bodies within solar system which result is a state parties are highly prohibited to placing such nuclear weapons or WMD in those area (Aoki,2017). In other way Article III of Moon Agreement fills a gap in Article IV of the OST, because the moon was omitted in this provision which prohibits only installation of weapons on other celestial bodies. Moon agreement in this matter are not prohibited the usage or the test of ASAT as this article mentioned above, ASAT is not part of WMD and nuclear weapon. Also, countries who development ASAT system have not ratified this agreement.

4. PTBT 1963

Partial Test Ban Treaty 1963 concerning about prohibiting its member states to carry out of nuclear test explosion or another nuclear-based explosion in the atmosphere, outer space, and underwater (PTBT Art I, 1963). The PTBT has a spirit from EMP radiation generated by the US and USSR test disabled at least six satellites from both countries and the UK, and that nuclear explosion detection satellites proved to be able to adequately verify compliance with the PTBT (Aoki, 2017). The PTBT are applied in time of peace, it might be different in time of war, a state still can be used nuclear weapon as part of defence within proportionality principles as their *Ultimum Remedium*, the regulation of using nuclear weapon in those manners, will be discussed further through United Nations (Aoki, 2017). However, it would be different if ASAT has consist or carry nuclear warhead, PTBT will applicable in this matter.

5. ENMOD Convention 1977

Environmental Modification Convention or specifically known as Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques 1977. Bans its member parties through its military activities or hostile to involved or engaging "environmental modification techniques" which having widespread, long-lasting or severe effect as mean destruction or injury to another state parties, including the change of the dynamics composition or structure of outer space (ENMOD Convention, elaborated from Art I&II). Despite ASAT generated much of space debris it

would be not considered as violation of ENMOD Convention (Aoki, 2017) and this regulation have limited application to govern ASAT weapon.

6. PAROS

In 1985 agreement was reached on the mandate of the *Ad Hoc* PAROS committee, the *Ad Hoc* PAROS Committee has never become a permanent body and each year CD (Committee of Disarmament) should request that it re-established (Alves, 1991). The *Ad Hoc* PAROS committee has continuously examined three main subjects' areas of its mandate, such as: (1). Issues related to the preventions of arms race in outer space, (2). Existing agreements governing space activities, (3). Existing proposals and future initiatives on the prevention of an arms race in outer space. Recent days, the testing of ASAT become more worst in the middle of today's political situation, and it could possibly become a weaponize conflict zone. Many diplomatic proposals were made by Canada, China, E.U and Russia aimed reinforcing the present regime for outer space security (Meyer, 2012). By the result from adoption of PAROS resolution, with the latest version approved in December 2011 by 176 in favour, none opposed and 2 abstain which is the U.S and Israel (Meyer, 2012). By the last resolution was adoption by the GA had three main elements which is: (1). Through PAROS, the world can avert a grave danger for international peace and security, (2). That the current legal regime applicable to outer space, does not in and of itself guarantee PAROS and that three is a need to consolidate and reinforce that regime and enhanced its effectiveness, (3). The conference on Disarmament (CD) should established a working group under its agenda item on PAROS as early as possible (Meyer, 2012)

At 1994 the delegations to the CD committee raised their motion regarding the urgently of new regime to control of arms in outer space, majority of delegates are convinced that is no urgently needed of new legally binding instrument, otherwise the CD committee are suggested they are should examine all relevant treaty regarding this measures, such as the UN Charter, the OST, Moon Agreement, PTBT, ICBM, ENMOD Convention, Etc.

7. ABM Treaty

Treaty Between the United States of America and the Union of Soviet Socialist Republics on The Limitation of Anti-Ballistic Missile Systems or generally known as ABM Treaty 1972. This treaty is governing the limitation of ABM (Anti-Ballistic Missile) by both parties and each parties may only have two ABM deployment areas, yet the deployment areas are reduce to one area. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based (ABM Treaty Art V, 1972).

However, the differences between ASAT and ABM will be questioned, recall function of ABM is similar with ASAT and have its capabilities. The purpose of ABM treaty “an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory” (Office of Technology Assessment, 1985) and ASAT weapon would be prohibited if they were capable to have any counter strategic ballistic missiles. For ASAT which using laser or intercept the satellite by program (Non KE-ASAT) this treaty is not applicable. However the ABM Treaty was terminated by both parties in 2002.

8. Armed Conflict in Outer Space

The importance of military space system is likely to increase in the future, which in turn increases the likelihood that these systems may be targeted (Desgagné, 2015). There is no doubt if IHL will applicable in outer space if there’s any inappropriate measure such as attack from a state to another states. Since the first this paper clearly mentioned regarding establishment of the U.S space force as part of their military system, in this regards military system cannot be divorced by any military activities on the Earth eventually. Space force we can say as *jus ad bellum* in this matter. However, if we’re looking to the most common reference such as Additional Protocol or any other legal instrument regarding law of war, no one mentioned space as their scope, these law just only mentioned land, water and air (Aoki, 2017). In this particular issue does no one legal instrument prohibited or avoid war which might be have collateral damage? In this regards Prof Aoki mentioned that AP I still can be used in several ways, such as if the conflict had direct impact to the Earth which causing fatality or injuries to the population on the Earth, or the effect causing un-direct impact such as navigational, telecommunication satellite being targeted and destroyed which population on the Earth cannot enjoying GPS and telecom system any further, AP I can possibly applied. Furthermore, based on ILC draft regarding which *Lex* will be using during conflict the OST or IHL, the answered undoubted IHL will be applied in such manner as *Lex Specialis*.

Applicable of IHL will straight forward if there’s any casualties to the land and civilian, in this particular albeit, IHL itself never mentioned regarding outer space (Mr. Richard Desgagné in his speech “In the ICRC’s view, there is no doubt that IHL applies to outer space warfare. Customary IHL rules on the conduct of hostilities apply to all means and methods of warfare, however and wherever used. In its Nuclear Advisory Opinion, the International Court of Justice indeed recalled that the established principles and rules of humanitarian law applicable in armed conflict apply “to all forms of warfare and to all kinds of weapons”, including “those of the future”) we shall refer to Article 49 of AP I which says: “the provisions of this Section apply to any land, air or sea warfare which may affect the civilian population, individual civilians or civilian objects on land. They further apply to all attacks from the sea or from the air against

objectives on land but do not otherwise affect the rules of international law applicable in armed conflict at sea or in the air” (Additional Protocol I, 1977). Currently, there are no specific rules within humanitarian law dealing with armed conflict in outer space. However, fundamental principles reflecting aims and objectives of humanitarian law, which are generally applicable to conventional wars, should similarly apply to armed conflict in outer space. Such principles include the limitation principle, distinction principle, and proportionality principle. This is confirmed by the ICJ that “the submission of the exercise of the right of self-defense to the conditions of necessity and proportionality is a rule of customary international law (Zhao & Jiang, 2019). However, IHL will not be applicable if space object is indicated “dual-use” purposes. furthermore in IHL had a protocol as guidance during international armed AP I was changed into international customary law which is the law can be applied in such of any manner as possible.

Conclusion Remark

KE-ASAT test in this matter does not make any advantages to ASAT countries or to the world. Whether the *Corpus Iuris Spatialis* is not prohibited on ASAT development and test however there are many agreements has been made to conduct and to govern weaponization of outer space. indeed these agreements are not enough yet to prevent current test. “common heritage of mankind” and “peaceful use purposes” are the main idea in the spirit of exploration of outer space according to the U.N. Charter. Nevertheless, these principles will be hardly questioned today because developed states have a giving sign they want to “conquered” outer space for their own benefit.

ASAT test, since the very beginning of this paper, to raise awareness of the bad impact on outer space. ASAT test since early 1970 has generated tons of debris which causing damage on active satellite and disadvantaging other countries. Based on science data, debris objects within largely than 1Cm is enough to causing technical troubles to active satellites, because the speed of objects movement on outer space is tremendously fast. Based on this fact ASAT test which generated debris should be considered to be restricted in the future such as KE-ASAT. As for example, the ABM treaty is a quite efficient and effective treaty to reduce BMD which may include ASAT, we must believe through such this treaty ASAT test could be reduced in the future. One of the solutions is made a treaty which focused to reduce and restricted the number of ASAT test system, however, the real obstacle is in political stage, do ASAT countries are willing and able to reach this concern.

Beside on disadvantage result from KE-ASAT test, we need also to consider about “global security” or “space security”. India as this paper mentioned, has successfully conducting KE-ASAT based test on March 27,

2019, has to escalate more tensions between “space power” countries. The U.S. and China are not “happy” with this kind of successfully test by India. It would be triggering those countries to develop more sophisticated ASAT. This is the same situation when China successfully tests its KE-ASAT in 2007 and a year later the U.S. showing its capabilities to counter China action. Albeit, this current situation has not to turn into space war, but we have noticed ASAT is largely possible to be use as a weapon during “Space War” in the future. By this analysis, this paper proposed and pursue to the “space power countries” to make a multilateral agreement to limits and to restrict on ASAT development particularly KE-ASAT basis and its test with three major point should consist in its agreement, such as; [1] all parties member shall ensure not to deploy or launch their KE-ASAT without any permission from UNOOSA (United Nations Office for Outer Space Affairs) to ensure space and human safety causing from KE-ASAT debris, [2] all parties member have to permission if they want to test their KE-ASAT system by giving specific data to the UNOOSA and [3] all parties members should act to monitoring KE-ASAT development and test. Future generation in much important to be protecting rather than “national ego”.

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