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Common security in outer space

Envisaging an effective arms control regime

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Common security in outer space: envisaging an effective arms control regime

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Abstract

How far the USA's withdrawal from the ABM Treaty and the recent plans for a National Missile Defense opened the door to further militarization of Space? Outer space is an internationalized common area beyond national jurisdiction of individual States. Security in space must therefore be the common security of all States. The concept of common security in outer space leads to a complete ban of active military uses of space and to an arms control regime for anti-missile defense. By applying these clauses to the subject of international security in outer space, the analysis will further draw patient conclusions for the establishment of an effective regime for safeguarding the peaceful uses of outer space.

Introduction

There are few international legal instruments dealing with the military uses of outer space. The ABM Treaty, to a certain extent, was one of them. As its title implies, the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of 26 May 1972, aimed at "ending an emerging competition in defensive systems which threatened to spur offensive competition to still greater heights"[1]. The Treaty permitted each side to have one limited ABM system to protect its capital and another to protect an ICBM launch area[2]. It prohibited development, testing, or deployment of sea-based, air-based or space-based ABM systems.

Throughout the 1960s anti-ballistic defense was essentially planned to be land-based. It was thus confined to intercept incoming missiles during the last phase of their flight path. The ABM Treaty furthermore so restricted and so located ABM deployment areas that they could not provide a nation-wide ABM defense or become the basis for developing one. Each country thus left unchallenged the penetration capability of the other's retaliatory missile forces.

Since the 1970s a number of delegations from around the world have submitted proposals to the various United Nations *fora* to create special treaty rules that would ensure the peaceful uses of outer space, fill the gaps of the Outer Space Treaty regarding new military uses of outer space, and eliminate the existing legal uncertainties in securing outer space for the benefit of mankind[3]. In addition to confidence-building measures and immunity rules for civil space uses, the proposals concentrate on an explicit prohibition of active military uses of outer space through an express space weapons ban, in particular of ASAT (Anti-satellite weapons) and BMD (Ballistic Missile Defense) weapons. In the CD's Ad Hoc Committee on PAROS (Preventing an Arms Race in Outer Space), it was hoped that by agreeing first on confidence-building measures, it would be easier to win subsequent US support for specific treaty rules on the prohibition of space weapons.

To date, the proposals submitted in this regard range from those containing specific additional rules for the Outer Space Treaty, to comprehensive drafts for a separate treaty on the peaceful use of outer space. After the USA's withdrawal from the ABM Treaty, December 13th of 2001, opened the door for the militarization of outer space. This article's aim is to examine if it is the time for a new regime about common security in outer space and especially for an effective multilateral arms control regime for space weapons.

Passive and active military uses of outer space

In order to asses an acceptance of current, or future, military uses of outer space, including new forms of military uses such as the deployment of space weapons, it is necessary to distinguish between military uses that are passive and non-destructive versus those that are active and destructive. This distinction appears in state practice, international law, as well

[1] *Arms Control and Disarmament Agreements. Texts and histories of negotiations*. Washington DC: US Arms Control and Disarmament Agency, 1982, p. 132

[2] Subsequently further limited to a single ABM system on each side by a 1974 Protocol to the Treaty.

[3] Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 131

as in the international security and arms control literature. However, this distinction is related to the greater debate about the interpretation of the term "peaceful" as "non-aggressive" or "non-military". Professor Ilias Kuskuvelis in a study published in 1988, substantiated that the term "non-aggressive", in the field of space law, is the appropriate one as it encompasses the military uses of some certain satellites or analogous activities in outer space (e.g. military tests, collecting intelligence)[4].

>From a point of view passive military space systems are not weapons themselves, but are used to enhance military systems below. Reconnaissance, early warning, communications, navigation and other satellites allow for effective use and coordination of aircrafts, tanks, missiles, ships etc.[5]. At variance, active military use of outer space would be every use of a space object that was designed or modified specifically for the purpose of inflicting permanent physical damage on any other object through the projection of mass or energy[6]. This definition is based on previous Canadian papers for space weapons in the Ad Hoc Committee on the Prevention of an Arms Race in Outer Space at CD[7].

According to the above we could summarize as a space weapon a device stationed in outer space (including Moon and other celestial bodies) or in the Earth environment designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in outer space, or a device stationed in outer space designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in the Earth environment. Any other device with the inherent capability to be used as defined above will be considered as a space weapon[8].

The position of United States differentiates between offensive and defensive space weapons. This, however, runs into the argument that the offensive or defensive use is a matter of the underlying strategy rather than objective capability. With a view to the question of the permissibility of the military uses of outer space, such a distinction is not helpful as every weapon can be used defensively or offensively. Nevertheless, a space weapon is surely an active military space system.

Current military uses of outer space

Outer space was conquered by military means and for military purposes. According to SIPRI more than 70% of all satellite launched in outer space served full or partial military purposes[9]. Today it is generally recognized the legality of using satellites in outer space for military purposes. The limited ABM and ASAT systems developed in the 1960s and 1970s by both space powers in accordance with the ABM Treaty did not contain space-based components[10]. These systems included the anti-missile rockets tested and temporarily deployed (land-based) by the United States, the air –based ASAT system as well as the ABM system with nuclear warheads around Moscow.

The acronyms NMD, BMD and ASAT systems are often used interchangeably for defense systems against strategic ballistic missiles. In Art. II of the ABM Treaty, 26 May 1972, ABM systems are defined as "a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of: (a) ABM interceptor missiles, which

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[4] Kuskuvelis I., *The Method of Genetic Effectiveness and the Future of the Military Regime of Outer Space*, in Zwaan T.L., Vries W.W.C., Tuinder P.H. de and Kuskuvelis I.I. (eds), *Space Law: Views of the Future, International Institute of Air and Space Law*, Kluwer, Deventer 1988, p. 101, Also see: Chadjiconstantinou C., *The weaponization of Outer Space: From the view of Public International Law*, Paratiritis, Thessaloniki 1984, p. 57-69

[5] Steinberg G,. *The militarization of space: From passive support to active weapons systems, Futures*, October 1982, p. 379

[6] Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 31

[7] see: CD/1487, 21 January 1998

[8] Jasani B., *Outer Space-Battlefield of the future*, SIPRI, Taylor & Francis, London 1978, Also, Jasani B., *Peaceful and Non-peaceful Uses of Space*: *Problems of Definition for the Prevention of an Arms Race*, Geneva 1991, p. 24

[9] Jasani B., *Peaceful and Non-peaceful Uses of Space: Problems of Definition for the Prevention of an Arms Race*, Geneva 1991, p. 39

[10] Gibson R., The history of international space programs, *Space Policy*, no. 23, August 2007, p. 155

are interceptor missiles constructed and deployed for an ABM role, or a type tested in an ABM mode; (b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and (c) ABM radars, which are radars constructed and deployed for an ABM role, or a type tested in an ABM mode"[11].

Anti-missile systems were temporarily deployed by United States, such as, Nike-Zeus[12] system equipped with nuclear warheads, which the US decommissioned in 1975, and the Soviet ABM-1b/Galosh (US name) system[13]. The ABM Treaty allowed both sides two ABM locations, one for the protection of the capital and one for the protection of an intercontinental ballistic missile launch-site while prohibiting a "nationwide missile defense". The US only deployed an ABM system to protect the Grand Forks missile launch-site, which was decommissioned already in the mid-1970s[14].

Air-based ASAT system was the so-called "air-launched miniature vehicle system". An example of the former is the US F-15 aircraft launched ASAT warhead propelled by a short-range attack missile (SRAM)[15]. In the 1960s both sides temporarily entertained plans to use space weapon systems in two ways: as an "orbital bombardment system", which would be deployed in orbit[16] and as a "fractional orbital bombardment system", which would be deployed only at the beginning of a conflict and detonated in the target area before completing a full orbit[17]. FOB's were inaccurate, more expensive and destabilizing since they could surprise the opponent's defenses: their launch would be similar to a space launching, and could attack unexpectedly from a different direction (e.g. from the south, unlike ICBM's, which come from the north)[18].

At the beginning of 1980s the Soviet Union was believed to possess two land-based lasers at its missile centre in Sary-Shagan that did not have space-based components, but did have the capability to damage satellites in orbit.

Possible military uses of outer space

The former Soviet Union and today's Russia, the United States and probably also China maintain long-lasting basic research programs for lasers and particle beams that could be

[11] Chadjiconstantinou C., *The legal dimension of Star Wars*, Paratiritis, Thessaloniki 1988, p. 48. TMD (Theatre Missile Defence) systems are defensive systems against "theatre missiles" or "tactical missiles". In the US-Russian Demarcation Agreement of 26 September 1997 concluded according to Art. VI (a) of the ABM Treaty in order to clarify the delimitation between permissible and non-permissible missile defence systems, "tactical missiles" are defined as ballistic missiles with a range of less than 3.500 km. In this article, the acronym NMD is used, when the vantage point of a nation-wide defence against strategic missiles is emphasized or when reference is made to specific former or current US plans named NMD. When reference is made in a more general way to missile defence against strategic missiles, the acronym BMD or ABM is used.

[12] The so-called "Sentinel" system in 1967. Also, the United States had installed temporarily the Nike-X (1960) and the "Safeguard" system equipped with Spartan missiles in 1975.

[13] The ABM-1b/Galosh system comprises 120 land-based ABMs to protect the city of Moscow.

[14] Carter A. & Schwarz N., *Ballistic Missile Defense*, The Brookings Institution, Washington D.C., 1984, p. 132

[15] The aircraft and missile part of the system was tested on January 1984. The first flight of the warhead was conducted on November 1984. Although, the warhead was not aimed at a specific target, its infrared guidance system was tested against a star. Jasani B., *Space Weapons, Space Policy*, May 1985, p. 165

[16] Ogunbanwo G., *International Law and Outer Space Activities*, Nijhoff, The Hague 1975, p. 98

[17] Only the latter type of the system was temporarily put in service by the Soviet Union without implying a permanent deployment of weapons in space, and it was soon given up. See: Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 32

[18] Kuskuvelis I., The *Method of Genetic Effectiveness and the Future of the Military Regime of Outer Space*, in Zwaan T.L., Vries W.W.C., Tuinder P.H. de and Kuskuvelis I.I. (eds), *Space Law: Views of the Future, International Institute of Air and Space Law*, Kluwer, Deventer 1988, p. 100

developed in futuristic weapon systems[19]. Until now formally two new kinds of weapon systems are primarily envisaged in addition to the upgrading of the space-based sensor satellites being tested and partially already developed[20]. As ASAT or BMD systems, they could be used against targets in space, but also, depending on the construction and specific modifications, against targets on Earth.

Space weapons can be divided into two basic groups- directed energy and kinetic energy weapons. Directed-energy weapons are space-based lasers which considered to be possible weapons for both ASAT and BMD systems, and more recently though of in terms of supporting conventional warfare on Earth. The advantage of space-based lasers lies in the fact that they are not subject to distortions caused by the gravity or by the Earth's atmosphere. Finally, a space-based BMD laser turned through 90 degrees would threaten more easily a relatively soft satellite in its known orbit[21].

There is a distinction between short and long-wave lasers. Chemical long-wave lasers must be deployed in space due to their radiation characteristics. Short-wave lasers (excimer and free-electron lasers)[22] need to be based on land, as they currently require large-scale energy supply systems. X-ray lasers, a particular class of short-wave lasers, have a special significance in that they are nuclear powered. For that reason these laser weapons are prohibited to be put in orbit due to there are a kind of "weapon of mass destruction" (if someone assumes that the nuclear energy supply seems to be giant nuclear bomb)[23]. Directed lasers would hit enemy targets at the speed of light with energy sufficient to destroy enemy missiles and warheads or to cause satellites to become dysfunctional. In 1981, the US Lawrence Livermore National Laboratory, under the direction of the father of the hydrogen bomb and staunch SDI supporter, Edward Teller, tested an X-ray laser with an underground nuclear explosion. The US high-energy laser program is currently pursuing the development of a powerful chemical laser in the framework of the Alpha project[24]. In addition, within the Large Optics Demonstration Program large revolving crystal mirrors are developed which should be able to direct laser beams from land or space-based laser stations onto target[25].

Another type of directed-energy weapon is the high power microwave beam. In contrast to laser weapons, the target is not destroyed from the outside (i.e. "hard-kill") but rather from the inside (i.e. "soft-kill") through high-energy atomic particle beams that overheat the insides of the target. A further type of particle beam weapons is the so-called "radio-frequency weapons", which would be directed against the electronic infrastructure of the adversary and would be deployed in geosynchronous orbit. Such a device is often referred to as a non-nuclear Electromagnetic Palm (EMP) weapon[26]. The concept of radio-frequency weapons requires the use of large-scale antennae able to direct the frequency beam onto target either in space or on Earth. Since antennas of 100 meters in diameter would be necessary for this type of weapon, an alternative variant is he use of "virtual structures" where hundreds of mini-satellites if formation would act together. Considering the hurdles in orbital antennae technology that must be overcome before space-based directed-energy weapons are feasible, it is unlikely that such systems can be fielded until the cost of routine access to space is reduced to the point that extensive experimentation can be undertaken. The chances of successfully developing such systems are potential as weapons against the electronic platforms of the enemy makes them nevertheless an attractive option in military theory.

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[19] Wolter D. Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 32

[20] Carter A. & Schwarz N., *Ballistic Missile Defense, The Brookings Institution*, Washington D.C., 1984, p. 174

[21] Jasani B., Space Weapons, *Space Policy*, no. 2, May 1985, p. 164

[22] While an excimer laser is related somewhat to chemical lasers (it depends on a reaction between two atoms), a free-electron laser depends entirely on the conversion of the kinetic energy of a beam of electrons into a laser radiation. Ibid., p. 173

[23] Ibid., p. 174

[24] Robinson C., Advance made on High Energy Laser, *Aviation Week & Space Technology*, February 1983, p. 25

[25] Hitchens T., Katz-Hyman M. & Lewis J. (eds), US Space Weapons: Big Intentions, Little Focus, *Nonproliferation Review*, vol. 13, no. 1, March 2007, 40-41

[26] Jasani B., Space Weapons, *Space Policy*, no. 2, May 1985, p. 175

The second kind of space weapons are the so-called kinetic energy weapons or impact weapons. These weapons consist of interceptor missiles fuelled by chemical reactions of a multitude of smaller projectiles propelled by electromagnetic canons. Their destructive effect is achieved through direst collision with the target. In the form of interceptor missiles, they must be deployed in such a way that they can reach the target in space. Classic ABM interceptor missiles have been developed for extraterrestrial launches in the framework of "Homing In Overlay Experiments" whereby attacking warheads are intercepted (homing in) during their flight above the atmosphere (overlay) and destroyed by the kinetic energy caused by the impact of the interceptor projectile[27]. The enormous speed of space flight objects (7-8km per second for a satellite in near-Earth orbit) poses a tremendous challenge for kinetic weapons. In outer space kinetic energy weapons derive their destructive power from the speed of their target and the force of the resulting collision. Used against targets on Earth, the destructive impact would have to be obtained from the speed of the kinetic projectile itself. Using electromagnetic forces, two types of electromagnetic guns are being investigated: the so-called mass driver and electromagnetic rail gun[28].

A considerable disadvantage of kinetic energy weapons is that a very large number of them are most likely needed to destroy a single target. For this reason and for reasons of reaching a target at long ranges in the shortest time possible, directed-energy weapons potentially offer the best solution. In the framework of SDI, there were plans to deploy hundreds or even thousands of self-targeting interceptor missiles in space. Later, under the Global Protection Against Limited Strikes (GPALS), which succeeded the SDI, work on kinetic energy weapons continued under the rubric of "brilliant pebbles", especially in view of the still considerable technological challenges presented by laser weapons[29].

Recently the United States has been reconsidering the option of equipping interceptor missiles with nuclear warheads, as the tests carried out with weapons rely on kinetic energy or conventional warheads have shown too many difficulties due to the numerous possible effective counter-measures (i.e. decoys)[30].

Finally the use of sensor satellites plays an important role in the NMD plans of the former W. Clinton and the current G.W. Bush Administrations. According to official US statements up until mid-2000, sensor satellites were the only space-based components of US deployment plans. For this purpose the developing and upgrading of existing satellites with the most modern sensor and infrared technology is planned. The space-based sensor satellites would be equipped with highly sensitive infrared sensors and laser acquisitions and pointing systems for early recognition, friend-foe identification and targeting. They would orbit the Earth in a geostationary position and remain permanently active in order to recognize enemy intercontinental ballistic missile (ICBM) launches ideally without delay. Reaction time plays a decisive role in defending against a missile attack, in particular in the boost phase, due to the quick travel time of modern ICBM's or SLBM's[31].

Deterrence and space weapons

The Space Regime was created to regulate space activities during peacetime and, in

[27] At a successful test in June 1985 a missile, for the first time, was effectively intercepted by another missile: a Minuteman-1 missile was intercepted by a modified Minuteman-1-HOE missile. The trajectory of the interceptor was chosen to miss the target by several tens of kilometers but it tracked the target from a distance and corrected its trajectory to successful intercept the target. The umbrella like structure of the interceptor 5m in diameter would wrap round the target on impact and destroy it. Ibid., p. 166

[28] Mini projectiles can be accelerated to an extreme speed by the electromagnetic canon ("rail gun") deployed in space-up to more than 20km per second. Ibid., p. 166

[29] Hecht J., *Beams weapons: The next arms race, Plenum*, New York 1984, p. 124, Also see: Cady S., Beam Weapons in Space, Air University Review, vol. 33, May 1982

[30] Chadjiconstantinou C., *The legal dimension of Star Wars*, Paratiritis, Thessaloniki 1988, p. 28

[31] Submarine Launched Ballistic Missile (in the case of an SLBM, the boost phase is very short-especially if a strategic submarine, such as Trident, project a missile from Arctic Ocean the response time is negligible).

particular, the security relations of the superpowers[32]. The international relations between these space powers during the Cold War were based on deterrence. The "balance of terror" was the main policy led to stability (at least in terms of "negative" peace) and the avoidance of war. Deterrence is about the role of threats in international affairs, and in particular threats of force, intended to stop others acting in harmful ways[33].

We are at the third phase of military space technology. At the first phase, the ballistic missiles use outer space as a corridor of unhampered attack. At the second one, the reconnaissance satellites disappears the adversary's secrets and provided intelligence of the function of his military. At the third phase, space weapons materialize the Star Wars. The development of weapon systems in outer space, generate conditions of increased instability and it is doubtful if in at an arms race for military domination in outer space, someone of the space powers tolerate for a long time the other's superiority, considering that the vulnerability of space systems would constitute an additional motive for a preventive strike making a nuclear war inevitable[34].

During Cold War there were four factors that would be possible to undermine the stability of mutual nuclear deterrence. The first factor was the pressure of an arms race (in our case an arms race in outer space); the second one was the technological development of destabilizing systems (counterforce- especially the development of antiballistic or anti-satellite systems), the third factor was the worsening of relations between superpowers and finally the proliferation of nuclear weapons. Nowadays the last factor is the most important one[35].

The major interest of superpowers were (and still is) security. In the military sphere, security may be satisfied by achieving military superiority over other states, by prohibiting, military competition through arms control or disarmament. The issue-are of outer space is related to the existence of nuclear weapons systems, thus the security area. The superiority in the nuclear field of the superpowers was the ability to deliver nuclear weapons. The solution was found in the intercontinental ballistic missile (ICBM). An ICBM which could put a satellite into orbit, or traveling through outer space, now can deliver a thermonuclear warhead to its target.

It is often explained that ICBM's are not prohibited because they do not, according to article IV of OST, complete a full orbit (the travel on fractional orbit). This would be correct if the Space Regime was applied in time of war or if we were referring only to the testing of ballistic missiles. The orbiting of nuclear weapons (bomb in orbit) was prohibited, while ICBM's not, because ICBM's were the basis of the security equilibrium and because ICBM's are a more effective strategic system than orbiting bombs[36]. Thus, this strategic excellence of ICBM's strengthens the deterrence than any other weapons on space.

Any other system which is characterized as destabilizing, undermines the nuclear deterrence and so the stability. So, any antimissile system with reinforced capabilities, such as Strategic Defense Initiative, GPALS, National Missile Defense, destabilize the international security since it makes a nation invulnerable. Invulnerability undermines the Mutual Assured Destruction doctrine and as long as the mutual nuclear deterrence (stability)[37]. This is the main reason why these BMD or ASAT systems are considering as destabilizing and their development should be prohibited, especially of the last one.

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[32] Kuskuvelis I., *The Method of Genetic Effectiveness and the Future of the Military Regime of Outer Space*, in Zwaan T.L., Vries W.W.C., Tuinder P.H. de and Kuskuvelis I.I. (eds), *Space Law: Views of the Future, International Institute of Air and Space Law*, Kluwer, Deventer 1988, p. 99

[33] Freedman L., Deterrence: A Reply, *The Journal of Strategic Studies*, vol. 28, no. 5, October 2005, p. 789

[34] Chadjiconstantinou C., *The weaponization of Outer Space: >From the view of Public International Law*, Paratiritis, Thessaloniki 1984, p. 18, 98

[35] Kuskuvelis I., *Deterrence and Nuclear Strategy: Theory of International Relations in Cold War, Poiotita*, Athens 2002

[36] Kuskuvelis I., *The Method of Genetic Effectiveness and the Future of the Military Regime of Outer Space*, in Zwaan T.L., Vries W.W.C., Tuinder P.H. de and Kuskuvelis I.I. (eds), *Space Law: Views of the Future, International Institute of Air and Space Law*, Kluwer, Deventer 1988, p. 100

[37] Krepon M., Moving Away from MAD, *Survival*, vol. 43, 2001, p. 83

As Glaser and Fetter describe, even though the United States is the dominant military space power, it should nevertheless strongly prefer a world in which all of the major powers are secure…In any case the United States has important co-operative programs with Russia, designed to improve Russian control over its nuclear weapons and weapon materials that could be interrupted or terminated if the US pursued NMD…The key argument to the above analysis is that the deterrent and damage-limitation benefits of a highly effective NMD would more than offset the dangers that would flow from increased Russian and Chinese insecurity. We believe that under current conditions this case for nuclear superiority is flawed[38]…

Proliferation of space weapons

President R. Reagan's SDI, launched in 1983, foresaw a "layered" defense system which would engage enemy missiles from boost to terminal phase[39]. In order to effectively fight missiles rising from their silos and during their mid-course flight phase, many parts of the defense system, both for direction and attack, would have required deployment in space. The ABM Treaty basically did not permit such a defense architecture. It implicitly allowed research on other than land-based ABM means; but it explicitly forbade their development or testing[40].

In an announcement which stunned the arms control community, on 6 October 1985 the Reagan Administration declared that developing and testing advances technology, including space-based weapons such as lasers and particle beam weapons, was authorized under the ABM Treaty. According to the Administration, the ABM Treaty placed no restriction, short of actual deployment, on the SDI.

After the demise of the Soviet Union the non-proliferation regime faced a serious problem. The nuclear weapons states aroused to "5+2+1+2"[41], for instance, the P 5 of the Security Council, India and Pakistan, Israel and now North Korea and Iran. Some others are at the threshold and some others had abandoned nuclear weapons (i.e. South Africa). Nowadays, the Weapons of Mass Destruction and their proliferation remain a major threat to peace and a major challenge to the international community.

The 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which was extended indefinitely in 1995, is considered the cornerstone of the global nuclear non-proliferation regime. Some authors propose to be followed the model of NPT, or through of it, in order to be achieved a control regime for space weapons. As it was stated above, the destabilizing role of ASAT and BMD must be eliminated and controlled. One of the vehicles of WMD or ASAT, or even BMD is the rockets. The Missile Technology Control Regime should be enhanced and a most detailed registration regime (in the field of Registration Convention) should be applied in order to safeguard the passive military use of outer space.

The previous experience of prohibition of dangerous weapons such as environmental and chemical give us the most useful guide for a space weapons disarmament procedure. In particular, the ENMOD Convention (1977) demonstrates with the best way the complete disarmament of a destabilizing and dangerous means of warfare[42]. The entry into force in 1997 of the Chemical Weapons Convention (CWC) completed a process that started in 1925, when Geneva Protocol prohibited the use of poison gas weapons. The Convention created, for the first time in history of international arms control, a stringent international verification regime to oversee parties' compliance with treaty obligations. Established for that purpose in the Hague, the Organization for the Prohibition of Chemical Weapons (OPCW).

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[38] Glaser C. & Fetter S., National Missile Defence and the future of US Nuclear Weapons policy, *International Security*, no. 26, Summer 2001, p. 64

[39] Chadjiconstantinou C., *The legal dimension of "Star Wars"*, Paratiritis, Thessaloniki 1988, p. 11

[40] Kries W. The demise of the ABM Treaty and the militarization of outer space, *Space Policy*, no. 18, May 2002, 175

[41] Walker W., International Nuclear Relations After Indian and Pakistani Test Explosions, *International Affairs*, vol. 74, no.3, 1998

[42] Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques. Also see: Chadjiconstantinou C., *The threat and the protection of environment from weapons*, Sakkoulas, Athens 1985, p. 35

Thus, the CWC marked an important conceptual breakthrough in the field of multilateral disarmament, as a possible harbinger of new mentalities. For the first time, a whole category of weapons is to be totally eliminated, on a non-discriminatory basis, under strict international verification, and without hampering the development of the chemical industry for peaceful purposes.

Detlev Wolter suggest a similar regime for the preservation of outer space for peaceful purposes and for a ban of active military uses of outer space a multilateral agreement for the Common Security in Outer Space (CSO) and the establishment of an International Organization for this purpose[43]. Also the Law of the Sea regime foresees about an office for the utilization of the region of the oceans' seabed. Also, according to CHOM principle (Common Heritage of Mankind), outer space is a common property of all mankind over which no nation would be permitted to exercise domination[44]. Professor Costas Chadjiconstantinou mentioned than according to IAEA and the Antarctica Treaty (art. 1), there are some principles that are applied mutatis mutandis to art. IV of Outer Space Treaty. Such principles are 1) peaceful means non-military, 2) the reference to military facilities and maneuvers is explanatory and not thorough and 3) the possibility of use military personnel or material for scientific or other peaceful purposes does not overrule the first principle[45].

Therefore, the problem had two faces. The first is about the proliferation of space weapons (vertical and horizontal) and the other is the proliferation and the space weapons. The first concerns the disarmament of space weapons and the control of this exotic technologies and the second concerns the ability of some states (i.e. the formal nuclear powers), to enhance the non-proliferation regime.

The vertical proliferation of space weapons would lead to an arms race in outer space and to the extraction of resources from the budgets of the space powers in order to run the race. The question of using for development purposes resources released through general disarmament under effective international control has been long debated. The horizontal proliferation is another problem of the general non-proliferation efforts. For example China had reached an advanced ASAT technology and other states with space capabilities have research programs for this purpose. Finally the efforts made for the non-proliferation of WMD are undermined due to the fact that some nations may be deterred from acquiring dangerous weapons as a result, but some others may have adopted unwelcome compensatory plans against such capabilities or are trying to acquire WMD or space capabilities in order to safeguard their national security.

The NPT regime was devised during the Cold War, when non-proliferation was one of the few large enterprises on which Washington and Moscow, as well as their allies, could agree. Another important common interest was the in advisability of initiating space warfare. The strategic forces of the United States and the Soviet Union depended on satellites for their survivability and for executing war plans. Attacks on satellites were therefore widely viewed as being connected to attacks on strategic forces. The international community is at crossroads: either there should be bilateral efforts to control these destabilizing technologies such as ASATs, or there should be multilateral processes in order to safeguard the outer space for the interest of mankind (far away from national dominance) and for a complete disarmament of these exotic technologies.

Common security in outer space

How far are we from a common security in outer space? Is it realistic a common missile defense? And how easy can we reach to a complete ban on active military uses of outer space? When President Reagan surprised the world in 1983 with his suggestion to share the results of SDI with the Soviet Union, and jointly make nuclear weapons obsolete, quite a few considered this to be an exercise in public relations. However, the Unites States indeed

[43] Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 129

[44] See: Art.1, para. 1, of OST 1967, and also, Para. 1 of Principles Declaration 1996

[45] Chadjiconstantinou C., *The legal dimension of "Star Wars"*, Paratiritis, Thessaloniki 1988, p. 58-59, Also see: Coulumbis Th. & Chadjiconstantinou C., *Disarmament and arms control issues*, Paratiritis, Thessaloniki 1989, Chadjiconstantinou C., *The legal regime of Antarctica*, Paratiritis, Thessaloniki 1991

made a concrete proposals at the CD for both sides to open their research laboratories to each other for this very purpose. After the end of the Cold War the defense ministries of the two countries set up a US-Russian Concepts Working Group so that concrete steps towards common security could be envisaged[46]. President Yeltsin's response to President Bush Sr.'s offer to participate in GPALS, the more limited successor of SDI, was probably the more far-reaching step towards envisaging a common defense system.

Jewgwnjil Velikhave, member of the Russian Academy of Sciences, presented a comprehensive cooperative global defense as part of a broad non-proliferation regime, starting first with bilateral then multilateral early warning and verification. The Russian idea that a joint defense system should be put under the aegis of an international organization was viewed by the Unites States with scepticism. In addition, Russia insisted that such a system should not include space-based interceptors or other space weapons.

In early 2000 President Putin referred to his predecessor's proposals as a reaction to the reinforced NMD plans, in suggesting, primarily to the Europeans, to cooperate in the development of a first tactical missile defense system in addition to a global non-proliferation regime for ballistic missile technology[47]. After 9/11th, United States, withdraw from the ABM Treaty because of the terrorist attack, according to article XV of the ABM Treaty. Russia was not surprised but found the reason given for withdrawal not "an extraordinary event to the subject matter of the Treaty"[48]. The Russian response was the denouncement of the START II Treaty. Nevertheless, after the US-Russian "Joint Declaration on the New Strategic Partnership" on 24 May of 2002 and the SOR Treaty[49], an enhanced bilateral cooperation, the things seems to be turned back again. The new plans for a partial anti-missile shield under US-led NATO aegis, made Pesident Putin to withdraw from the CFE Treaty in 2007. Nowadays, Russia threats with countermeasures if Czech Republic or Poland install on their homeland interceptors of the Washington's NMD system.

Proposals for a national or global missile defense

Various proposals for an internationalization of missile defense have been made in the literature, based also on the legal argument that the interest of mankind in the peaceful use of outer space could only be safeguarded through appropriate multilateralization. In this vein, Edward Finch pleads for an "International Strategic Defense Initiative"[50]. According to Finch, if outer space is to be used for peaceful purposes, any measure adopted to pervert the arms race in outer space must apply to all parties, be verifiable and enhance stability and security. Thus, what seems to be needed is an ISDI, which would be used to defend the whole planet, including both superpowers. Scott March has also proposed a joint deployment of the US SDI system and a Soviet BMD system in a cooperative framework, including technology transfer as a means to overcome nuclear deterrence[51].

Particularly with regard to the close link of missile defense and non-proliferation to the new threats concerning the enhanced risks within and from the South, missile defense is no longer a question of a US-Russian duopoly, but rather concerns the entire world. This has led to proposals for a jointly developed defense system under the aegis of the United Nations. For outer space the requisites for non-proliferation are particularly acute given the dual-use capabilities of most of civil space technologies. For this purpose Olivier de Saint Lager combines the general considerations of space law and the security and arms control

[46] Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 142
[47] Ibid., p. 143
[48] Kries W., The demise of the ABM Treaty and the militarization of outer space, *Space Policy*, no. 18, 2002, p . 176
[49] On 24 May 2002, United States and Russia concluded the Strategic Offensive Reduction Treaty, also known as Moscow Treaty; in order to reduce the level of deployed nuclear warheads between 1700 and 2200. The Treaty will be remain into force until 2012 and is possible to be expanded or replaced according to the contractors.
[50] Finch E., *Magna Carta of Outer Space and the Strategic Defense Initiative*, Proceedings from the 30th Colloquium on the Law of Outer Space, 1988, p. 310
[51] March S., *The Strategic Initiative Debate: An interdisciplinary approach*, Proceedings from the 28th Colloquium on the Law of Outer Space, 1986, p. 89

rationale, and suggest setting up a world space organization[52]. In the same wavelength Detlev Wolter, suggest in that a new treaty about Common Security in Outer Space should be negotiated as soon as possible, in a multilateral level[53].

Proposals for a ban on active military uses of outer space

Many proposals for a comprehensive ban of anti-satellite weapons and BMD in outer space (space based components) have been made since 1970. The proposals concentrate on an explicit prohibition of active military uses of outer space through an express space weapons ban, in particular of ASAT and BMD weapons. The best place for such proposals was the Conference on Disarmament and especially the CD's Ad Hoc Committee on PAROS.

The best proposals made form Italy since 1968. In 1979 Italy submitted a draft for such an additional protocol to Outer Space Treaty to the CD. The draft is based on the distinction between passive military uses, which should continue to be permitted (explicitly Art. 1, para. 2 of the draft with regard to verification satellites), and active military uses of a destructive nature in outer space, which were to be explicitly banned. Several other states have supported this proposal with equal in number variations about the new regime (verification matters, etc.). Other states have considered the easiest and more feasible solution to be the extension of the prohibition on the deployment of WMD in outer space, as stipulated in article IV of OST, to cover any type of space weapon through the inclusion of the phrase "any kind of weapon" to the Treaty's phrasing in paragraph 1[54]. However, such a prohibition would not safeguard the complete demilitarization of outer space as it would left the ground open for fractional trajectories of objects that are not constitute (i.e. mirrors in outer space as a part of a land-based laser, or the so-called "Rods From God[55]"). Thus, the Italian proposal contains more outright motions about a real disarmament on outer space than other proposal.

Both space powers of Cold War have developed ASAT and BMD but without space-based components[56]. None of the proposals have been negotiated in detail since the United States continues to take the position that an arms race in outer space is not imminent, and that additional multilateral treaty stipulations on the military use of outer space are not necessary. Soviet Union/Russia despite the fact of having developed ASAT supports initiatives for a ban of space weapons. In early 2000, Russia, China and Canada tabled new working papers at the CD, where they reconfirmed their previous proposals for a prohibition pf space weapons and additional confidence-building measures, and adapted them to the most recent developments[57].

The European states, while demanding the re-establishment of the Ad Hoc Committee on PAROS and recalling their previous draft treaty proposals, have not undertaken new initiatives. In contrast Czech Republic and Poland are contracting agreements about the installation of land-based components of the BMD, the so-called National Missile Defense system, of United States. These initiatives could destabilize the regional and afterwards the international security, due to Russia's opposition to any installation of such a system in Europe. Russia suggests that a BMD system could be deployed in Azerbaijan, as it fulfils the characteristics for a defense of ICBMs coming from the South (especially from Iran).

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[52] Lager de Saint O., *Should there be a World Space Organization*?, Proceedings from the 34th Colloquium on the Law of Outer Space, 1992, p. 339

[53] Wolter D., *Common Security in Outer Space and International Law*, UNIDIR, UN Publications, Geneva 2006, p. 147

[54] Ibid., p. 131

[55] "Rods from God" is an immiscibly envisaged space weapon as it has the ability to project rods made of titanium down on Earth. This weapon is characterized as kinetic energy weapon due to the fact that its destructive effect is achieved through direst collision with the target. It reaches the earth's surface with 7.200km/h and hits like a comet. The development of this weapon is still in springtime.

[56] At the beginning of 1980s the Soviet Union was believed to possess two land-based lasers at its missile centre in Sary-Shagan that did not have space-based components, but did have the capability to damage satellites in orbit. United States also developed land and air-based ASAT. *as it mentioned above*.

[57] Ibid., p. 134-135, see also ibid., p. 67-74

Conclusion

The ABM Treaty has not helped to avert an arms race in outer space. While it has no practical relevance where possible space-based BMD weapons are concerned, with regard to ASATSs the Treaty has failed to seize the opportunity to constrain a development which will lead to military conflict in outer space sooner or later. United States withdrawal from it does not change that fact.

For the time being, there are no weapons deployed in outer space. The military uses of outer space are limited to those of a passive quality by satellites without destructive effect. However, after Washington's plans about a national missile defense (with regional installations of such a defense system), there is an increasing possibility of a drift towards active military uses of outer space, which could spur an arms race, should space weapons be deployed. The international community has from the very beginning of such plans raised serious objections, referring to the mankind clause in Art.1, para. 1, of the Outer Space Treaty. The space powers have been repeatedly called upon within the CD and the United Nations General Assembly to refrain from any action that could lead to an arms race in outer space, asking them in particular to refrain from any active military uses of outer space.

In the age of proliferation of destabilizing technologies, such as ASATs and global BMD, there is an urgent need to rethink about an enhanced non-proliferation regime (disarmament) that safeguards the new insecurity environment. According to ASATs, these weapons must be prohibited in a manner similar to chemical weapons (or environmental warfare). The disarmament regime of chemical weapons is a model that could be followed in the field of ASATs. With reference to BMD, this is a matter of arms control and a security dilemma too. A homeland missile defense is not a strategic solution as it safeguards a limited defense only from unauthorized and accidental missile attacks and attacks in violation of non-proliferation regimes. A regional missile defense, in the field of NATO, could destabilize the regional security and could lead to an arms race in the region of Euro-Asia due to the fact of the dual use of this missile system (it can be used for offensive purposes too) and also because undermines the strategic doctrine of offence. Finally, a global missile defense system would be preferable (if not unnecessary) as it diverts the insecurities both of the space powers.

The resulting outcome in attempting to develop a new regime will demonstrate how much credence the space powers are willing to assign to the "rule of law" in question to international security. It will also show whether the objective of the OST to reserve the common space exclusively for the use in the interest of mankind can be preserved or whether instead it has to accommodate the unilateral control and use in the interest by one or a few states.

It remains to be seen whether a unipolar system will be equally as effective in controlling proliferation or refraining from space warfare, but the early returns are not encouraging. The international community is at crossroads: either the very basis of the structural change of non-proliferation regime, with regard to proliferation of space technology, will undermine the stability, or an unbridled power rivalry to expand into outer space will erupt. Even at the height of the Cold War, both space powers respected the peaceful purpose standards in the use of outer space. It would be an irreparable setback for the international community to now lose the disarmament and arms control experience, and risk having space become the new arena for an arms race for the sake of unilateral military "space control" ambitions and the transgression towards active military uses of a destructive nature.

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