

THE LEGALITY OF SPACE WEAPONS IN INTERNATIONAL LAW

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Abstract

The current legal literature on space security raises the need for introducing legal solutions, in different ways and proposals, to the dangerous race of armaments in the field of outer space. Having in mind the complexity of this topic and the very delicate issues it involves for the space powers, this paper will be addressing the legal aspects of space weapons on the basis of the principles underlying space law and international humanitarian law. Useful tools may be found for this purpose. On the one hand, international humanitarian law refers to the principles of distinction and proportionality. On the other, important rules are now in force applicable to space activities. An analysis of the various 'space weapons' from the point of view of the above-mentioned principles will assist the author in establishing whether the deployment and use thereof is unlawful under contemporary international law.

Introduction.

Resolution 56/23 of the General Assembly of the United Nations, following the report by the First Committee is divided into two fundamental premises for the subject matter under study. The first states "*the importance and urgency of preventing an arms race in outer space*".¹ The second recognizes "... as Stated in the report of the Ad Hoc Committee on the Prevention of an Arms Race in Outer Space, the legal regime applicable to outer space does not in and of itself guarantee the prevention of an arms race in outer space".²

These assumptions are supported both by States and by scientists coming from the academic world.³ This paper, however, attempts to inquire into the legality or illegality of space weapons in the *status quo*.

In simple terms, is it valid to ask ourselves whether the law can provide a political solution? Is it legally permissible to use space weapons?

To answer this question we shall first analyze the difficulties involved in the concept of space weapons. Once we have overcome this first hurdle, we will highlight the different

kind of space weapons. Then we shall highlight the limitations of the current space law in preventing a future arms race in space. Finally, we shall use the classification of space weapons, as starting point, for analyzing their legality. To this end we shall consider two basic principles of international humanitarian law, namely the principle of distinction and the principle of proportionality as applied to space weapons.

Discussion

(a) The concept of space arm.

It should be initially noted that there is no consensus on what should be understood by space weapons. Basically there are two definitions of this concept; one that could be termed restricted, and a broader one. For example, the restricted concept of the term space weapon is used in a proposal of an international treaty drawn up by the Democratic Republic of China and the Russian Federation. The project considers the term weapons in outer space as: *"... any device placed in outer space, based done any physical principle, specially produced or converted to eliminate damage or disrupt normal function of objects in outer space, on the Earth or in its air, as well as to eliminate population components of biosphere critical to human existence or inflict damage to them"*.⁴

The broad sense of the term would also include any weapon that can produce its

effects in space. In this sense it is understood that *"a weapon is a device stationed in outer space (including the moon and other celestial bodies) or in the Earth's environment designed to destroy, damage or otherwise interference with the normal functioning of an object or being in outer space, or being in the earth environment"*.⁵

For the purposes of this paper we shall be adopting the broad concept. Otherwise we would be leaving aside a very important group of weapons likely to be developed and having a strong impact in space, such as ASATs, as noted, among others, by Hitchens, who defines ASATs as *"the most near-term serious threat to the security of outer space"*.⁶

(b) Types of space weapons.

It is important to describe the different kinds of space weapons since, given their components and their effects, they could be considered prohibited under international humanitarian law and its fundamental principles. First we should highlight the Electromagnetic and Radiation Weapons. As Preston sets *"They have the capacity to impair Electronic circuits by the creation and / or emission of an electromagnetic pulse (EMP) or radiation"*.⁷ A nuclear explosion creates both. EMPs are lethal to unprotected circuits within a very large area, harming satellites several hundred miles from the blast.

Secondly we have the Kinetic Energy and Hypervelocity Weapons. *"This type of weapon simply steers close to its target and blows it up by detonation in the target's vicinity. The explosive kill vehicle is rocket launched to coincide with the same orbital plane as the target satellite"*.⁸

Finally there are the Directed Energy Weapons which include laser and radio frequency weapons. A laser weapon produces an intense beam. Laser weapons can be used to either physically harm the satellite or, simply, to blind a satellite's sensors. *"The most significant characteristic of this class of weapon is propagation of destructive energy at very high speeds ... (from electronic jammers to laser cutting torches)"*.⁹

(c) The limits of Space Treaties

As far as space security is concerned, we could start the normative history with the policy statement from early 1963 which in its fourth paragraph provides *"The activities of States in the exploration and use of outer space shall be carried on in accordance with International law, including the Charter of the United Nations, in the interest of maintaining peace and security and promoting International Cooperation and understanding"*.¹⁰ This principle has a fundamental implication every time it orders the application of general international law and particularly the UN Charter in its application to space. Thus, with

even greater emphasis for having been included in the article III of the Space Treaty, all the rules of the *jus ad bellum* contained in the Charter of the United Nations are applicable, such as the prohibition of the use of force, the role of the Security Council and respect for the right of self defence. Years later in 1967, upon adoption of the Space Treaty, Article IV prohibits *"... to place in orbit around the Earth any objects carrying nuclear weapons and any other kinds of weapons of mass destruction ..."*¹¹ and also declares that *"The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden"*.¹² Much has been said about the meaning of peaceful purposes in article IV of the 1967 Space Treaty. As Freeland says, *"While there is general agreement – but not complete unanimity – among space law commentators that this is directed against “non military” rather than merely “non aggressive” activities, the reality has, unfortunately, been different...outer space has and continues to be used for an expanding array of military activities"*.¹³ Sundahl, for his part, highlights three basic approaches to the interpretation of peaceful purposes: *"Under the first approach, some commentators argue for the absolute demilitarization of outer space. Pursuant to the second approach, the word “peaceful” is treated as equivalent to “non-aggressive”... The third approach also adopts*

the “non-aggressive” definition of “peaceful” but applies a broader interpretation which allows for the use of spaces assets, including satellites, for any action taken in accordance with the UN Charter”¹⁴. The present paper follows the third approach.

While the rules we mentioned do not to close down all possibilities of using space for military purposes, they should not be downgraded since they are probably the best rules that can be agreed upon in terms of security in space, at the time they were drafted. At that time, for example, these rules were useful to prohibit deployment of weapons of mass destruction in space and military use of the Moon and other celestial bodies.

Following Li Daoyu these measures are not sufficient to stop an arms race in space. The author underlines four policy loopholes: “*First, they cannot prevent testing, deployment and use of space weapons other than those of mass destruction in outer space, especially in orbit around the Earth... Second, they do not deal with such issues as the threat or use of force from the Earth (including from land, sea or air) against outer space objects. Third, with the abolishment of the Anti-ballistic Missile Treaty, the international legal system has been weakened and undermined. And fourth, some of existing legal instruments lack universality (e.g. The Moon Agreement)*”.¹⁵

(d) The application of principles of international humanitarian law

In the pre-stage of the development and enactment of a rule effective enough to prevent a possible arms race in space it is useful and, moreover, is the main objective of this paper, to analyze space weapons (or proposals about them) in light of the principles of international humanitarian law. Whereas these principles were developed to govern land, naval and air combat, and given their scope and recognition received, they could very well be applied to the law of outer space. Consequently, we shall hereby analyze two fundamental principles of international humanitarian law, namely the principle of distinction and the principle of proportionality.

The principle of distinction is laid down in Art.48 of the Additional Protocol I to the Geneva Conventions of 1949. It states that: “*In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives*”.¹⁶

The classification of military targets is of utter importance given the wording of Art.48. In this sense we should ask ourselves whether a satellite may constitute a military target.

In fact, the use of space for military purposes has been proven since the 1990's. Thus "Operation Desert Storm" was regarded as one of the first space wars. Likewise, as highlighted by Maogoto and Freeland: "*space technology played an increasingly important role in the military actions by NATO in Kosovo and Serbia in 1999 and by the Coalition of Willing Forces in Afghanistan in 2001. During the invasion of Iraq in 2003, the United States used Global Positioning System (GPS) satellite technology to a significant degree to guide and direct so-called smart bombs to their assigned targets*".¹⁷

This dual use enables us to affirm that these satellites are, indeed, military objects thus meeting the requirement of distinction. An attack of the kind attack is also in line with the obligations arising from Article 52 of the Additional Protocol (Geneva) concerning military advantage. The authors quoted above do not agree with this statement since they understand that an attack would have a devastating impact on a community, country or even a region of the world. In our judgment the economic effects that may result from the attack should not be confused with the devastating effects on the health or life of the civilian population. The former does not rule out an attack, the latter does.

We should not neglect the fact that it will depend on how the attacker neutralizes or

disrupts the signals routed from one satellite for the attack to be legal in light of the principle of proportionality, as will be discussed below.

The principle of proportionality is clearly in Article 51 (5) Issue of Additional Protocol I establishing that "*Among others, the following types of attacks are to be considered as indiscriminate: ...b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated*".¹⁸

In brief there should not be an excessive disproportion between the military advantage obtained from the attack and the incidental or collateral damage.

The principle of proportionality requires that, whoever makes the decision to launch an attack and chooses a military target should have in mind the collateral effects. For the purposes of this paper, we must consider the effects that the destruction of a satellite may entail. This is not a minor issue. The serious risk of space debris that could be generated by the destruction of a satellite has already been proven. Among others, Blount believes that "*In the case of a weapon used against a space based asset, the weapon must also be able to be targeted with discrimination. Assuming that*

the weapon is able to be targeted correctly, the creation of debris could be considered an indiscriminate effect. If a weapon destroys an object in orbit, it is feasible that the resulting debris could cause damage to civilian assets in space".¹⁹

As example thereof reference is made to the amount of space debris originated by the destruction of the Chinese satellite Fengyun 1 C in 2007. On January 11, 2007, China conducted its first successful direct-ascent anti-satellite (ASAT) weapons test, launching a ballistic missile armed with a kinetic kill vehicle to destroy the Fengyun-1C weather satellite at about 530 miles in low earth orbit (LEO) in space. The explosion generated a large amount of space debris. As the experts observe "*this debris cloud (estimated at 950 pieces 4 inches or bigger plus thousands of small pieces) threatens space assets in LEO, according to the Johnson Space Center. The Director of Space Operations at the Air Force said that his staff tracked about 14,000 particles before January 11, and that number increased to about 15,000".²⁰*

Because of this huge amount of space debris, the attack on a satellite of another State should be considered unlawful for not respecting the principle of proportionality generating high risks and losses for other space objects likely to be reached by these small particles. Similarly, its effects will continue over some

time since, at the moment, we do not have the adequate technology to eliminate all effects coming from the explosion.

Space debris is therefore one of the most important threats to space security, alongside with the development of space weapons and near-earth natural objects. In this sense Williams notes that: "*Space debris is an increasing threat to security in outer space. In addition to active satellites – as well as abandoned or inactive satellites – orbiting the Earth, small particles originating from collisions between these objects, known as "second generation debris" imply an extremely serious risk of collision with active satellites, sometimes with untold consequences.*

These small particles, because of their size, cannot be detected from Earth at the present state of the art. They travel at very high speeds (roughly 8km per second) and there are currently tens of thousands of those pieces in outer space".²¹

Along these lines the Canadian government has stressed in a Conference on Disarmament that "*the sustainable use, in a safe way, of outer space by the international community is not compatible with the production of space debris that would result from further testing of anti-satellite weapons. Besides the difficult recovery from the harmful effects in a large scale which result from fighting the first war of*

humanity in space with weapons so destructive and indiscriminate".²²

Final thoughts

The objective of this paper was to review the lawfulness of space weapons in international law. Apart from highlighting the urgent need for legislation in this regard, international law as a whole, and particularly international humanitarian law, contain rules and principles that can be used for answering the unresolved questions concerning the legality of such weapons. While the principles, as such, could be presented as abstractions and thus allow the legal practitioner to argue for or against either position, the principles of distinction and proportionality imply a restraint on the development of space weapons and a reasonable test to judge them by. As discussed in this paper not all space weapons can overcome the test of proportionality. The generation of space debris due to an explosion in outer space and the danger that goes with it is a strong argument to ban a weapon that causes such indiscriminate effects. However, the principles do not exclude the use of any weapon in space. Every State, in exercise of its legitimate right to self-defence, may attack a satellite that was also used for military purposes by another State, using technical means that would simply complicate or disable its operation. If this happens, from land or from an object in orbit, the attack would be absolutely legitimate since it would involve a

clear military objective and would not produce excessive damage according to the military advantage to be obtained with the attack. That is why we do not agree with the position stating that all military activity in space or the development of space weapons or the use of space for military purposes should be banned. On the contrary, the use of technology like GPS to guide a weapon to a specific target, far from opposing international humanitarian law, results in improved the compliance with the requirement of distinction. Similarly, if we do have access to technology enabling to launch an attack on a military target in space, mankind would have no shelter to confront the danger of collision with a NEO. In sum, any future legislation, cannot ignore or fail to insist on the implementation of existing international humanitarian law, particularly its basic principles, in the field of outer space. In international law the *status quo* is not completely static: these guiding principles will no doubt show significant force and be of great use.

¹ UNGA Resolution 56/23, 21st December 2001.

² *Idem*.

³ The report elaborated by the First Committee (A/56/535) was adopted by 145 votes to none, with three abstentions (Israel, Federated States of Micronesia and United States of America).

⁴ China and Russia proposal "*Treaty on the prevention of the placement of weapons in outer space, the threat or use of force against outer space objects*".

⁵ MARSHALL, W et al. (2005). *Space weapons: the urgent debate. ISYP Journal on Science and World Affairs, Vol. 1, No 1. pp-. 20.*

⁶ HITCHENS, T (2008) Russian-Chinese Space Weapons-Ban Proposal: A critique in UNIDIR: *Security in space: The next generation. Conference Report 31 March – 1 April 2008. Page 153.*

⁷ PRESTON, B et al (2002). *Space Weapons. Earth Wars.* Rand. Pittsburg. Page 23.

⁸ MAOGOTO J.K., and FREELAND, S (2007). *The final frontier: the laws of armed conflict and space warfare.* From: *The selected works of Jackson Nyamuya Maogoto.* Available at: http://works.bepress.com/jacson_maogoto/48. Page 31. (last visit 08/26/11).

⁹ PRESTON *op. cit.* Pages 24/25

¹⁰ UNGA Resolution 1962 (XVIII).

¹¹ Outer Space Treaty (1967). Article IV.

¹² Ibidem.

¹³ FREELAND, S (2006). *The applicability of the jus in Bello Rules of International Humanitarian Law of the Use of Outer Space. Forty-Ninth Colloquium on the Law of Outer Space, Valencia 2006.* Page 339.

¹⁴ SUNDAHL, M (2006) *Information Warfare: The legal aspects of using satellites and jamming in propaganda battles. Forty-Ninth Colloquium on the Law of Outer Space, Valencia 2006.* Page 360.

¹⁵ LI DAOYU (2006). *Prevention of the weaponization of and arms race in outer space: an urgent task with no time to delay.* Published in *Safeguarding Space Security: Prevention of Arms Race in Outer Space – Conference Report.* 21-22 March 2005. UNIDIR. Page 44.

¹⁶ Protocol I, Additional to the Geneva Conventions, 1977, Article 48.

¹⁷ MAOGOTO and FREELAND *op.cit.* Page 25.

¹⁸ Protocol I, Additional to the Geneva Conventions, 1977, Article 51 (5).

¹⁹ BLOUNT, P.J. (2008) Limits on Space Weapons: Incorporating the law of war into the *corpus juris spatialis.* *Proceedings of the 51st Colloquium on the Law of Outer Space, Glasgow.*

²⁰ KAN, S (2007). *China's Anti-Satellite Weapon Test, Congressional Research Services.* Available at: <http://www.fas.org/sgp/crs/row/RS22652.pdf> (Last visit 08/28/11).

²¹ WILLIAMS, M (2008) *Safeguarding outer space: on the road to debris mitigation* in UNIDIR: *Security in space: The next generation. Conference report 31 March – 1 April 2008.* Page 84.

²² Working document - *Transparency and Confidence-Building Measures and Treaty Proposals* for a treaty concerning security in space.