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## **SPACE DIPLOMACY: A MECHANISM FOR PREVENTING ASAT SHOW OF FORCE AND HOSTILE OPERATIONS AGAINST FOREIGN ORBITING SATELLITES**

### **Abstract**

With the Space Race becoming a distant memory for most space-faring nations, scientists and legislators would think that humanity currently opts for a more peaceful future concerning space advancements and technology. The hidden purposes of the beginning of the Space Race, however, seem to be forgotten by the international community – if humanity strived toward the dominance of outer space, then what is stopping it from continuing to make various efforts for the same goal in the present? Space diplomacy, for that matter, is considered a tool in the field of Astropolitics in order to improve the international relations, suspicions, indirect hostile threats and political tensions between space-faring nations. Our extraterrestrial environment has never been the same since the Sputnik-era, with multiple satellites, space telescopes and spacecrafts primarily launched in low-Earth orbit, as well as ground-based space weapons. Hence, this paper aims to define ASATs within the classification of space weapons, interpret the necessity of their demonstration as an excuse for practicing space warfare, as well as to analyze the contradictory legal area of ASAT utilization regarding space diplomacy.

**Keywords:** Space, diplomacy, warfare, ASAT, weaponization



## INTRODUCTION

Science diplomacy can be properly described as a general reference to the use of scientific, technological and academic collaborations among countries, regions and societies to address common issues and to build international partnerships. Experts use a wide variety of definitions for this concept, nevertheless, science diplomacy has become an umbrella term that includes several kinds of research-based, scientific, academic and engineering exchanges among nations and societies. Science diplomacy is not new, but it is more important than ever due to the scientific dimension of the current global challenges. No nation-state can tackle any of these challenges alone, thus their foreign policy needs to integrate new tools for a world of increasing scientific and technical complexity. At the same time, scientific values of rationality, transparency, impartiality and universality provide a non-ideological environment that contributes to the free exchange of ideas, helps to underpin a better global governance and build trust between nations. The soft power of science enables participation and diffusion of tensions, thus contributing to innovation, alliances, and peace. (SciTech DiploHub n.d.)

Additionally, with space sciences and technology becoming more prominent among spacefaring nations, it is not unexpected for both scientific and diplomatic aspects to continue promoting international partnership in order to address space-related issues and concepts. When scientists come together for complex multi-national projects in astronomy or physics, their nations devise diplomatic agreements on management and financing. And when political relations between two nations are strained or broken, joint research efforts can give them a way to keep talking – and to build trust. (Twas n.d.).

The concept of *Space Diplomacy*, therefore being originally derived from Science Diplomacy, has been discussed ever since the beginning of artificial satellite launching, in 1955 with the United States' first space policy to “endeavor to launch a small scientific satellite under international auspices, such as the International Geophysical Year, in order to emphasize its peaceful purposes”. However, regarding rocket priorities, quite separate from the International Geophysical Year (IGY), satellites clearly were linked to ballistic missiles and government considerations about the eventuality of humankind in space (National Security Council, 1955a):

*The interference of such a demonstration of advanced technology and its unmistakable relationship of intercontinental ballistic missiles technology might have important repercussions on the political determination of free world countries to resist Communist threats, especially if the USSR were to be the first to establish a satellite. Furthermore, a small scientific satellite will provide a test of the principle of “Freedom of Space.”* (Berkman et al., 2011:21)

Such tendencies dating even before the beginning of the infamous Space Race would only manage to disrupt international relations due to the emergence of hostile and military tensions among space-faring nations would only threaten the stability by the further promotion of conflict and warfare. However, another relevant factor to bear in mind is the fact that there are various national legal regulations concerning outer space affairs. Clear policy differences exist among the major space powers today on the aim of space diplomacy. But

there is widespread agreement on the fact that the status of space governance is problematic. As Indian ambassador Sujarta Mehta explained his country's viewpoint in mid-2012,

*As this global common gets more populated and crowded, and as technology develops rapidly it becomes natural to ask if the current international legal framework on outer space [sic] devised at the dawn of the space age more than three decades ago is adequate to address space security challenges both contemporary and future.*

But India does not want to see the creation of an agreement like the 1970 Treaty on the Non-Proliferation of Nuclear Weapons, which gave a special status to those countries (unlike India) had already tested nuclear weapons before it was signed. India fears, for example, that if ASAT weapons tests are banned in space, it will be forever placed in a "second class" status in space. It therefore speaks of the need for what Ambassador Mehta called legally binding "non-discriminatory" measures. But, then, what are the consequences if all countries insist on their right to conduct harmful kinetic ASAT tests in low-Earth-orbit? These are some of the dilemmas facing diplomats as they consider a new space treaty. (Moltz 2014)

Presuming that "all countries" only refers to space-faring nations due to their scientific and technological development, as well as their economic capacity to financially support the manifestation of ASAT tests, there needs to be an analysis of correlation between the laws of physics and the international regulations of space law, regarding the answer to this not so straight-forward question. Namely, we should ask ourselves whether the term "harmful" refers to potentially hostile international relations among space-faring nations, foreign orbiting satellites and other space objects being destroyed or brought down, or polluting the space environment within the low-Earth-orbit in the process, since it is clear that there are multiple consequences of conducting ASAT tests which possess a fairly destructive characteristic. Therefore, although there might be a possibility to legally allow space-faring nations their supposed right to conduct harmful kinetic ASAT tests in low-Earth-orbit, this dilemma is simultaneously more dependent of technologically-developmental and environmental consequences, rather than legal aspects. Namely, there is a chance for this right to be fairly limited, given the fact that the ease of simply shooting down a national orbiting satellite and its ultimate effects upon the space environment in orbit, which could additionally contribute for the limitation of ASATs utilization, keeping in mind that such actions, of severe enough, may result in conducting international crimes committed by one or multiple space-faring nations. As for the latter considering of a new space treaty, given the fact that the Outer Space Treaty (OST) was officially brought in 1967 and is currently more than fifty years old, therefore allowing its consideration. The Outer Space Treaty, like all international law, is technically binding to those countries who sign up to it. But the obvious lack of "space police" means that it cannot be practically enforced. So a country, individual or company could simply ignore it if they so wished. Implications for not complying could include sanctions, but mainly a lack of legitimacy and respect which is of importance in the international arena. However it is interesting that, over the 50 years of its existence, the treaty has never actually been violated. Although many practical challenges have been made – these have always been made with pars of the treaty in mind, rather than seeking to undermine it entirely. (The Conversation 2017)

This should not be entirely confused with the understating that the OST is not currently facing specific challenges that come with the ever-growing aerospace developments, including the utilization of ASATs. For instance, in 2007 China was thought to have violated the treaty when it shot down one of its own weather satellites with a “ground-based medium-range ballistic missile”. This was seen as “aggressive” by Japan, but since the missiles did not come under the definition of “weapons of mass destruction”, it was found that it did not violate the treaty. There was, however, international outcry because of the debris cloud it caused within the orbit. (The Conversation 2017)

Considering that the OST contains certain loopholes and is facing various challenges originating from the modern issues within space law, it might be less likely for it to actually address the legal dilemmas concerning the utilization of ASATs due to the arising of environmental and technological problems, instead of problems of legal characteristic and background. While nations have managed to successfully destroy or bring down their own registered dysfunctional national satellites by the utilization of ASATs, in order to address such activities toward foreign orbiting satellites and other space objects, it might be useful to revise the concept of the “Freedom of Space” doctrine and analyze whether a proper correlation can be found concerning the assumed politicization of science via ASATs. From before the beginning of the space age, U.S. leaders sought to ensure the rights of free passage of spacecraft anywhere in the world. In a critical document, “*Meeting the Threat of Surprise Attack*,” issued on 14 February 1955, a group of academics, industrialists, and the military, working at the request of President Dwight D. Eisenhower, raised the question of the international law of territorial waters and airspace, in which individual nations controlled those territories as if they were their own soil. That international custom allowed nations to board and confiscate vessels within territorial waters near their coastlines and to force down aircraft flying in their territorial airspace. But outer space was a territory not yet defined, and the United States called for it to be recognized as free territory not subject to the normal confines of territorial limits. “*Freedom of space*” was extremely significant to those concerned with orbiting satellites, because the imposition of territorial prerogatives outside the atmosphere could legally restrict any nation from orbiting satellites without the permission of those nations that might be overflowed. U.S. leaders thought that the Soviet Union might clamor for a closed-access position if the United States was the first to orbit a satellite. President Dwight D. Eisenhower, committed as he was to development of an orbital reconnaissance capability to spy on the Soviet Union as a national defense initiative, worked to ensure that no international bans on satellite overflights occurred. (American Foreign Relations n.d.).

In the modern era, however, the distance between multiple national reconnaissance satellites seems to represent a more relevant issue, rather than the concern of overflight occurrences, as well as a potentially crucial factor regarding the consideration of the “Freedom of space” concept recognized in a different perspective. Namely, it is suspected that the reason for two or more (reconnaissance) satellites being relatively close to each other regarding distance while originating from different countries could indicate “threatening” purposes. For instance, it was recently reported that a Russian satellite has positioned itself uncomfortably close to an American spy satellite in orbit around Earth, leading space trackers to speculate that the foreign vehicle is doing some spying of its own. The Russian

spacecraft is meant to inspect other satellites, and experts in the space community believe it may now be keeping a watchful eye on the secretive US vehicle. But the motivation behind this in-space stalking is still unknown. (The Verge 2020)

The term “uncomfortably close” might indicate that nations that launch orbiting satellites also expect foreign space-faring nations to respect their “space and privacy” during their particular space activities, respectively, while orbiting in the same plane. Regarding such unusual maneuvers, concerns have been raised about what satellites *could* do to one another in space if they got close enough. The Defense Department has sounded the alarm about satellites ramming into other satellites, spraying them with chemicals, or shooting them with lasers in order to destroy them. That kind of in-space warfare hasn’t quite happened yet, but it’s certainly on the radar of the US government. Plus, there isn’t a set protocol about what to do when another country’s satellite gets too friendly. *“One of the big concerns is that we don’t have any agreed rules or norms about how these close approaches should be done,”* says Weeden. *“That means an increased risk someone might get the wrong perception about what’s going on, perhaps even mistaking it for an attack.”* (The Verge 2020)

Regarding identical scenarios, although space-faring nations cannot officially accuse one another of in-space stalking, since such activities are not necessarily perceived as illegal, the speculations as to what could possibly represent the motivation for this, which simultaneously refer to causing severe damages or destruction of the stalked satellite, presume primarily hostile intentions instead of peaceful intentions. Continuously, such allegations are more than likely to result in aggravating international relations, therefore requiring the intervention of space diplomacy in order to attempt to maintain scientific collaborations among space-faring countries in the field of space exploration, as well as addressing such a serious space-related issue in order to build trust. Due to a specific protocol not yet being set in regards to foreign satellites getting too close to an already orbiting national (reconnaissance) satellite, space diplomacy could officially establish a system of rules governing diplomatic occurrences. Furthermore, space law could even potentially determine a specific distance legally recognized in relation to more than one satellite in the same orbit, however, it would be necessary to acknowledge which distances would be internationally perceived as “uncomfortably close”, in the first place. For instance, in the case of Kosmos 2543 and USA 245 previously mentioned, the two satellites range between 150 to 300 kilometers apart at any given time, which essentially makes them neighbors in the vast area of low Earth orbit. Kosmos 2542 *is* slowly drifting away, but it will be within a direct line of sight of USA 245 for weeks or even months. (The Verge 2020)

While the trailing foreign satellite in question does not yet represent a potential object to conduct space-to-space warfare, a more active potential approach could violate the OST in a more realistic manner. Up until now, few and only rather minor issues have arisen in the application of international space law, which would lead to a diplomatic frown. Amongst them are sometimes a lax registration of space objects, but this does not shake the foundations of space law. Neither have astronauts stranded nor have objects which have fallen on Earth not been identified and their return has been requested. One could argue that anti-satellite tests might only require advance consultations to discuss possible harmful interference with other space activities. Does that mean that space law does not need enforcement today or in the future? (Schrogl 2016)

Given that space-faring nations have already conducted ASAT tests independently, which resulted in harming the space environment and international relations, space diplomacy might represent the appropriate method in order to eliminate the possibility for the occurrence of such harmful interferences with other space activities, without them necessarily escalating into international conflicts under suspicions of the potential weaponization of outer space, which still differs from the concept of militarization of outer space, already being conducted and manifested. However, the practice of military uses of outer space in the fields of communication, positioning, remote sensing, electronic intelligence etc. has been conducted in view of the postulate of peaceful uses. But where does military use turn into non-peaceful use? Is it the attack on a space object of another State? (Schrogl 2016)

This question would represent the combination of militarizing outer space simultaneously through the concept of weaponizing outer space, since military and intelligence space object such as national satellites, have been used for peaceful purposes so far. In order to attack a space object of another State, the ultimate utilization of either Earth-to-Space or Space-to-Space weapons would be necessary to conduct such a deliberately hostile action. The militarization of the cosmos involves mainly two types of risk that seem to be interconnected: the first being that of a political nature, concerning relationships between States; and the second dealing principally with the environment (terrestrial and cosmic). In completing this picture, one cannot discount the importance of technological developments, which characterizes the most important activities of any State; being fundamental at the international level for varying outcomes, and essential for the completion of military projects. Given the impossibility of clearly addressing all elements indicated (due to the vast number of States and objectives present in the international context), it would seem necessary to clearly identify the limits to the areas of application on the subject. (Space Legal Issues 2019)

Technological developments regarding space objects and space weapons in relation to the conducting of space diplomacy can be perceived to be analogous to the utilization of science as a tool of diplomacy, given that outer space does not only represents the farthest limitation of a region which is not yet entirely regulated by international space law, but also the farthest limitation of our current scientific achievements and overall understanding in the specific area of space sciences. Namely, space is the final frontier in international diplomacy. When economical, political, military, or even cultural methods fail to build international cooperation and unify a divided world, space cooperation endures. (Diplomatic Courier 2018)

## DEFINING ASATS WITHIN THE CLASSIFICATION OF SPACE WEAPONS

It is no secret that besides the continuous goals of exploring outer space, mankind simultaneously has tendencies to imagine the possibility of its hostile militarization, mainly through the utilization of space weapons. After land, water and air, space became a focus for military use in the 1950s, driven by the rivalry between the nuclear

superpowers, the United States and the Soviet Union. But right from the start, research into military uses was accompanied by efforts to control arms in space. In response to new technological capabilities, such as the potential development of “killer satellites” and other anti-satellite weapons, growing importance has been attached to the conversation on the need to agree space arms control for the 21st century. (Warpp Info n.d.)

Since the Sputnik era, concepts and ideas for legally controlling orbits around planet Earth, but also the desire of one of the greatest space powers to dominate space have inspired the appearance of space weapons – weapons attempted to be used while conducting extraterrestrial warfare. However, the term “space weapon” is not defined within any international treaty, international customary law, or domestic US law. While treaty and customary law do provide some guidance on the legality of weaponization, no comprehensive definition of “space weapon” is provided. *The importance of defining a space weapon cannot be understated; for whoever defines space weapons defines the debate of weaponization.*

The question of what constitutes a “space weapon” is a matter of degree. One can theorize that a broad definition of space weapon would include terrestrial and space-based systems with the capacity to destroy, damage or interfere with a space asset or Earth-based asset from space. Conversely, a narrow definition of space weapon would limit its application to systems in space whose designed purpose is to physically destroy or damage an object in outer space. One of the major difficulties in defining “space weapon” is that many space systems designed for peaceful purposes have the *capacity* to destroy or interfere with another object or being in space or in the Earth environment. (Mineiro 2008)

The concepts of space weapons and the weaponization of outer space are simultaneously intertwined but only by the potentiality of such space weapons actually being utilized in order to damage or destroy another State’s space object. Space weapons include, on the one hand, armed systems like weaponized satellites stationed in space and armed orbital gliders circling the Earth for long periods. Such systems may be designed for space-to-space attacks and/or space-to-Earth attacks. On the other hand, there are Earth-to-space missiles, which must also be classified as space weapons since they could be used against satellites. Land-launched weapons like intercontinental ballistic missiles that are directed at targets on Earth are, by contrast, not normally classed as space weapons, although they do pass through space. Nor do passive systems, primarily satellites, with militarily uses in space count as space weapons, even though they play a key role in military surveillance, communication and navigation. (Warpp Info n.d.)

Putting undefined classifications aside, there are opposing opinions regarding space weapons as technological advancements. Moreover, space law should be able to primarily define “space weapon” in a precise manner, in order to conclude whether ASATs are included in such a legal definition and more importantly, whether the future and deliberately hostile utilization of ASAT aimed to destroy or damage another State’s satellite would even be considered as a manifestation of the concept of the weaponization of outer space;

Senator Charles Robb from Virginia, a member of the Senate Armed Services Committee, feels that developing space weapons would be a “mistake of historic



proportions” because it would trigger an arms race in space. Other states would develop space weapons to counter those of the US. Then the US would have to develop intricate countermeasures. Colonel (Ret, USAF) Sam Gardiner, a war gaming expert, notes that “if you defend the satellite, you widen the war” such that the solution becomes the problem. (Gleason 2002)

Due to the fact that space-faring nations already possess space systems that are capable of causing damage, destruction or interference regarding another State’s space object, the additional development of space weapons would only represent the exaggerated extension of outer space as a national security priority. Forty-nine countries have put 2,732 satellites in space which support military operations in various fashions across imagery, communication, navigation and weather forecasting. The problem is that since the OST did not define peaceful purposes, each country applies its own definition. General Fogelman stated in 2001 that the US has certainly militarized space, however we have not weaponized space. The question is where should the international community draw the line between militarizing and weaponizing space? (Gleason 2002)

In reality, outer space is already both militarized and weaponized, technologically speaking, with the main difference being that while the militarization of outer space is actively recognized and accepted in the international community, the weaponization of outer space is not perceived as being conducted due to its passive activity so far. Put in another way, the weaponization of outer space will not be actively recognized and accepted as an official occurrence in the international community until our current space systems are eventually utilized in order to destroy or damage another State’s space object. Therefore, the international community should draw the line between militarizing and weaponizing outer space the moment when space systems that are seemingly developed for peaceful purposes, are utilized in order to damage, destroy or interfere another State’s space object, particularly including foreign intelligence satellites. The problem with international space law is that it constantly tries to recognize and potentially regulate the definition of space weapons and the consequential weaponization of outer space as a concept that is thought to be expected any time soon, when space diplomacy should originally be focused regarding this question because outer space is already passively weaponized. How nations act in space matters far more than how they define space weapons. A treaty banning space weapons remains a distant goal. There are other ways, far more realizable, to strengthen norms for responsible space-faring nations – including the norm of not using satellites for target practice. (Arms Control Wonk 2010)

It should be the priority of space diplomacy to observe how space-faring nations utilize their national space systems and ASATs, not just toward their national space objects, but toward foreign space objects as well. However, given that ASATs represent potential space weapons due to their technological capacity, another relevant question simultaneously arises from this argument: Where does this put ASATs regarding the extremely thin lines between militarizing and weaponizing outer space?

The ultimate utilization of ASATs for either peaceful or hostile purposes is what blurs the lines between the militarization and weaponization of space in a non-traditional manner, since it is not even necessary to bring weapons into space in the first place.

Respectfully, there are three types of space weapons, classified by two main aspects: their placement and the location of their target, being either terrestrial or extraterrestrial:

- \* **Earth-to-space weapons** (weapons that have the capacity to attack space systems, such as satellites orbiting in space, from the Earth)
- \* **Space-to-space weapons** (weapons on orbiting space systems that have the capacity to attack other orbiting space systems, such as satellites)
- \* **Space-to-earth weapons** (weapons placed on a space system, including orbital weaponry and orbital bombardment, that have the capacity to attack certain targets on Earth, or disable missiles traveling through space, shot from ground-to-space weapons)

According to the abovementioned classification of various space weapons, we can determine that ASATs belong to the type of Earth-to-space weapons, meaning that they are specially designed to destroy or damage orbiting satellites for strictly strategic military purposes, even though space warfare has not been utilized yet, but still these space weapons are in existence, mainly originating by the contesting future major space powers during the Cold War, remaining under development even today. Regarding Earth-to-space weapons, ASATs primarily represent surface-to-space and air-to-space missiles, primarily developed by the United States, Russia and the China as the currently dominant space-faring nations. Recently, India has also managed to join this selected group of nations with a similar technology. Namely, India has successfully demonstrated its capability to intercept a satellite in outer space based on indigenous technology, by the conduct of Mission Shakti, an anti-satellite missile test, from Dr APJ Abdul Kalam Island launch complex. The test was successful on all parameters. India has made it clear that its space capabilities aren't directed against anyone and the government is committed to safeguarding the country's national security interest. (The Economic Times 2019)

In hypothetically conducted space warfare, ASATs possess the technological potential of being considered as a method of destroying and bringing down opponent's satellites and or other hostile spacecrafts and space systems without the actual need to go to and eventually place space weapons, simultaneously not violating Article IV of the OST:

*"States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner"* (United Nations 2002)

Taking this in consideration, the only current space powers that possess ASATs are the USA, Russia and China, as well as India, where an increased likelihood of conflict or war to occur between them is possible, however, if another non space-faring nation comes to an argument with them, the likelihood of such a concept is less assumable due to the previous manifested show of force with ASAT, thus creating a supposed reputation of international dominance enjoyed by the selected group of nations.

## INTERPRETING THE NECESSITY OF ASAT DEMONSTRATION AS AN EXCUSE FOR PRACTICING SPACE WARFARE

It is generally presumed that the actions of the few space-faring nations that have previously managed to shoot down their own satellites in orbit with the utilization of anti-satellite weapons are internationally recognized as a *show of force* - a military operation deliberately manifested during seemingly peaceful times in order for them to be perceived among themselves as an intimidating opponent in potential space warfare. According to the DOD Dictionary of Military and Associated Terms, a show of force is described as “*an operation planned to demonstrate United States resolve that involves increased visibility of United States deployed forces in an attempt to defuse a specific situation that, if allowed to continue, may be detrimental to United States interests or national objectives.*” (OC, Incorporated., United States., & United States 2020)

However, such indirect and passive provocations when aimed deliberately toward satellites of another State represent active and hostile demonstrations of a space force capacity that are no longer recognized as a force (power) projection, but as a utilization of military force; Military doctrines can be categorized as fundamental, environmental and organizational. The first category, fundamental doctrine, includes premises and beliefs about the purpose of the military, the nature of war, and the relationship of the military instrument of power to other power instruments. The second category is environmental doctrine or the best way to employ forces in a particular environment (land, air, sea, or space). The third category of doctrine is organizational doctrine. This doctrine deals with the organization of military forces and defines the mission of the various organizations and institutions. Environmental military doctrines often include the word power in their title, whereas a space power doctrine describes the most appropriate way to employ space forces. (Benkö and Schrogl 2005)

According to Baldwin, power is a relational concept and “*can be defined broadly to include all relationships in which someone gets someone else to do something that he or she would not otherwise do. Both positive sanctions (actual or promised rewards) and negative sanctions (actual or threatened punishments) are means to exercise power.*” States exercise their power through a number of means, but all these means have been categorized into four broad areas: economic, diplomatic, informational, and military. (Whiting 2002)

International relations among space-faring nations through ASAT utilization and identical extraterrestrial actions manifest the competitive reality of the space community and give the phrase “peaceful purposes” an almost superficial perception and meaning. How a space-faring nation exercises power through means of space systems and ASATs for seemingly peaceful purposes, should serve as an indicator of achieving a diplomatic effect. In relation to the utilization of ASATs as a hostile attack toward foreign orbiting satellites, such actions can be described as a method that the space force would choose to employ. Regarding the high-ground doctrine, the development of space based ballistic missiles defense devices still remains an option which the United States does not want to foreclose. Also, earth-oriented space weapons are not being ruled out as a possible future arms alternative. (Benkö and Schrogl 2005)

The transitioning status of shooting down dysfunctional satellites as a show of force into a utilization of military force contributes for the drastic changes regarding international relations in both scenarios. Firstly, shooting down national orbiting satellites causes space-faring nations to view such actions as continuously building up political tension, as well as an indirect threat of foreign military forces in the future. In other words, anti-satellite capabilities are seen as a passively-hostile warning toward foreign orbiting satellites. For instance, in May 2013, the Pentagon suggested that a high altitude Chinese sub-orbital space launch—claimed to be a scientific mission by China—was in reality the first test of an anti-satellite (ASAT) interceptor that would reach all the way to geo-synchronous earth orbit. Previously, on January 11, 2007, China had successfully launched an ASAT missile against one of its own low earth orbit (LEO) weather satellites. These and other Chinese actions have provoked strong concerns within the U.S. about China’s motivations. While these concerns have some validity, all U.S. military satellites are not equally vulnerable to a Chinese ASAT attack. Furthermore, the benefits from an ASAT attack are limited and would not confer decisive military advantage in every plausible conflict. (The Diplomat 2014)

As the Pentagon maps out strategies and tactics to defend its satellites, military lawyers are actively investigating how international law applies to outer space.

*“Any operation in outer space must comply with the same law that is applicable to other domains, like sea, air and ground warfare,”* said Michael Hoversten, chief of space, cyber, international, and operations law at Air Force Space Command headquarters at Peterson Air Force Base, Colorado.

As with other uses of military force, actions in space are restricted by international rules. If U.S. satellites were attacked, there is no ambiguity, he said. *“The right to use force in self defense applies.”* (Space.com 2018)

Additionally, anti-satellite weapons have also posed an indirect threat to U.S. satellites, because orbital debris, or “space junk,” from damaged and destroyed spacecraft could collide with other satellites in orbit. Moreover, satellites and technology in low Earth orbit have become increasingly more valuable as tech advances and as countries increasingly adopt space technologies for national security purposes. (Space.com 2020)

Reconnaissance, communication, and navigation satellites are not only the backbone in a war on Earth, but would also play a key role in space war. The destruction of satellites used in conventional war or the threat by anti-satellite weapons (ASATs) could substantially alter the strategic balance and require the application or preventive or preemptive measures, both passive and active, offensive and defensive. Satellites can be hardened against interference or attack to some degree but at a high price and with a considerable residual risk of vulnerability. Warning times could shrink to minutes. ASATs can attack any space object, including space-based ballistic missile defense (BMD) components, which would severely affect the operability of the affected missile defense system and could provoke a preemptive attack. (Benkö and Schrogl 2005)

ASATs may be perceived as an easier method to eliminate defunct satellites however satellite operators have multiple options to eliminate a defunct satellite in orbit at the end of its mission. In other words, satellite operators can choose between de-orbiting the satellite, leaving the satellite in its current orbit or move the satellite to a graveyard orbit. Instead of being de-orbited, most satellites are either left in their current orbit or moved to a graveyard

orbit, a practice which was characteristic in the past, since early satellites were rarely designed to be de-orbited. Additionally, ASATs originate from the contesting future major space powers during the Space Race, which indicates that space-faring nations have serious intentions to continue what they have started in the past, and that is to develop endangering methods in order to gain dominance, control, power and a superior status among other nations.

In attempts to legally solve this matter, the European Union, The United States, Japan and Australia have endorsed an International Code of Conduct to establish rules of the road for responsible space-faring nations. The most crucial norms in need of strengthening are debris mitigation, traffic management procedures to avoid collisions, and restraints on harmful, purposeful interference against satellites. (E-International Relations 2012)

However, the rules prescribed within the International Code of Conduct for Outer Space Activities lay upon a primarily voluntary basis and are therefore, not legally binding, although open to all States. Regarding its current status, the EU's draft International Code of Conduct initially received mixed reactions in the international community. Several emerging space powers expressed concerns about not being involved in the process from the outset. Substantive issues with the draft center on its vague terminology and lack of definitions, the degree to which it is legally binding, concerns that it would limit freedom of action in space for military and intelligence activities, and suspicions that it is "arms control in disguise." (Security World Foundation 2014)

Consequentially, banning all military capabilities that can be directed against satellites isn't feasible. Banning "dedicated" ASAT capabilities – those specifically designed for use against satellites – isn't consequential, because much of the latest anti-satellite capabilities would remain untouched. Additionally, the vulnerability of satellites and the dangers to manned space flight place all space-faring nations in the same dilemma. Destroying someone else's satellite doesn't help, because your own satellites can be placed at risk by this act – either because of uncontrollable space debris, or because your own satellites can't be defended against counter-attacks. (E-International Relations 2012)

Space-related diplomatic initiatives do not have to necessarily promote legally nonbinding guidelines for the utilization of ASATs, as that is the case with the International Code of Conduct for Outer Space Activities. Space assets, just as other military forces, can exert power to achieve diplomatic effects. When deliberating how military space assets might do this, the most apparent manner is through dissemination of high-resolution imagery that can then be used to influence a diplomatic situation. (Whiting 2002)

Perhaps the international community cannot entirely rely upon space diplomacy in order to solve anti-satellite tests as debris-producing actions however it should serve as a priority, nonetheless. Future attacks upon orbiting satellites could be carefully calculated and based on previous or current relations between the major space forces or with other countries, respectfully. That way, the chosen opponent is shown that the only option he has left is to respond to the attack, thus engaging in a war with the provoking nation. Space diplomacy, in this phase, is often perceived as too late to interfere, as it should have been conducted previously to act as a mechanism to prevent the two countries from provoking each other to start a war, which must be considered as a last option.

## THE CONTRADICTORY LEGAL AREA OF ASAT UTILIZATION REGARDING SPACE DIPLOMACY

In relation to the international community, space security is tending to become more dependent on space diplomacy due to rising conflicts and political tensions among space-faring nations who are significantly relying on space assets to support their military purposes and extraterrestrial governance. Additionally, the competition between them also contributes for arising international conflicts that may potentially result with the hostile utilization of ASATs aimed toward foreign orbiting satellites. Space diplomacy, however, seems to be understood and manifested differently among each space-faring nation. Diplomacy has an important role to play in U.S. space security interests, and it is unfortunate that in recent years the United States has not made more use of it. Three broad approaches exist: dialogue, voluntary cooperation regimes, and formal agreements. Dialogue on space weapons has been minimal, though there has been more in non-weapons areas, such as debris. (MacDonald 2008)

Another issue regarding space diplomacy in relation to space security interests is that it often emphasizes banning space-based weapons while simultaneously excluding ASATs in that category in order to prevent the weaponization of outer space. Although this may be a result of a different perception of such an occurrence, it has already been passively conducted in our practical reality without the necessary need to place weapons in outer space. In relation to potential diplomatic negotiations concerning the utilization of ASATs, dialogues on both space weapons and orbital debris as areas, should be combined and thus given a tactical and strategic approach characterized by the intention of successfully managing international relations between space-faring nations in order to preserve and protect the extraterrestrial environment, as well as the orbiting satellites and other space objects within. And while most broad approaches mentioned above stand on a voluntary basis, it seems that only formal agreements would actually have an obligatory role to enforce the protection of the most crowded orbits from space debris. However, such international agreements should not focus on the banning of weapons in space since ground-based ASATs obviously does not fit that categorization while simultaneously causing damages and political tension, but also because it is necessary for space-faring nations to possess technology that would allow them to manifest their right to defend themselves from foreign hostile actions aimed toward their national satellites orbiting in space, but rather on the limitations of the utilization of ASATs.

National space program developments are essential for the exploration of outer space from a technological perspective and allows for individual space-faring nations to simultaneously ensure their national space security interests, and they often necessarily include certain non-technological aspects for that matter. An important aspect of the growth of China's space program is its expanded cooperation with space actors other than the United States. Such "space diplomacy" is a calculated approach to draw other space actors closer through science and technological diplomacy and to reduce China's dependence on US technology and its associated technology restrictions. (Harding 2013)



Within an identical context, regarding Chinese diplomacy and the area of space-based weapons, China has preferred a comprehensive arms control approach to space security for a number of years. China and Russia have joined together in the UNCD to promote a treaty to ban all weapons in space. The stated purpose of their proposal, which aims to prohibit space-based weapons and the use of force against outer space objects, was to close the gap in existing international space law. China has said its proposal seeks to prevent the deployment of weapons in outer space. Notably, China itself has conceded the difficulty of verifying such an agreement. The paper that China and Russia provided at the UN analyzed the feasibility of a verification regime for a future legal instrument. It offered the view that a verification regime in a future treaty applicable to outer space would be highly complicated and would encounter formidable technological and financial challenges. The United States has rejected the China-Russia approach, and it is highly unlikely the U.S. senate would ratify any agreement that was not shown to be effectively verifiable. (MacDonald 2008)

Not only concerning international space law issues concerning space security, other rising space-faring nations consider space diplomacy as one of their highest priorities by identical motivations as China, that is, in order to manifest scientific and technological developments and progress in the field of extraterrestrial exploration, but also to enforce national strengths among each other, they perceive space diplomacy as the most effective and appropriate method within the international community. Japan has historically sought to extend its regional influence through Official Development Assistance (ODA). A number of officials have identified space as an important new area for Japanese ODA. Diet Member Kawai, for example, views space diplomacy as “the most important aspect” of Japan’s space policy and argues that JAXA should provide launch access, satellites, and training to other countries in Asia via ODA. To date, such efforts have had mixed success. (Moltz 2011)

Moreover, North America and Asia in this context should not represent the only continents associated with space diplomacy negotiations within the international community. Besides individual national methods of space-faring nations in relation to ASAT utilization and the concept of the weaponization of outer space, countries that possess sufficient economic, scientific and technological capacities and strengths to manifest progress regarding space exploration, such as the member-states of the European Space Agency, should also have a word concerning the legal policy-building issue of ASAT utilization. In other words, since space security now holds a central position in space diplomacy, Europe needs to play a prominent role on the international scene, as a promoter of a clear, united and consisted “European way”. (Burger and Bordacchini 2019)

On the other hand, however, space policies and diplomacy in relation to space security do not seem to entirely involve or consider developing countries. Although this might be partially understandable due to the fact that developing countries are not recognized as space-faring nations and do not play a relevant role regarding space exploration, both the benefits and perils of outer space should be distributed internationally, with the main focus on emphasizing the benefits and understate the perils by all means possible. However, there will always be an obvious difference between space-faring nations and developing nations in terms of international influence determined by various economic, scientific, military and technological capacities, particularly in the area of possessing and manifesting strong ASAT

abilities. Those countries that are capable of investing in space assets will continue to spend precious resources in order to produce the appearance of being more advanced and more like the developed space actors than their less space-fortunate neighbors or competitors. In the world of international diplomacy, appearances can make all the difference. As the final frontier of the international system as we currently know it, space policy will continue to play an integral role in changing and perhaps equalizing the national security and development goals for the countries of the developing world in the twenty-first century. (Harding 2013)

Attempts of equalizing the concept of space security within the international community, however, would likely require the practical manifestation of diversification, as the necessary measures and proceedings of diversifying the participation of multiple states in the process of policy-building of the utilization of ASATs, irrelevant of their classification and recognition in international relations, by legal, economic, scientific, technological, political and military perspectives. Identical to standard definitions, diversification calls for cooperation between the actors and stakeholders involved. On a second level, such cooperation can lead to an improved coordination of activities. One step further, coordination may provide for harmonization of activities and the development of a coherent legal framework. Finally, the different components of the legal framework could be integrated into a single corpus. (Benkö and Schrogl 2005)

Bearing this in mind, another consequential question simultaneously arises, and that is whether the principle *par in parem non habet imperium* (lat: “equals have no sovereignty over each other”) could be expected to apply to space-faring nations in terms of space security and ASAT utilization;

It is suggested that diversification can lead to conflicts of competencies and legal instruments. The sometimes broad competencies of international organizations may overlap quite easily. Each international organization, however, builds its own legal system and the principle *par in parem non habet imperium* does not apply to the relationship among two international organizations. A body of one organization therefore cannot decide on the lawfulness of an action by another organization. (Benkö and Schrogl 2005)

Similarly enough, any space-faring nation possessing technological ASAT capacities would promote its own national policy for the utilization of ASATs, including on an international level. However, we should consider whether all space-faring nations would really be considered as equals, regarding technological ASAT capabilities and strengths. By terms of international relations, the primary reasons why diversification would lead toward conflicts of competencies and legal instruments are:

- (1) Attempts to establish a technological ASAT hierarchy;
- (2) Attempts to avoid the corpus of international space law;

Space-faring nations are constantly tending to technologically improve their national systems of ASATs in order to be considered more powerful among their rival nations, thus establishing dominance within international relations. Additionally, space-faring nations are continuously analyzing the capabilities, strengths, flaws and weaknesses of the utilization of foreign ASATs, as well as simultaneously determining whether such passively-hostile actions would represent a national threat. In other words, attempting to establish a technological



hierarchy consequentially influences the course of international space security legislations and would result with individual space-faring nations avoiding the corpus of international space law regarding the issue of ASAT utilization - because a single international legislation is not yet regulated, concerning the matter of issue. Moreover, regarding the concept of diversification in relation to space diplomacy, international space legislators should ask themselves why a certain space-faring nation would attack another State's space object or satellite. More importantly, when should this deliberately hostile action even occur - before or after the occurrences of unsuccessful space diplomacy negotiations? And where would the ultimate utilization of ASATs targeted toward foreign satellites and space objects should be classified regarding such dilemma?

As previously mentioned, ASATs are generally classified as space weapons according to acknowledged definitions, as well as their utilization being considered as debris-producing and international political tension-building actions among space-faring nations instead of representing a simple and effective method of eliminating defunct orbiting satellites from a technological aspect. In other words, such show of force only manages to manifest destructive capabilities which would seem to decrease the likelihood of ASATs being perceived as a beneficial, rather than a hostile technology. However, in order to perceive the utilization of ASATs as a non-hostile action in a passive manner (currently) and in an active manner (potentially in the future), the key is to understand the difference between a method of eliminating a defunct orbiting satellite, on one hand, and the indirect utilization of a space weapon, on the other, both legally and technologically speaking. In other words, ASAT utilization is currently perceived as military action in order to show force, as well as a threat to foreign (space-faring) nations, thus manifesting destructive capabilities. However, if the utilization of ASATs was to be defined as a method of eliminating defunct satellites, ASATs would no longer be necessarily considered as space weapons. In order to achieve this, ASATs would have to primarily meet certain standards as the means of not to be considered as dangerous weapons by not causing harm or damages and to continue being utilized toward the nation's own defunct satellites;

Regarding ASAT and the OST, it has been concluded that "non-nuclear ASAT weaponry is... legal". Bruce Hurwitz concludes that since ASATs are not weapons of mass destruction they are legal according to the letter of the OST. Considering the spirit of the law, "the conclusion appears to be that anti-satellite weapons are legal, *de lege late*, but should be illegal, *de lege ferenda*." The type of ASAT system being considered becomes critical. While there is no formal delimitation of outer space, earth orbit is most often considered outer space. Therefore, an orbital (space-based) defense would be subject to international law, where a ground-based system would not. (Johnson-Freese 2000)

This argument still manages to only partially contribute regarding the overall perception of ASAT utilization as a non-hostile action, since such actions could only emphasize the dilemma of space security versus space control, that is, in what legal manner do both concepts apply in relation to ASAT utilization. Contradictory to the principles and purposes of space security, space control is the ability to deny the enemy use of a region of space for a specific period; it does not require absolute control of space. (Petersen 1991)

The "regional" prohibition within the active extraterrestrial environment during wartime is understandable to be legally and practically manifested, identical tendencies are

simultaneously manifested during peacetimes, not entirely related to the utilization of ASAT. Given that no foreign orbiting satellite has been shot down by rival space-faring nation in practice, a mild comparison of “regional prohibition” during peacetime can be made by recalling the recent event of the suspected in-space stalking of the American satellite USA 245 by the Russian satellite Kosmos 2543. There are no necessary regional restrictions legally recognized by international space law concerning the orbiting of satellites, which allow for a foreign satellite to orbit significantly close to the satellite of another space-faring nation without any violations. However, that does not mean that such extraterrestrial behavior does not cause any reactions from the space-faring nation that suspects of in-space stalking. On the contrary, the action of tailing a foreign (spy) satellite arise political tension, suspicions and threats of espionage and deteriorated international relations in general. Such negative reactions and responses only prove that even during peacetime, space-faring nations are bothered by the lack of regulations concerning “territorial” prohibition that applies to specific distances in orbit to be applied in practice. Moreover, space control doctrine recognizes the environmental possibilities and limitations of warfare in space and provides ample foundation for the development and employment of space war-fighting weapons. (Petersen 1991)

In immediate relation to ASAT utilization, however, our main concern is how space diplomacy would implement its ultimate purpose regarding the indirect weaponization of space manifested by ground-based weapons. For decades the bulk of the world’s legal and diplomatic space experts focused on how to institutionalize the ‘use of outer space for peaceful purposes’ in the ‘common interest of all mankind’. These international experts formed an influential international community of individuals, ideas and international agreements that have sought to advance ‘peaceful’ uses of space – and ban the ‘militarization’ of space (Von Bencke 2007)

There seems to be a somewhat of a disagreement regarding the question whether outer space should be used for peaceful purposes, by supporting the concept of space being used in the common interest of mankind, but not in a way to be established in practice as a special part of an official organization. However, how else would this protective notion be put in force and be taken seriously otherwise, other than simply being institutionalized with formal agreements? The concept to advance peaceful uses of space imagined of being just an informal principle depending on nations for it to be applied gives them the option to not respect the common heritage of mankind, thus endangering it, no matter the reasons. In terms of emphasizing the concept of banning space militarization, even in the field of international space law, this is considered difficult, taking ASATs in consideration, due to the fact that space weapons such as ASATs are already a reality. Weapons that do not exist are easier to ban than systems fielded or under advanced development. Once nations possess weapons, laws cannot guarantee that those weapons will not be used. (Petersen 1991)

Powerful space-faring nations did not simply develop ASATs as space weapons for them to be banned by international space law. Logically, there is a great chance for them to violate existing international space law regulations and rely upon the concept of technological, scientific and economic power, rather than the concept of legislation. Possessing any kinds of space weapons complies with the nation’s intentions to gain space control, thus obtaining the option of dominance over other countries. Previous events have indeed witnessed the

utilization of ASATs, allowing for the expectation to be used again in near future. And while international space law may not be so influential to entirely prohibit the use of ASATs, it can still limit that possibility, or change its purposes to be of a more peaceful character. Though our intentions in securing space control may be to preserve the peace, reasonable parties will be able to consider such activities potentially more offensive and destabilizing than missile defense. (Von Bencke 2007)

Such national intentions are completely expected given that every space-faring nation has the right to defend itself from threatening dangers upon it and its orbiting space object. Regarding ASATs and unprovoked use to show force, however, there is a shift of differences between securing space control, on one hand, and a nation's option for missile defense, on the other. Such concepts cannot be legally perceived as identical, but rather as complementing in order to fulfill the primary purpose of gaining space control. By demonstrating ASAT (military) capabilities, concerned space-faring nations imply their intentions of gaining space control in relation to rival space-faring nations, as well as other less technologically developed countries. This method, however, manifests the opposing concept of diversification, as previously mentioned, regarding space exploration and developing objects, weapons and technologies specifically meant for the extraterrestrial environment. Space exploration, in a certain manner, might be perceived as a big international "business" where multiple space-faring nations are constantly trying to enlarge their range of weaponry (ASATs) within the weaponization of outer space as a controversial field of operation in space diplomacy, simultaneously being partially contradictory to the concept and purpose of space security.

## CONCLUSION

Space legislators have often questioned where the international community should draw the line between militarizing and weaponizing space. The classification of ASATs as ground-based space weapons, however, has proven that outer space is already technologically militarized and weaponized. While the militarization of outer space is accepted in the international community, the weaponization of outer space is not perceived as being conducted due to its passive activity and will not be recognized until our current space systems are utilized to destroy or damage another State's space object. Therefore, space diplomacy aims to interpret the necessity of ASAT demonstration as an excuse for practicing warfare in the future, analyze its contradictory area of conduct, as well as to prevent its rather provoking and threatening purpose in the field of international space law. In other words, space diplomacy has legal potential to serve as a mechanism to prevent ASAT show of force by powerful space-faring nations and performing hostile operations against foreign orbiting satellites, along with the general concept of national dominance over outer space, as well as the likelihood of actively recognizing the already existing weaponization of outer space in order to conduct space warfare.

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