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# THE FINAL FRONTIER: A LEGAL ANALYSIS ASSESSING THE RELEVANCE AND EFFICACY OF THE PRINCIPLE OF NON-USE OF FORCE IN OUTER SPACE

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**ABSTRACT**

*The domain of outer space is unexplored not only in the scientific context but also in the legal context. Many countries are developing anti-satellites to eliminate probable dangers arising out of the operation of other satellites. Not only this, but every space-faring nation launches dual-use space satellites to slyly militarize outer space under the garb of commercial use and scientific exploration. This paper intends to undertake a comprehensive analysis of the legal jurisprudence pertaining to space militarization, non-peaceful use of outer space, and use of force in outer space. The space law regime was developed due to the fragmentation of public international law. But, the basis of space law also lies in public international law. Thus, in this paper, the potency of the application of general international law on the non-use of force in outer space will be tested. For this purpose, various nuances of the principle of jus ad bellum are dissected and individualistically subjected to outer space application, and therefore, inherent loopholes are exposed in the process. A hypothetical situation is used to explain the application of every aspect of law due to the lack of any cases or disputes occurring at the present time in outer space. Therefore, real-life examples are limited, and they are being appropriately used at the required places in the paper. Through this paper, basically, the ability of current law to withstand modern-day challenges is critically analyzed. And, finally seeing the voluminous shortcomings in the existing law, the author has suggested a complete revamp of outer space law to restrain the exploitation of outer space law for military purposes and other aggressive uses.*

**Keywords:** *Jus ad bellum,* Non-use of Force, Self-defense, Countermeasures, Responsibility, Liability, Outer Space, Anti-satellites.

## Introduction

A space war is a real-time threat, and it is in the offing and can occur anytime. Most of the developed and some developing nations have expanded their endeavours in outer space.[36] The region of Outer Space is so fragile that the amount of 'due regard' that needs to be observed is obviously greater.[37] Even a non-aggressive commercial exploration in outer space can lead to catastrophe if appropriate precautions are not undertaken by the launching state. In light of this, there is a considerable amount of risk associated with space travel. Is the current legal system equipped to handle a situation where, in the future, a war breaks out in space as a result of the use of force by one state against another? Article 2(4) of the Charter if the cornerstone of the whole Charter and not just the principle of non-use of force.[38] Even if we evolutionary interpret the law, the interpretation must be

[36] Christopher M. Petras, *Space Force Alpha Military Use of the International Space Station and the Concept Of "Peaceful Purposes*, 53 A.F. L. Rev.135, 155-56 (2002)
[37] Setsuko AOKI, *The Standard of Due Diligence in Operating a Space Object*, 3 IAC-12-E7.3.9 8 (2012).
[38] U.N. Charter art. 2, ¶4.

confined to the lines of the actual provision.[39] Therefore, evolutionary interpretation is not the panacea to everything, and constant reforms need to be made to keep the law relevant to the test of time. The major goal of this paper is to highlight the profound uncertainty in the legal doctrine that now governs how to deal with the use of force in space. In order to address this, this study has conducted thorough research of both space law and general international law, methodically examining all significant facets of the legal system.

The paper has been divided into six parts. Part II expresses the general international law on the principle of *jus ad bellum* and lays down critical issues that will be addressed throughout the course of the paper. Part III assesses the provisions in the body of space law that intend to ensure peace in outer space. It also underscores the inherent deficiencies in the provisions and highlights some absurdities in the drafting of these provisions. Part IV contains the actual analysis of the application of general principles of international law on the non-use of force in outer space. Part V is concerned with the exploration of legal consequences of violation of law and damage caused through space activities. Part VI finally concludes and sums up the whole analysis by suggesting a future discourse and further improvements in law.

## General Principle of Jus ad bellum: Dissecting the Law & Delineating the Critical Issues & Testing their Transposition in Outer Space

The Principle of *Jus ad bellum* encompasses not only the prohibition of the use of force principle but also covers some specified exceptions where the use of force is justified.[40] The principle correlates with the 'just war' conception. However, with the evolution of time, the focus has shifted from prohibiting 'war' to prohibiting 'force.'[41] This is a noteworthy development that showcases the building concern of the nation-states to not only suppress war but also suppress all the events that give rise to a war. After a couple of utterly devastating World Wars, a sense to preclude any kind of force that threatens international peace and security became prevalent. All these developments summed up and led to the creation of the United Nations and its Charter. This organization was primarily tasked with preventing another world war and ushering in peace in the world community.[42]

With this succinct history, it is clear that the principles of non-violence existed even before the United Nations Charter was written, but not in the form of a treaty but rather in established legal principles. Although there were some minor alterations made to the majority of these principles, the overall spirit and goal of the law remained intact.[43] The fundamental clause of the UN Charter, Article 2(4), is what establishes the non-use of force concept. To clear up a common misconception about the application of the principle of non-use of force, it is essential to first conduct a thorough examination of the provision. Untruly, it is thought that the norms of customary international law supersede those that are already in place because the principle of non-use of force is codified in the UN Charter as a treaty. This justification is based on the well-known legal maxim *lex posterior derogat priori*, which states that a law is revoked by subsequent legislation. The pre-existing norms of customary international law co-exist with the treaty provisions that were afterwards developed, the International Court of Justice (ICJ) concluded in a landmark case, which put an end to this misperception.[44] The concept of the non-use of force principle does not, therefore, only apply to the Charter's listed

[39] Kasikili/Sedudu Island (Bots. / Namib.), Judgment,1999 I.C.J.1045, ¶18 (Dec. 13).
[40] Tom Ruys, *The Meaning of "Force" and the Boundaries of the Jus Ad Bellum: Are "Minimal" Uses of Force Excluded from UN Charter Article 2(4)*, 108 Am. J. Int'l L.159, (2014).
[41] Nicholas Rengger, *On the just war tradition in the twenty-first century*, 78, *International Affairs*, 353–363 (2002).
[42] Christine Gray, *A Policy of Force, in* The ICJ and the Evolution of International Law237 (Karine Bannelier et al eds., 2013)
[43] CHRISTINE D. GRAY, INTERNATIONAL LAW AND THE USE OF FORCE 186 (2018)
[44] Military and Paramilitary Activities in Nicaragua (Nicar. v. U.S.) (Merits), 1986 I.C.J. 14, ¶176 (June 27).

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clauses. Instead, it encompasses norms of customary international law that were already in place or that were created later after the UN Charter's Article 2(4) went into effect.

There is also a lack of clarity when it comes to the question of hierarchy between a treaty and a CIL norm. The parties enter into a treaty through explicit consent and are bound by it by virtue of *pacta suncta servanda*. On the other hand, states are bound by CIL due to their consistent and uniform practice with the intention to be legally bound to perform these. A CIL norm is binding on all the states, and a treaty is binding only on the states which are parties to it. However, it is very difficult to establish a principle to be a customary international law, and there are no determinative standards laid down for these. The UN Charter stands on a different footing beyond this conflict of hierarchies because of two main reasons. Firstly, all the nation-states are members of the United Nations except the Holy See and the State of Palestine. Secondly, Article 103 of the Charter is a claiming priority provision that grants superiority to the UN Charter obligations over any other treaty obligation. Whether a charter provision prevails over a CIL by virtue of Article 103 and whether Article 103 applies to 'rights' as well as it only uses the term 'obligations.' These are some questions that don't have a definite answer in international law.[45] As we are focusing on Article 2(4) of the UN Charter, we should not be worried about all this as this principle is not only recognized as CIL but also as *jus cogens*[46] norm that is the norm of highest character.[47]

According to UN Charter Article 2(4), all Members should refrain from using or threatening to use force against the territorial integrity or political independence of any state or in any other way that is incompatible with the purposes of the United Nations. We should keep in mind that there are two main exceptions to Article 2(4) entailed within the Charter itself, i.e., Article 51 and Chapter VII of the UN Charter. Let us dissect the provisions and delineate issues that we aim to discuss in the course of this paper, specifically in the context of their application in outer space:

1. What amounts to the use of force? Whether the meaning of 'force' is restricted to mean 'armed force'? Can we apply the effects-based approach to categorize other kinds of actions as 'force,' that cause damage of the same extent as 'armed force' if not of the same nature? When states destroy other states', satellites using an anti-satellite, can it be considered a 'force' under Article 2(4) of the UN Charter?
2. Whether outer space is a vulnerable regime where the principle of non-use of force is more prone to be violated because of the recent developments and the possibility of a war taking place in outer space? Or is it because outer space can be used to spur wars to take place on the land using precise data from the satellites operating in outer space? If both, then, the current law is well-equipped to combat these threats? Are both kinds of military use of outer space prohibited under law?
3. Is there a possibility that missiles from space can be dropped on Earth? If yes, doesn't that propound the threat and magnitude of 'force' and resultant potential damage? Is existing law capable of deterring these actions?
4. Whether 'threat of force' is also prohibited in international law? Whether 'threat of force' is condemned to the same level as 'use of force' by law? Can a mere espionage taking place from outer space, be considered a 'threat of force'? Can the placement of dual-use satellites in outer space be considered a 'threat of force'?
5. Given that outer space is governed by a *res communis* regime and cannot be appropriated by any state, it is theoretically not possible to say that the use of force there violated Article 2(4) because it was not

[45] Ricky J. Lee, *The Jus ad Bellum in Outer Space: The Interrelation Between Article 103 of the Charter of the UN and Article IV of the OST, in* Proceedings of the 45th Colloquium on the Law of Outer Space 139 (2002).
[46] Military and Paramilitary Activities in Nicaragua (Nicar. v. U.S.) (Merits), 1986 I.C.J. 14, ¶176 (June 27).
[47] Alexander Orakhelashvili, *Changing Jus Cogens Trough State Practice- The Case of Prohibition of Use of Force and its Exceptions,* The Oxford Handbook of the Use of Force in International Law 245 (Marc Weller ed., 2015).

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intended to harm any state's territorial integrity. Can states be said to have a "*quasi-territorial*" claim over satellites?

6. How does the 'non-intervention' stance vary from the perspective of political independence? Does every use of force constitute a breach of the rule against interfering in others' affairs? Is the non-intervention or non-use-of-force principle violated by cyberattacks, both, neither, or neither?

7. The bar is fairly high for the use of force that is at odds with the goals of the UN Charter since it fundamentally jeopardizes world peace and security. By applying this reasoning, is it possible that we would not consider using force of any type in space to be forbidden?

8. In the case of self-defense in space, can force be justified? If so, how can we tell the difference between a 'use of force' and an 'armed attack' in the context of space? Is it also required to notify the UNSC when self-defense is exercised?

9. Are anticipatory and pre-emptive self-defense permissible in the context of outer space?

10. Can force in the form of a countermeasure be used as a response if the degree of force is slightly short of an armed attack?

These are some questions that are endeavored to be addressed in the subsequent parts of the paper. The author tries to give his perspective on each of these questions through this paper. The answers to these are more analytical and pragmatic and juxtaposed with practical realities. The author attempts to highlight loopholes in the existing positions of law and suggests some solutions to fix these loopholes to deal with the existing roadblocks.

## Appraising Parallel Corpus Juris Spatialis Intended to Ensure Peace in Outer Space

The region of outer space became accessible to humankind after more than a decade of the promulgation of the UN Charter. The first man-made satellite, the Sputnik 1, was launched into outer space on 4th October 1957. The international community was very quick to realize the threat of space militarization, and thus, a series of General Assembly Resolutions were adopted, towards the 'non-militarization' and 'non-weaponization' of outer space. The first, in this context, was adopted on 14th November 1957, which was even prior to the launch of a satellite, the Explorer 1, by the USA in response to the USSR. This shows that the world realized very soon that armed conflict could travel to outer space with humankind, especially during the Cold War Era, when both superpowers were trying to dominate one another in every aspect. The series of GA resolutions culminated in the formation and enforcement of the Outer Space Treaty, 1967 (the OST), which is also known as the Magna Carta or constitution of Outer Space Law. As of now, there are only five outer space treaties that collectively form *Corpus Juris Spatialis*, i.e., the body of Space Law.

Assuring the peaceful use of space is the main goal and objective of the OST. This was the main goal when the treaty was drafted, and that is what all of its provisions are geared toward. Article I of the OST states that all space activities must be carried out in the interests of all humankind and that all nations must have equal and equitable access to space without any form of discrimination.[48] Article II states that outer space is a res communis omnium, or a common heritage of mankind, and that it cannot be appropriated by any nation through a claim of sovereignty, use, occupation, or other methods. The High Seas, Antarctica, and other places are some other examples of such areas.

Since it regulates military use of space, Article IV of the OST is the part of the agreement that most worries us. The weakening of the current space law, which is intended to limit the military of space, is mostly due to this section, which is badly written. The provision's main issue is that it is incapable of withstanding the difficulties brought on by the development of space

[48] STEPHAN HOBE, *ARTICLE I*, *IN* COLOGNE COMMENTARY ON SPACE LAW (Stephan Hobe ed., 2009).

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technology. Determining how to combat current threats in the area of space is, therefore somewhat outmoded. Let's now draw attention to the provision's inherent shortcomings. Firstly, A nuclear weapon or a weapon of mass devastation cannot be deployed in space, according to the law. While a WMD isn't explicitly defined in the body of space law, it is typically intended to produce destruction on a par with atomic, chemical, and biological weapons.[49] By limiting the ban to only these two kinds of weapons, the provisions ignore the considerable threat posed by weapons of other kinds, like directed energy and kinetic energy weapons. It is also important to understand that the outer space region is so fragile that a weapon need not possess nuclear capabilities to cause mass destruction, a normal satellite colliding with another satellite can cause significant, widespread, and long-term damage. The destruction of a single satellite pulverizes into a large number of space debris that further emanates the danger of collision with other operating satellites. The satellite collisions multiply the number of debris existing in the concerned orbit, and, thus, will potentially disrupt human space ambitions in the future. This chain of subsequent collisions, which is a never-ending process, can result in the manifestation of Kessler Syndrome, according to which the accumulation of an enormous number of debris in the orbit, which will make the whole orbit inoperable and will clearly impinge the peaceful use of outer space.[50] It would be erroneous to assume that only when the quantity is huge, the damage would be present. Also, it is important to note that only breaking down a satellite does not result in debris, but all kinds of non-functional and defunct satellites operating in outer space contribute to the menacing debris situation. Even a small quantity of debris in the orbit can cause colossal damage because these particles (debris) operate at a tremendous speed of around 8 km/s. At such speed, even if a tiny shard of debris collides with a spacecraft, it would not only be lethal for the astronauts traveling in it but can even completely dysfunctional the whole satellite. In 2007, China launched an ASAT to destroy its own weather satellite, F1C**,** which resulted in around 3,000 traceable debris particles and approximately 32,000 debris, which are untraceable because they are too small to be detected and, thus, are ultra-hazardous in nature.[51] When the two satellites collide, the level of destruction that is caused is ten times greater because the speed with which they collide breaks both satellites into innumerable pieces, which not only scatter within the orbit but their velocity takes them outside their orbit, and they travel beyond their orbits and threatens the operation of satellites in other orbits as well. This was noticed when the Iridium-Kosmos clash took place in the year 2009 when one Russian derelict satellite collided with another Russian operational satellite.[52]

Although the debris concern has taken a lot of words, it actually deserves that because every other space issue in outer space boils down to this major concern, and it is intricately related to the peaceful use of outer space. The activities in outer space can't be peaceful until and unless the problem of debris creation is not resolved. This reinforces the first deficiency in Article IV of OST pointed out earlier. The debris-causing weapons must also be incorporated in the list of prohibited under Article IV of OST if the provision has to realize its true objective and fulfill the drafter's intention behind it.

Secondly, Article IV of OST prohibits the placement of weapons in orbit or their installation on celestial bodies, but it fails to envision the possibility of weapons that don't station in outer space but just transit through outer space and cause intended destruction and travel back to the earth or gets self-

[49] Kai-Uwe Schrogl & Julia Neumann, *Article IV*, *in* Cologne Commentary on Space Law, (Kai-Uwe Schrogl & Julia Neumann eds., 2009).
[50] N. Jasentuliyana, *Space Debris and International Law* 26 J. Space L. 139, 155 (1998).
[51] Gotz Neuneck, *China's ASAT Test- A Warning Shot, or the Beginning of an Arms Race in Space?, in* Yearbook on Space Policy211 (K-U Schrogl et al eds., 2008)
[52] Ram Jakhu, *Iridium-Cosmos Collision and Its Implications for Space Operations, in* yearbook on space policy: 2008/2009 254 (Schrogl, Kai-Uwe et al. eds., 2010).

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demolished in the outer space. An example of such a weapon is kinetic energy anti-satellite weapons, which are currently possessed by four space-faring nations i.e., the US, Russia, China, and India.[53]

Thirdly, the second of the two paragraphs in Article IV of OST only applies to the moon and other celestial bodies, not to all of space. The moon and other celestial bodies shall be used for "exclusively peaceful purposes," as stated in Article IV, paragraph II. When we contextually interpret paragraph II of Article IV of OST, it is clear that the drafters intended to limit its application to the moon and other celestial bodies and not the whole of outer space.[54] This is due to the fact that "Moon and other celestial bodies" are always referred to when the word "outer space" is used elsewhere in the OST, including the title, preamble, and other clauses. The phrase "moon and other celestial bodies" is not used in conjunction with outer space only in paragraph II of Article IV of the OST. Therefore, interpreting Article IV of the OST in light of its wording and context leads us to conclude that void outer space can be used for both peaceful and unfriendly purposes, with the exception of the moon and other celestial bodies. Furthermore, this implication can be wholly detrimental, undermine the OST's entire goal, and make it unnecessary.[55]

Fourth, we must consider the basic goal and purpose of the OST, which is to uphold peace in space, while interpreting the clause teleologically. Here, a new angle of discussion over the definition of "peaceful" appears.[56] Since the term "exclusive" is used, it is almost obvious that this does not entail total demilitarization, the finest example of which being Antarctica. If it is to be read in that way, however, it would apply to the Moon and other celestial bodies rather than empty space. Additionally, we typically define "peaceful" in terms of being "non-military" or "non-aggressive" in the context of outer space.[57] The more popular interpretation is the latter one, which is espoused by the most powerful nation in the world, i.e., the US. The intention of the US behind interpreting the term 'peaceful' as 'non-aggressive' is clearly understandable. The US wants to use its space technology to gain a military edge over other nations. To substantiate this with an example, the US's military power relies heavily on its space prowess. In 1991, the Iranian Gulf War was the first time, the US used its space capability to aid its military in the territorial war, and it completely looked insurmountable in the war, and it was made largely possible due to its domination in space technology. The other type of interpretation, i.e., non-military, was espoused and proposed by the USSR, but it also played quite smartly here because it impliedly permitted passive military use of outer space, and prohibition will be applicable to only active military use of outer space. For example, reconnaissance, mapping, weather forecasting, navigation, early warning, etc., are passive military uses of outer space. Moreover, many satellites are launched into outer space as dual-use space satellites, which serve both military and commercial purposes. Russia also has many dual-use satellites in outer space.[58] Therefore, its interpretation of peaceful use as 'non-active military use' is comparable to the US's interpretation as 'non-aggressive.'

The notion of due regard, which is based on the maxim "*sic utere tuo ut alienum non-laedas*," or "one should use their property in a way that doesn't injure other people's property," is outlined in Article IX of the OST. However, due to the requirement that states consulate with a state appropriately when they have cause to

[53] Christopher Petras, *The Debate Over the Weaponization of Space—A Military Legal Conspectus*, 18 Annals of Air & Space L. 186 (2003).
[54] Bin Cheng, *Properly Speaking, Only Celestial Bodies Have Been Reserved for Use Exclusively for Peaceful (Non-Military) Purposes, but Not Outer Void Space, in* essays in Honour of Professor L.C Green on Occasion of His Eightieth Birthday81, 84 (Michael N. Schmitt ed., 2000).
[55] VS Vereshchetin, *Limiting and Banning Military Use of Outer Space: Issues of International Law, in* Essays in International Law in Honour of Judge Manfred Lachs671, 673 (J Makarczyk ed.,1984).
[56] Caesar Voute, *Boundaries in Space, in* Peaceful and Non-Peaceful Uses of Space 19, 22 (1999).
[57] A.A Golroo & M. Bahrami, *Distinction Between Militarisation and Weaponization of Space, a Misleading Concept, in* Proceedings of the 51st Colloquium on The Law of Outer Space 244 (2008).
[58] Abdul Rehman Khan, *Space Wars: Dual-Use Satellites*, 14 Rutgers J. L. Pub. Pol'y314, 320 (2017).

suspect that their actions could potentially interfere negatively with the operations of other States, this clause is difficult to execute. First, the rule provides states too much latitude; the only time a state is required to hold international consultations is if it thinks that its actions will potentially interfere negatively. But a state would never admit that its space activities, in which it has invested much, would compromise the functionality of other satellites. The provision becomes ineffective as a result. The responsibility of international consultation is also violated by governments' later state practices. Therefore, Article IX does not impose a legally binding requirement on nations to avoid from intentionally or carelessly interfering in ways that are injurious to the satellites of other states. [59]

In light of the above analysis, it could be seen that there are several lacunae in the law that could be easily exploited, and the fundamental objective to ensure peace in outer space can't be achieved with the existing laws, without making necessary amendments. Undoubtedly, these are the provisions that primarily govern the activities in outer space by virtue of the principle, *'lex specialis derogat lex generali'* which means that special law prevails over the general law. However, as per Article III of OST, the space activities must be carried out also in accordance with international law, which essentially includes all sources of law enumerated under Article 38 of the ICJ statute, primarily the UN Charter.

**Can General Public International Law Effectively Establish Peace in Outer Space?**

While appraising the special rules of space law, we attempted to highlight the shortcomings that fail to establish confidence in the legal authority to ensure peaceful use of outer space. In such situations, a resort is taken to general international to bring out desired outcomes and overcome all sorts of adversities. As the primary focus of this paper is the analysis of the application of the principle of non-use of use in outer space, we will delve into distinctive facets of the concept and bring to light all possible challenges that we might come across in this process.

**Conceptual Analysis: Bringing Up Possible Challenges in the Application of Law**

Let us create a hypothetical situation happening in outer space and practically analyze all the concepts of jus ad bellum applicable to the scenario.

**Hypothetical**: Suppose there are two space-faring nations, A & B, who are parties to all five treaties of space law, UN Charter, and VCLT. State A launched a satellite, named X with dual-use capability in outer space and deployed in the low-earth orbit. State A was informed by its military sector that a satellite named Y, which was registered with State B, was carrying out espionage over critical military sites. State A intimated State B regarding the apprehension of espionage, but State B outrightly denied the existence of this. State A was reassured by its military services that espionage continued to happen; therefore, it directed its space agency to dysfunctional satellite Y using the laser capabilities of satellite X, but due to the miscalculation upon the laser attack by satellite X, satellite Y's sensors stopped functioning, and satellite Y was pushed out of the orbit due to uncontrollable thrusters. After this occurrence, severe loss was incurred by state B due to the destruction of its satellite. After about 10 days of this incident, satellite Z, operated by state A, went uncontrollable and started drifting towards a mega-constellation of about 150 satellites belonging to different states, out of which 5 satellites were owned by state B. State B raised this concern with state A but timely actions were not taken. Therefore, to protect its satellites, State B launched a direct-ascent Anti-Satellite from the ground, and it pre-emptively hit satellite Z, which was uncontrollable and created a large amount of debris in the lower earth orbit.

**Use of force**

[59] SERGIO MARCHISIO, *ARTICLE IX*, *IN* COLOGNE COMMENTARY ON SPACE LAW, (Sergio Marchisio ed., 2009).

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Article 2(4) of the UN Charter prohibits the use of force against territorial integrity or political independence or in any other manner inconsistent with the purpose of the UN Charter. The force should be an 'armed force.' Fortunately, till now, humankind has not been successful in taking the human army into outer space, launching an attack on other states, and engaging in an armed conflict. But this situation is not very far if the current position of law is not strengthened. As we don't have any other law, we need to interpret the existing provisions effectively and in an evolutionary manner such that the purpose of the law is served.[60] When we use an effect-based approach and compare the potentially detrimental effects in outer space, we can determine the force in the context of outer space, and the destruction of one satellite using another satellite clearly meets the definition of 'force' under Article 2(4) of the UN Charter.

For the use of force to be unlawful, it should meet either of the three conditions enshrined under Article 2(4) of the Charter. Firstly, it should be directed against the territorial integrity of another space. However, this is problematic when we transpose it to outer space, which is a res communis omnium and subject to non-appropriation by nation-states. Thus, technically, the territorial integrity of a state can't be violated in outer space. Professor Bin Cheng, however, proposed something interesting that can resolve the conundrum. He called satellites to be quasi-territory because a registered state exercised exclusive jurisdiction, control, and ownership over the satellite. However, it seems a bit far-fetched and implausible. Secondly, by the destruction of a satellite, the political independence of a state is not impinged, because, politically, a state remains unaffected by the destruction of the satellite. Thirdly, the last resort that we are left with is establishing that the use of force was inconsistent with international peace and security. However, it is very difficult to meet this threshold because the destruction of a single state's satellite can't threaten international peace. However, the abominable consequences of the destruction of a single satellite that affects the operation of other satellites may be construed as a breach of international peace and undermines international security.

**Espionage: the threat of force and non-intervention**

In the given hypothetical situation, there was an apprehension of espionage from state B carried out through satellite Y. Can this be presumed that espionage creates a threat of force? Is it logical to assume that espionage means that some use of force is in the offing? Can we consider espionage to be an act of aggression or a hostile action? If not this, can we at least consider espionage to be a violation of the non-intervention principle?

Before thoroughly analyzing these concepts, it is imperative to decide whether espionage is legal or illegal and whether a state can destroy the source of espionage if it is illegal. Recently, Chinese air balloons that were conducting espionage over American territory were shot down by the US. Similarly, a U-2 plane in the Cold War times was also shot down when it was carrying espionage over the territory of the USA. But, when the same espionage was taking place through the high seas, it was not considered an illegal, RB-47 incident. The same applies to the region of outer space, which is a res communis territory; espionage from that region is not considered illegal. Even today, there are several reconnaissance satellites operating in outer space, and it is also considered beneficial for the international community as they can monitor the military advancements of other states and can be priorly intimated if an attack is planned against their state. This usher in a situation of mutual deterrence, where a state hesitates from attacking another state because it knows that the other state might have been warned of its military progressions, and it will be ready to

[60] James Crawford, Brownlie's Principles of Public International Law 561 (2012).

attack back, and essentially, a war will take place that will cause humungous damage to both sides.

Also, mere espionage can't be classified as an act of aggression. Aggression is an aggravated form of the use of force, which can be explained by the definition of aggression and examples of acts of aggression provided under UNGA Resolution 3314. Mere espionage can't be called a use of force in the first place, forget about the act of aggression.[61]

The threat of force is also prohibited by Article 2(4) of the UN Charter, and the legality of a threat of force is predicated upon the legality of the use of force in the same situation; in other words, if the use of force is lawful, then the threat of force is also lawful, and if the use of force is unlawful, then the threat of force is also unlawful.[62] Many authors believe that the threat of force has a sui generis existence, and certain elements of it need to be fulfilled to qualify as a threat of force. Firstly, there must be coercive pressure to meet a specific demand. Secondly, the threatening state must possess *animus minandi* to use force against another state only when the demands are not met. Thirdly, the threat must be reasonably perceived as credible by the threatened state. Neither of these elements is present; therefore, mere espionage without an element of coercion can't be considered a threat of force. In the present case, although espionage was not conclusively established, the circumstantial evidence is also admissible before the court when the direct control of obtaining real evidence lies with the other state.[63]

Moreover, mere espionage also doesn't amount to intervention prohibited under the law because it needs to co-exist with the element of coercion, which is clearly absent in the present case. Therefore, the principle of non-intervention is also not violated in the given factual scenario.

**Self-defense & its different elements**

Article 51 of the UN Charter entails the right of self-defense, individual or collective, against an armed attack.[64] The pre-existing customary international law and Article 51 together constitute the right of self-defense, and requirements laid down under both laws need to be satisfied for the legitimate exercise of self-defense.[65]

**Types of self-defenses – A temporal distinction**

Based on time, self-defense can be categorized into five types:

a. Actual self-defense – it is exercised when an armed attack has already taken place.
b. Interceptive self-defense – it is exercised when either the armed attack has begun or has crossed the Legal Rubicon, i.e., the point of no return. In the given factual scenario, the uncontrollable satellite Z can be considered to have crossed the Legal Rubicon because its course can't be diverted in any other way. Thus, the right of interceptive self-defense can be argued to exist in the given hypothetical situation.
c. Anticipatory self-defense- it is exercised when an armed attack is about to happen, and it is certain and imminent. The destruction of Satellite Z can also be considered an exercise of anticipatory self-defense because of the imminence of the threat of an armed attack or collision of uncontrollable satellite Z with the mega-constellation.
d. Pre-emptive self-defense- it is exercised when there is a possibility that an armed attack will take place. There is a very thin line between anticipatory self-defense and pre-emptive defense. The distinction is primarily based on

[61] S.M Schwebel, *Aggression, Intervention and Self-Defence in Modern International Law*, *in* 136 Collected Courses of the Hague Academy of International Law411 (1972).
[62] Legality of the Threat or Use of nuclear weapons, Advisory Opinion, 1996 I.C.J. 226, ¶42 (July 8).
[63] Corfu Channel (U.K. v. Alb.), Merits, 1949 I.C.J. 4, at 18 (Apr. 9).
[64] N. Ochoa-Ruiz & E. Salamanca-Aguado, *Exploring the Limits of International Law relating to the Use of Force in Self-defence*, 16 Eur. J. Int'l. L.499 (2005).
[65] Military and Paramilitary Activities in Nicaragua (Nicar. v. U.S.) (Merits), 1986 I.C.J. 14, ¶176 (June 27).

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the level of certainty and imminence of threat of an armed attack.[66]

e. Preventive self-defense- it is exercised to prevent future armed attack, when there is no real reason to believe that it will take place anytime soon.[67]

The first three kinds of self-defense are considered lawful, and the next two kinds are vehemently denied as lawful. The legitimacy of anticipatory self-defense stems from the Caroline principle, according to which, self-defense in anticipation can be exercised when an attack is instant, and overwhelming, leaving no means and no moment of deliberation.[68] The Caroline principle attained the status of customary international law backed with pre-charter and post-charter state practices.[69] The UN High-level Report of 2005 further reinforces the legitimacy of anticipatory self-defense due to the greater level of threat arising out of modern developments in technology, which strikes with such intensity that there is very little time to respond.[70]

**Armed attack**

An armed attack is a graver use of force, and the scales and effects of an armed attack are much greater than a normal use of force. The threshold at which the use of force is categorized as an armed attack is called the 'de-minimis threshold.'[71] It need not be a singular attack; a series of events can be cumulatively considered an armed attack. It is known as the pin-prick doctrine or accumulation theory.[72] It is challenging to assess the gravity of force in the context of outer space, and it is even more challenging to establish what kind of force qualifies as an armed strike in outer space. Is it possible to classify the destruction of a single satellite as an armed attack that makes it acceptable to use force in self-defense? The answer to this subject is still up for debate and is based on a variety of specific circumstances and facts. It is challenging to provide a solution because there are no precedents for using force in space. Everybody offers their own individualized viewpoint on the the same. Therefore, it is imperative to codify law and create unique elements of the jus ad bellum concept that are only applicable to space. [73]

**Necessity**

The requirements of necessity and proportionality have developed over time through the catena of case laws, and this dual condition has attained the status of customary international law.[74] The principle of necessity requires that the use of force must be exercised as a last resort when all alternative peaceful remedies are exhausted. It is based on the principle of peaceful settlement of dispute embodied under Article 2(3) and Article 33(1) of the UN Charter. The requirement of necessity includes the element of imminence.[75] Even if we establish the certainty of an armed attack, the imminence of the attack in terms of time can be compromised because the objective of the law is to repulse the attack. In the given scenario, state B requested State A to take adequate measures to avoid the impending disaster. However, state A was incapable of managing the court of the refractory satellite. In this situation, it might be argued that the UNSC should have been approached for help before resorting to the use of force, but enough time was not left to resort to that; time was of the essence in this case.

**Proportionality**

There are two ways in which proportionality can be assessed. One is that the response must

[66] ASHLEY S. DEEKS, TAMING THE DOCTRINE OF PRE-EMPTION, IN THE OXFORD HANDBOOK OF THE USE OF FORCE IN INTERNATIONAL LAW 146 (Marc Weller ed., 2015).
[67] Matthew C. Waxman, *The Use of Force Against States That Might Have Weapons of Mass Destruction*, 31 Mich J. Int'l L.12 (2009).
[68] R. Y. Jennings, *The Caroline and McLeod Cases*, 32 Am. J. Int'l L. 82, (1938).
[69] Dominica Svarc, *Redefining Imminence: The Use of Force Against Threats and Armed Attacks in the Twenty-First Century*, 13:1 ILSA J. Int'l & Comp. L. 172, 184 (2006).
[70] Oscar Schachter, *The Right of States to Use Armed Force*, 82 Mich. L. R.1620 (1984).
[71] Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. 161, ¶51 (Nov. 6).
[72] Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. 161, ¶64 (Nov. 6).
[73] Christopher Greenwood, *The Relationship Between Jus ad Bellum and Jus in Bello*, 9 Rev. Int'l Stud.221, 224 (1983)
[74] Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. 161, ¶43 (Nov. 6); Military and Paramilitary Activities in Nicaragua (Nicar. v. U.S.) (Merits), 1986 I.C.J. 14, ¶194 (June 27).
[75] Gabčíkovo-Nagymaros Project (Hung. v. Slovk.), Judgement, 1997 I.C.J., ¶54 (Sept. 25).

correspond to the magnitude and scale of the attack. The other is that force must be used to the extent necessary to achieve the goal pursued, i.e., to repulse the attack.[76] In the given scenario, the use of an utterly destructive weapon, a direct ascent ASAT that creates massive debris, is questionable on grounds of proportionality.[77] A risk-benefit analysis needs to be done to test the proportionality of the measure, in other words, whether the collision with the mega-constellation of state B would be more destructive than the creation of large amounts of orbital debris by the use of ASAT to destroy.[78]

**Collective self-defense**

In the given factual situation, can state B's act to destroy uncontrollable satellite Z be classified as collective self-defense? The answer would be no because collective self-defense can be exercised when the aggrieved state requests the state to exercise self-defense to defend them from the armed attack.[79] In the given factual scenario, the other satellites whose satellites were operating in the mega-constellation did not request state B to destroy satellite Z to protect their satellites.

**Reporting to UNSC**

There is an obligation to immediately report to the UNSC the exercise of the right of self-defense. This is because the UNSC is primarily responsible for the maintenance of international peace and security.[80] However, the non-fulfilment of this obligation does not make the exercise of self-defense illegal because, firstly, it is a procedural and not substantive obligation. Secondly, it is a post-facto obligation that needs to be met after the exercise of the right. Thirdly and most importantly, there is insufficient practice where states report to UNSC subsequent to exercising self-defense and makes it non-mandatory in nature.[81]

**Countermeasures**

When there are erga omnes obligations, an injured party or third party may also effectively take countermeasures. Article 50(1)(a) of the ARSIWA stipulates that these countermeasures must not interfere with the UN Charter's prohibition on the threat or use of force. It is interesting to note that ARSIWA was adopted in the year 2001, and two years later, in the ICJ's decision in Oil Platforms Case, Justice Simma rendered a new term 'proportionate countermeasures', which is distinguishable from the meaning and application of the concept enshrined under ARSIWA.[82] According to Judge Simma, right to self defense exists against the attacks of a lesser level then an armed attack. But this right does not correspond with full-scale self-defense and the standards of necessity and proportionality that are required to be met are also higher. He coined this type of self-defense as 'proportionate countermeasures.'[83] However, it is tough to rely on a single Judge's opinion to exercise this extensive right, which is an exception in itself. The purpose of exception itself is to deviate from the main principle of law, and thus, it is meant to be interpreted in a restrictive sense. We can't randomly enhance the scope of the right to self-defense against all kinds of attacks without the backing of a constructive law.[84] When ICJ's opinion is not binding in nature, the separate opinion of a single judge holds much lesser value in the eyes of international law for its binding force. However, a single judge's opinion is a secondary source of law under Article 38(1)(d) recognized as an 'eminent jurist.' Still, sole reliance on it to exercise force and diverge from the principle of non-use of force is

[76] Armed Activities on the territory of the Congo (Dem. Rep. Congo v. Uganda), Judgment, 2005 I.C.J 168, ¶148 (Dec. 19).
[77] Judith Gail Gardam, *Proportionality and Force in International Law*, 87 Am. J. Int'l L.391, 392 (Jul. 1993).
[78] David A. Koplow, *ASAT-ification: Customary International Law and the Regulation of Anti-Satellite Weapons*, 30 Mich. J. Int'l L. 1187, 1202 (2008-2009).
[79] DEREK BOWETT, SELF-DEFENCE IN INTERNATIONAL LAW 152 (1958).
[80] U.N. Charter, art. 39.
[81] D.W Greig, *Self-Defence and the Security Council-What Does Article 51 Require?* 40 Int'l & Comp. L. Q. 366, 378 (1991).
[82] Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. 161, ¶16 (Nov. 6) (Separate Opinion by Simma J); Military and Paramilitary Activities in Nicaragua (Nicar. v. U.S.) (Merits), 1986 I.C.J. 14, ¶249 (June 27).
[83] Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. 161, ¶11-¶13 (Nov. 6). (Separate Opinion by Simma J)
[84] Dominic Raab, *'Armed Attack' After the Oil Platforms Case,* 17 Leiden J. Int'l. L. 719, 728-9 (2004).

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not only inadequate but also inappropriate. And, to replicate this law in outer space is even more questionable.[85]

**Repercussions of Violation of Legal Obligations and Damage Caused: Responsibility & Liability Under Space Law and General International Law**

After getting familiar with the existing position of law, the next pertinent question is to know what are the legal repercussions for violating legal obligations. The answer to this question lies within the spheres of responsibility and liability. Again, here, special law gets precedence over general law, and any dispute concerning space activities, violation of space law provisions, and consequential damage will be dealt with under a specific area of space dedicated to liability. The approach to elucidate this aspect would be different from the previous ones. Here, we will first focus on basic principles of general international law on responsibility and liability. The concepts of responsibility and liability are used interchangeably many times, but there is a subtle distinction between the two, and that will determine the remedies that a party can avail through law for the loss incurred by it. Responsibility includes two main elements: 1) breach of a legal obligation and 2) attribution. Responsibility, in international law, applies against the state only, and thus, the element of attribution comes into the picture. The predominant difference between responsibility and liability is that 'violation of a legal obligation' is sufficient to arise responsibility, and mere 'damage' is sufficient to arise liability. When both elements co-exist, a party becomes eligible to claim compensation for the damage caused under the responsibility. When we invoke responsibility, three forms of reparation are available depending on the circumstances: (1) restitution in integrum means reviving the status quo before the commission of the wrongful act; (2) if restitution is not possible, the remedy of compensation of the loss is available to the party; (3) where either of the two remedies are not possible, satisfaction is available with the parties. On the other hand, liability involves only one remedy in the form of compensation. The parties need not prove the existence of fault, objective or subjective, to establish liability; mere damage is enough to constitute liability.[86]

Here comes the difference between space law and international law, liability has a separate dedicated convention under space law. [87]There are two types of liability: 1) First is absolute liability, which applies when the damage is caused on the surface of the earth or aircraft in flight; 2) Second is fault-based liability, which applies when the damage is caused by the space object anywhere apart from the earth's surface. Unlike general international law on liability, the fault is an integral element for the damage caused in outer space due to the space activity of a state.[88] Also, in space law, the causality[89] of damage becomes important to establish the liability of a state. The Outer Space Treaty contains a provision pertaining to liability i.e., Article VII. However, this provision does not get into the nuances of liability; it only indicates that a remedy of liability exists, and if a party is not a signatory to the Liability Convention, then the only recourse left is international law. Therefore, the relevance of Article VII in silos is quite minimalistic.[90]

The responsibility principle is embodied in Article VI of the OST, and unlike international law, attribution is automatic in this case, meaning that the state is accountable for all commercial space activity. Additionally, non-governmental organizations must be authorized and constantly supervised by the relevant authorities. Additionally, direct control and supervision are not requirements to establish

[85] Tom Ruys, *The Meaning of "Force" and the Boundaries of the Jus Ad Bellum: Are "Minimal" Uses of Force Excluded from UN Charter Article 2(4)*, 108 Am. J. Int'l L.159, (2014).

[86] Trail Smelter Arbitration (U.S./Can.) 1941, R.I.A.A. 1905, at 1963 (Mar.11).

[87] Elena Carpanelli & Brendan Cohen, *Interpreting "Damage Caused by Space Objects" under the 1972 Liability Convention, in* Proceedings of the 56th Colloquium on the Law of Outer Space 2 (2013).

[88] Andre G. DeBusschere, *Liability For Damage Caused By Space Objects*, 3 J. Int'l L. & Prac. 97, 100 (1994).

[89] León Castellanos-Jankiewicz, *Causation and International State Responsibility*, Amsterdam Center Int'l L. 46-47 (2012).

[90] Armel Kerrest & Caroline Thro, *Liability for Damage Caused by Space Activities, in* Routledge Handbook of Space Law(2016).

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state responsibility; rather, it is a legal requirement for states to monitor all manners of private companies' operations in space. The issue with this clause is that the term "national activities" is used, but it is not given the proper weight.[91] A state's national operations cannot be referred to as the commercial endeavors of private enterprises. Despite this distinction, the state is automatically constituted as being accountable for any manner of non-governmental enterprises' conduct. The law needs to be altered in light of the impending privatization of space, and the state's financial burden should be slightly lessened. However, there is a significant barrier to its implementation, as public international law only applies between states. If we place responsibility on private actors, however, then it will fall under the purview of private international law, which is nonexistent at the moment. Thus, it is another onus upon the international community to formulate private international space law so as to holistically reform the space law jurisprudence to adequately deal with modern-day challenges.[92]

**Conclusion & Way Forward**

Through this research analysis, we have understood that the international community was quite proactive at the initial stages of the development of space law. With the launch of a single satellite, the legal community predicted the dangers that recent developments and the advent of humankind in outer space would bring with it. However, it is surprising that the development of space law has stagnated, and it is incompetent to cope with modern-day challenges. It is also regrettable that the international community has not felt the need to convene and agree on even more stringent and robust legal boundaries that will preclude state and non-state actors from circumventing and exploiting modern laws. Over the years, one thing has become clear: humans are bound to engage in conflicts; concepts of harmony and friendships are illusionary in nature. The conflict between states will definitely transcend to outer space in the near future, and the current law is not well equipped to preclude that possibility.[93]

Through this paper, several deficiencies in the existing law have been underlined, and these are so many that the current look looks obsolete in nature, and minor reforms will not bring change; a holistic revamp in the law suitable to current demands needs to be effectuated. Although there are space mitigation guidelines and several armed controlling resolutions of the general assembly, their relevance towards bringing out required change is not magnificent because of their 'soft law' nature. Therefore, the key is to strengthen the 'hard law' so that international law would be more meaningful towards ensuring peace in the final frontier. Till now, the United Nations has been grossly unsuccessful at preventing war on land, war, and air, only outer space is left where war has not stepped its foot. Prompt reforms in the law might restrict the conflict in outer space but for that more than law, its enforceability needs to be bolstered.

[91] Stephen Gorove, *Space Stations - Issues of Liability, Responsibility and Damage*, 27 I.I.S.L. PROC 252 (1984).
[92] MANFRED LACHS, THE LAW OF OUTER SPACE, AN EXPERIENCE IN CONTEMPORARY LAW MAKING 15 (1972).
[93] Ricky J Lee, *The Jus ad Bellum in Spatialis: The Exact Content and Practical Implications of the Law on the Use of Force in Outer Space*, 29 J Space L 93,95 (2003).