False start: are offensive military uses of outer space permissible?

by

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December 2024

A thesis submitted to McGill University in partial fulfilment of the requirements of the degree of MASTER OF LAWS (LL.M.).

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ABSTRACT

Outer space is a vital resource and environment for present-day human activities, both necessities and niceties. Space has also simultaneously evolved into an essential, strategic domain for States' security and military operations. Despite the Outer Space Treaty's objective to foster international cooperation and prevent a largescale conflict amongst big space players, militaries' use and deployment of outer space assets are constantly increasing. It is generally accepted that self-defense, as outlined in the United Nations Charter, is permitted in space, but offensive uses of outer space seemingly contradict the historical and current objectives of "peaceful purposes." State practices, however, have gradually linked "peaceful purposes" to "non-aggressive" operations vice the debated alternative meaning of "non-military" uses. Longstanding legal ambiguities surrounding "peaceful purposes", coupled with States' evolving stance on military space maneuvers, largely influence current and future interpretations of offensive uses in and of space.

Accordingly, this paper investigates whether offensive acts or uses of outer space are, or will likely become, permissible via the current space law framework, in addition to the guise of States' everchanging strategic interpretations and practices. Determining whether offensive uses of outer space are illegal require a two-step analysis: 1) an assessment of applicable general international law restrictions; and 2) a "peaceful purposes" evaluation as detailed in space law. Thus, this paper provides a comprehensive review and analysis of the interplay between offensive military acts, space law, and general international law by using examples drawn from State space practices and terrestrial military activities. Relevant treaties' language, as well as original and developing State interpretations of the space "travaux préparatoires", paint an inevitable future with customary offensive military uses of outer space.

RÉSUMÉ

L'espace extra-atmosphérique est une ressource et un environnement indispensables aux activités humaines actuelles, à la fois indispensables et agréables. L'espace est également devenu simultanément un domaine stratégique essentiel pour la sécurité des États et leurs opérations militaires. Malgré l'objectif du Traité sur l'espace extra-atmosphérique de favoriser la coopération internationale et de prévenir un conflit à grande échelle entre les grands acteurs de l'espace, l'utilisation et le déploiement de moyens spatiaux par les armées sont en constante augmentation. Il est généralement admis que la légitime défense, telle que définie dans la Charte des Nations Unies, est autorisée dans l'espace, mais les utilisations offensives de l'espace extra-atmosphérique semblent contredire les objectifs historiques et actuels des « fins pacifiques ». Les pratiques des États ont cependant progressivement lié les « fins pacifiques » aux opérations « non agressives » par rapport à la signification alternative controversée des utilisations « non militaires ». Les ambiguïtés juridiques de longue date entourant les « fins pacifiques », associées à l'évolution de la position des États sur les manœuvres spatiales militaires, influencent largement les interprétations actuelles et futures des utilisations offensives dans et de l'espace.

En conséquence, cet article examine si les actes ou utilisations offensifs de l'espace extra-atmosphérique sont, ou deviendront probablement, autorisés par le cadre juridique spatial actuel, en plus du masque des interprétations et pratiques stratégiques en constante évolution des États. Déterminer si les utilisations offensives de l'espace extra-atmosphérique sont illégales nécessite une analyse en deux étapes : 1) une évaluation des restrictions générales applicables du droit international ; et 2) une évaluation des « fins pacifiques » telles que détaillées dans le droit spatial. Ainsi, cet article propose un examen et une analyse complets de l'interaction entre les actes militaires offensifs, le droit spatial et le droit international général en utilisant des exemples

tirés des pratiques spatiales des États et des activités militaires terrestres. Le langage des traités pertinents, ainsi que les interprétations originales et en développement des États des « travaux préparatoires spatiaux », dépeignent un avenir inévitable avec des utilisations militaires offensives coutumières de l'espace extra-atmosphérique.

ACKNOWLEDGEMENTS

Space law is a new and challenging, yet rewarding professional adventure for me. With humility and appreciation, I dedicate my thesis journey and achievements to my family and loved ones. Thank you for keeping me grounded and reminding to give myself grace, while continuing to strive for excellence. I am above all grateful to the great "I am" for comforting, protecting, and supplying me with the resources and people I needed, including my earthly angels.

I owe deep gratitude to my professor and supervisor, Professor Andrea Harrington, for her continued education, advice, and encouragement. My final thesis also reflects the unequivocal educational impacts of the faculty and staff at McGill University Faculty of Law. Last, but not least, I want to thank my employer and professional mentors for helping me realize one of my dreams. I acknowledge I am immensely blessed to have one of my dreams become a reality, and I intend to pay it forward.

ABBREVIATIONS & ACRONYMS

Anti-Ballistic Missile	**ABM**
Air Force Doctrine Publication	AFDP
Anti-Satellite Weapon	ASAT
Committee on Space Research	COSPAR
Congressional Research Service	CRS
Court of Justice of European Union	CJEU
Customary International Law	CIL
Department of Defense	DOD
Field Manual	FM
Intercontinental Ballistic Missile	ICBM
International Atomic Energy Agency	IAEA
International Court of Justice	ICJ
International Law Commission	ILC
Law of Armed Conflict	LOAC
National Aeronautics and Space Act of 1958	NAS Act
National Aeronautics and Space Administration	NASA
North Atlantic Treaty Organization	NATO
Proposed Prevention of an Arms Race in Space	PAROS
United Nations	U.N.
United Nations General Assembly	UNGA
United Nations Convention for the Law of the Seas	UNCLOS
United Nations Committee On The Peaceful Uses Of Outer Space	UNCOPUOS
United States	U.S.

Introduction[1]

In 2022, the Chief of Space Operations (CSO), United States Space Force (U.S. Space Force) declared, "We find ourselves in a period of great competition for space with nations that don't share our view…. It's a competition where the outcome is no longer assured, and it's a competition that we cannot lose. Because if we lose our access and ability to operate freely in space, we all lose."[2] Two years later, these words ring louder than ever. If a person read the CSO's statement without any reference to space, a sports game, like American football, may come to mind. It sounds like two opposing teams are set and ready, waiting for their challenger to make an illegal move. In American football, if an offensive player prematurely makes "any quick abrupt movement", [3] also called a false start, their team is penalized.[4] Ironically, the 'great competition for space' has set a similar stage. Space is quickly evolving into the primary, strategic domain for military operations, and States are preparing themselves for the competition; for example, the United States' 2023 update to its Law of War Manual contains a section titled "International Law and Warfare in Outer Space."[5]

[1] Opinions, conclusions, and recommendations expressed or implied within are solely those of the author and do not necessarily represent the views of The Air University, the United States Air Force, the Department of Defense, or any other U.S. government agency. Author's note: Refer to internal citations to navigate to specific analyses of topics previewed or generally referenced in earlier sections of the thesis.

[2] "Raymond praises Space Force achievements & purpose while noting ongoing threats, challenge", United States Space Force (5 April 2022).

[3] Official Playing Rules Of The National Football League, Section 4, Article 2 (2024).

[4] It is important to acknowledge that only two of the five space treaties, the Liability Convention and Registration Convention, explicitly embody enforcement mechanisms; however, State Parties violating any of the five treaties' binding provisions are typically subject to the United Nations' scrutiny, and, most effectively, penalties, such as sanctions imposed by other spacefaring nations. See the following treaties: 1) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 27 January 1967 (entered into force on 10 October 1967) [hereinafter Outer Space Treaty]; 2) Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 22 April 1960 (entered into force on 3 December 1968) [hereinafter Rescue Agreement]; 3) Convention on International Liability for Damage Caused by Space Objects, 29 March 1972 (entered into force on 1 September 1972) [hereinafter Liability Convention]; 4) Convention on Registration of Objects Launched into Outer Space, 14 January 1975 (entered into force on 15 September 1976) [hereinafter Registration Convention]; and 5) Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 18 December 1979 (entered into force on 11 July 1984) [hereinafter Moon Agreement]. See also "Committee on the Peaceful Uses of Outer Space", online: United Nations, Office for Outer Space Affairs.

[5] Department of Defense Law of War Manual (Office of General Counsel, Department of Defense, 2023) at 953.

While it has only been five years since the North Atlantic Treaty Organization (NATO) recognized outer space as an "operational domain",[6] some States are now referring to space as a "warfighting domain".[7] The growth of military uses of outer space is undeniable, as reflected in militaries' reliance on space assets and capabilities. However, space law is stagnant and does not wholly address the constant evolution of military activities in outer space. States argue that defensive uses of space, such as spy satellites and highly debated anti-satellite weapons, are peaceful and within bounds of the current space law framework.[8] Further, there has been a surge of countries carving out specialized outer space military divisions, and the intense competition between major space players has presumably led to the development of overt offensive outer space capabilities.[9]

Military capabilities are typically divided into two categories: "kinetic" and "non-kinetic"; "kinetic" generally refers to irreversible, physical destruction or damage caused by conventional weapons, such as missiles, while "non-kinetic" encompasses both reversible and irreversible electronic or cyber warfare, such as jamming and spoofing.[10] The legitimacy of offensive space activities is currently under scrutiny, yet there are known incidents, or at least accusations, of varying States jamming other States' space assets.[11] Therefore, it is not a matter of if, but a matter of <u>when</u> one or more States will seek to actively use their space assets in a blatant

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[6] NATO, "NATO's approach to space", online: NATO.
[7] Two members of the French Air and Space Force describe space as a 'potential new warfighting domain, one central to the defense of sovereignty and the protection of State interests." Everett C Dolman, "Space is a Warfighting Domain" (2022) 1:1 *Æther* 82 at 87.
[8] Anne-Sophie Martin, "State's Right to Self-Defence in Outer Space" (2020) 30 JAPCC 30 at 31; David Vergun, "Official Details Space-Based Threats and U.S. Countermeasures", DOD News (26 April 2023).
[9] *Ibid,* Martin at 30.
[10] Mark Pomerleau, "Army sees combo of kinetic, non-kinetic capabilities as essential to combating China's military mass", Defense Scoop (26 April 2024). See also Isabelle Khurshudyan and Alex Horton, "Russian jamming leaves some high-tech U.S. weapons ineffective in Ukraine", The Washington Post (24 May 2024).
[11] Over the years, numerous States have accused others of jamming their space-reliant capabilities, to include Norway and Finland accusing Russia of jamming their Global Positioning Systems and disrupting the 2018 NATO wargames. See Space Security-CyberSecurity, John Hopkins University, "Major Jamming Events".

offensive manner, such as remotely disassembling another State's satellite. The overarching dilemma is whether, explicitly or through omission, current space law and State practice legitimize offensive military uses of outer space? But, more pointedly, is an offensive use of outer space required to be peaceful, and does the current legal framework have the capacity to handle growing tensions and the possibility of a space-related conflict caused by a State's use of its offensive measures?

In her 2020 article, Dr. Anne-Sophie Martin concludes, "There is an imperative need to revisit the existing framework of international laws pertaining to space and [offensive or defensive] State behaviour [sic]."[12] Space is a vital resource for States, and the current tension in the space community increases the likelihood of military space assets becoming "attractive target[s] to adversaries."[13] However, the preamble of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the moon and Other Celestial Bodies (Outer Space Treaty), clearly shows the drafters' desire[14] for international cooperation and States use of outer space for "peaceful purposes."[15] The terms "target" and "peaceful" are complete opposites on the spectrum of conflict. Nevertheless, Dr. Martin's simultaneous warning about outdated space law and mention of adversarial targeting inherently anticipate the looming reality of States' increased military uses of outer space.

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[12] Martin, *supra* note 8 at 34.
[13] *Ibid* at 31.
[14] While the preamble of the Outer Space Treaty reflects the drafters' desire to generally use outer for "peaceful purposes", the drafters consciously decided to only include the moon and other celestial bodies within the "exclusively for peaceful purposes" provision. States, therefore, do not have a legal obligation to exclusively use the void of outer space for "peaceful purposes", and this reality acts as the launching pad for the focus of this thesis -- offensives uses of outer space. Outer Space Treaty, *supra* note 4 at Article IV, para 2.
[15] *Ibid* at Preamble.

According to Gerardine M. Goh, peace is the foundation and heart of space law, but space technology was birthed from wartime.[16] Space law, however, is known for its ambiguities which result in various interpretation debates. The lack of uniformed, global understandings and interpretations of key treaties' provisions and their terminologies, specifically pertaining to military operations in space, require focused analyses of the space "travaux préparatoires"[17], in addition to past and present State practices. A discussion regarding relevant general international law and customary international law is also necessary to cover any legal loopholes or challenges space law does not address.

In general, law and policy considerations both factor into the permissibility of outer space activities. The international legal communities refer to these areas as "hard law" and "soft law". "Hard law", such as written treaties or customary international law, are binding upon States and often embody legal consequences for violations.[18] "Soft law", on the other hand, are voluntary, and they are often presented as non-binding principles and norms of States' expected behavior.[19] While "hard law" factually paints a picture of standards, rights, privileges, and prohibitions, "soft law" helps frame those regulations towards the overall objectives. "Soft law" is subordinate to the law itself, yet it often yields a better compliance response from States.[20] If a State chooses to ignore principles and norms of States' expected behavior directly connected to a binding instrument, such as the Outer Space Treaty, their nonconforming use could result in consequences equivalent to, or more detrimental, than violating the law itself.

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[16] Gérardine M Goh, "Keeping the peace in outer space: a legal framework for the prohibition of the use of force" (2004) 20:4 Science Direct (Space Policy) 259.
[17] "United Nations Treaties and Principles on Outer Space: Travaux Préparatoires", online: United Nations, Office for Outer Space Affairs.
[18] Jack M Beard, "Soft Law's Failure on the Horizon: The International Code of Conduct for Outer Space Activities" (2017) 38:2 U Pa J Int'l L 335 at 342, 352.
[19] *Ibid at 342.*
[20] *Ibid* at 345-47.

Therefore, this thesis will thoroughly investigate the current legal regime and determine whether offensive uses of outer space are, or will likely become, permissible. One of the major considerations is whether offensive space weapons and uses fall within or outside of the travaux's intended "peaceful purposes" of outer space. Based on a prima facie review of State practice, the answer seems to be "yes" – offensive uses of space are permitted; a close examination of the space law further undercovers what is expected to be a highly debated and precarious affirmation, laying within the legal loopholes; even if a critic believes offensive uses of space are definitely prohibited, history shows constant evolution of State practice and policies expanding military space activities, thus the future consensus will likely embrace offensive uses of space. This is exactly why it is important to examine "soft law" or policies pertinent to offensive uses of outer space.

Nevertheless, opportunities afforded by legal ambiguities or omissions should not always be seized, especially if doing so will likely result in dire consequences. A comprehensive legal assessment of offensive uses of outer space is therefore vital to legally outline spacefaring nations' military activities. A rational examination cannot stop at the legal question of permissibility, instead it must address what is arguably the most important question: should States offensively use outer space? For example, from an international cooperation and public interest perspective, and considering the probability of inevitable collateral damage, what, if any, types of offensive tactics in space should States reconsider?

Chapter One will analyze key provisions of applicable general international law, as well as customary law, and examine whether offensive uses of space may qualify as a use of force. While the focal point of the thesis is not weaponization, the concept is a subsidiary of the overall use of force analysis. Chapter Two will focus on crucial international space regulations and

supporting documents, assessing them from a *lex specialis*[21] perspective of outer space activities, to include military uses. This chapter also compares demilitarization clauses of other treaties to provide additional context for debated outer space phrases, such as "exclusively for peaceful purposes."[22]

Next, Chapter Three details and dissects the challenged meaning of "peaceful purposes" and its connection to military uses, as well as the influence those legal concepts have on the permissibility of offensive uses of outer space. Chapter Three will also examine terrestrial offensive and defensive military measures, then compare them within the scope of legal uses of outer space. Lastly, Chapter Four explores additional considerations related to offensive uses of outer space, such as dual-use objects and the domain classification of outer space. This chapter will also propose a resolution reflecting suggested parameters for offensive military uses of space to streamline future legal issues. The purpose of this thesis is to determine and opine on whether offensive military uses of outer space are permissible, in hopes of informing space players who may not have fully appreciated the applicable law.

Accordingly, the author concludes deficiencies and ambiguities of space law permit offensive military uses within the void of outer space. The author also surmises there is also no legal requirement to ensure offensive space measures are used peaceful nor is there a current enforcement mechanism to curtail the offensive ambitions of radical spacefaring nations; thus, States and legal experts must act with a sense of urgency to clarify and update the law to address

[21] Stephan Hobe notes space law is a branch of international law as lex specialis. Stephan Hobe, ed, Space Law, 2d ed (Bloomsbury Publishing, 2023) at 48, para 159. Alan Boyle also explains lex specialis as a technique for interpreting and applying treaties by focusing on the more specific rule as the governing or decisive norm. Alan Boyle, "Reflections on the treaty as a law-making instrument" in 40 years of the Vienna Convention on the Law of Treaties (London: British Institute of International and Comparative Law, 2010) at 19.
[22] Outer Space Treaty, *supra* note 4 at Article IV, para 2.

the current trajectory of military space activities, as generally unfettered military uses of space could result in dire consequences for all humankind and environments.

Chapter 1: Starting at the Beginning – General International Law & Their Interpretations

I. The Vienna Convention on the Law of Treaties (1969)

Treaty interpretation is at the core of clarifying whether offensive military uses of outer space are permissible. Therefore, it is essential to understand the legal framework outlining the chronological and elemental components for properly interpreting a treaty, meaning Articles 31-33 of the 1969 Vienna Convention on the Law of Treaties (the Vienna Convention or the Law of Treaties).[23] The International Law Commission (ILC), a United Nations legislative body responsible for the codification and progressive development of international law, drafted the Vienna Convention to act as "the law of treaties."[24]

Although the Vienna Convention does not address all issues pertaining to treaties[25], it outlines administrative and fundamental rules and procedures for treaties between sovereign States.[26] Fitzmaurice describes the Vienna Convention as a living document, subject to judicial practice and explanations, yet some courts, such as the Court of Justice of European Union (CJEU), have deviated from the Vienna Convention's explicit language.[27] Namely, the CJEU was criticized for diverging from the Vienna Convention's guidance for interpreting treaties, as it

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[23] Vienna Convention on the Law of Treaties, 23 May 1969, (entered into force on 27 January 1980) [hereinafter Vienna Convention or Law of Treaties], Articles 31-33.
[24] The ILC was established by the General Assembly to conduct studies and make recommendations to ensure progressive development of international law and its codification. "International Law Commission", online: United Nations.
[25] Examples of issues outside the scope of the Law of Treaties include the effect in treaties of the outbreak of hostilities and the question of State responsibility. Malgosia Fitzmaurice, "Law of Treaties" in The Oxford Handbook of United Nations Treaties (Oxford Handbooks Online, 2019) 493 at 496.
[26] The International Law Commission adopted the position that Articles 31 and 32 appropriately emphasis different means of interpretation, acting as "a single combined operation" for interpreting treaties. Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties, (International Law Commission, 2018) Part Two, Conclusion 2, para 5.
[27] Fitzmaurice, *supra* note 25 at 498-99.

frequently relied on a treaty's "object and purpose" vice applying the entire three-part interpretation procedure discussed in Articles 31-33.[28] CJEU, however, is a court of the European Union. Thus, it lacks legal authority over many States in the United Nations, and its interpretive approach is not dispositive.

Furthermore, the Vienna Convention has developed into an "iconic" component of international law, and it is revered as the "most successful of all the Conventions."[29] While the Law of Treaties' relevance to modern day challenges may be questioned, it remains in effect and demands compliance from its 116 Parties.[30] Big space players, such as the China and Russia, are State Parties to the Vienna Convention, thus they are expected to follow the rules and procedures laid out in the Convention, to include its interpretation provisions. The United States is a signatory[31], not a State Party, of the Law of Treaties.[32] Accordingly, the United States accepts and recognizes the various provisions of the Vienna Convention as customary international law in regarding to the law of treaties.[33] The International Court of Justice has also recognized parts of the Vienna Convention, namely Articles 31-33, as customary international law.[34] Customary international law is one of the formal, binding sources of international law, [35] established through generally consistent State practice born out of a sense of obligation.[36] Though the Outer Space

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[28] *Ibid* (the CJEU chose a broader approach referred to as "teleological interpretation", favoring the notion of a treaty's "object and purpose" over other methods of interpretations identified in the Vienna Convention, such as subsequent practice).
[29] Fitzmaurice, *supra* note 25 at 493.
[30] Fitzmaurice notes some objection to the Vienna Convention's current applicability to present-day legal issues, but also highlights it is still 'widely regarded…a sensible and practical guide' for practitioners dealing with treaties. *Ibid* at 499; see also Draft conclusions on subsequent practice, *supra* note 26, Part Two, Conclusion 2, para 5.
[31] The term "signatory" refers to a State in political support of the treaty and willing to continue its engagement with the treaty process. "Legal Obligations of Signatories and Parties to Treaties", online: Inside Justice.
[32] "U.S. Department of State, Frequenly Asked Questions - Vienna Convention on the Law of Treaties", online: US Department of State.
[33] *Ibid.*
[34] Judgment on the *Arbitral Award of 31 July 1989*, *Guinea-Bissau v. Senegal, ICJ Reports 1991* at 69-70, para 48.
[35] Panos Merkouris, "Interpreting the Customary Rules on Interpretation" (2017) 10 Int C L Rev 126 at 129.
[36] Britt Hunter, "Research Guides: International and Foreign Law Research: Customary Law & General Principles".

Treaty predates the Law of Treaties, the customary status of the principles of interpretation make them applicable to the Outer Space Treaty. It is through said customary lens of Articles 31-33, in the Vienna Convention, the outer space "travaux préparatoires" and States' space activities will be examined.

A. Vienna Convention, Article 31

Article 31 outlines the general rule of interpretation; per this rule, '[a] treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light its object and purpose.'[37] Under Article 31 of the Vienna Convention, it is apparent that a treaty's preamble is important when one is interpreting its provisions, as the preamble typically encompasses the 'object and purpose' of a treaty. However, as Odermatt highlights, a treaty's preamble or object and purpose does not outweigh the text explicitly written in a treaty's articles.[38] There is a large difference between an introductory summary of one's goal and overall intentions, meaning a preamble, vice the specific, agreed upon restrictions, rights, options, and ramifications often meticulously laid out in a treaty's articles. Accordingly, paragraphs 2-4 of Article 31 identify acceptable considering factors for one's initial attempt at interpreting a treaty; these contextual considerations expand beyond a treaty's object and purpose. Treaty interpretation via Article 31 involves a review of the treaty's 'context', meaning the treaty's preamble, its annexes, agreements between the Parties or instruments made and accepted in connection to the treaty's conclusion, as well as any subsequent agreement or subsequent practices that establishes an agreement between the Parties.[39]

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[37] Vienna Convention 5, *supra* note 23, Article 31, para 1.
[38] Jed Odermatt, "The Use of International Treaty Law by the Court of Justice of the European Union" (2015) 17 CYELS, 121 at 131.
[39] Vienna Convention, *supra* note 23 at Article 31, paras 2-3.

While Article 31 pointedly identifies permissible contextual material for interpretation of a treaty, it is important to construe the last two categories, subsequent agreements and practices, as intended by the Vienna Convention. The ILC adopted and submitted explanations regarding subsequent agreements and practices to direct treaty interpreters towards the appropriate material.[40] According to the ILC, subsequent agreements and practices are 'objective evidence'[41] of a particular position taken by the Parties regarding the interpretation of the treaty.[42] The ILC also explains that subsequent agreements are any agreements between the Parties of a treaty that occurred after the treaty was finalized, while any conduct done in the application of a concluded treaty which establishes a later agreement meets the criteria of a subsequent practice.[43] Although only the acts of Parties to a treaty may constitute a subsequent practice, an assessment of non-State actors' conduct may be relevant when determining the subsequent practices of Parties.[44] One should also account for any 'special meaning' Parties to a treaty intentionally attached to said treaty's term or text.[45] Simply put, the ordinary meaning of a term in a treaty prevails unless Parties to the treaty intentionally established a special meaning for the relevant term. Article 31 effectively embodies a commonsense approach to interpreting treaties.

B. Vienna Convention, Articles 32-33

Treaties, however, address complex legalities. As a result, in order to obtain a legitimate interpretation of a treaty's provisions, one may have to look beyond the finalized textual language, connected agreements, and subsequent practices. Article 32 in the Law of Treaties

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[40] Draft conclusions on subsequent practice, *supra* note 26.
[41] *Ibid* at Conclusion 3.
[42] *Ibid* at Conclusion 6, para 1.
[43] *Ibid at Conclusion 4, paras 1-3.*
[44] *Ibid at Conclusion 5, paras 1-2.*
[45] Vienna Convention, *supra* note 23 at Article 31, para 4.

provides an interpretation recourse via supplementary means of interpretation, but only after the methods in Article 31 have been exhausted.[46] Accordingly, Article 32 allows an examination of preparatory work and circumstances surrounding the conclusion of a treaty to confirm meanings, clarify "ambiguous or obscure" inferences, or address "manifestly absurd or unreasonable" results from applying the general rule in Article 31.[47]

"Peaceful purposes" is at the crux of the debates regarding military uses of outer space, as it is infamously vague and suppositional. Therefore, it is appropriate and necessary to turn to supplementary means via Article 32 of the Vienna Convention to interpret "peaceful purposes", which is a key factor to the analysis of offensive military uses of outer space. The Cold War, General Assembly Resolutions, discussions in working groups and papers, as well as meeting notes of the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS)[48], are all examples of supplementary means of interpretation regarding the space treaties. Therefore, a review of such matters is necessary to properly determine if offensive uses of space are permissible.

Lastly, Article 33 of the Vienna Convention asserts the text of a treaty in two or more authenticated languages is treated "equally authoritative" and presumably has "the same meaning", unless the Parties agreed to a prevailing text.[49] If a prevailing text is not identified and conflicting meanings exist, the textual meaning that best aligns with the treaty's "object and purpose" must be accepted by the Parties.[50] For space law, this highlights the importance of

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[46] *Ibid* at Article 32.
[47] *Ibid.*
[48] The United Nations Committee on Peaceful Uses of Outer Space is the organization created by the General Assembly of the United Nations to govern the exploration and use of space for the benefit of all, and its additional duties involve reviewing international cooperation in peaceful uses of outer space, studying space-related activities, encouraging space research, and studying legal issues. "Committee on the Peaceful Uses of Outer Space", online: United Nations.
[49] Vienna Convention, *supra* note 23 at Article 33, paras 1,3.
[50] *Ibid* at Article 33, para 4.

States arriving to a common understanding for various ambiguous phrases and provisions, i.e., "peaceful purposes." Continuous competition among State Parties, however, hinder mutual acceptance of textual meanings, thus leading to contested issues such as offensive uses of space.

II. The Charter of the United Nations

The Charter of the United Nations (U.N. Charter or Charter) is an international legal instrument that established one of today's biggest and most respected international organizations, the United Nations. While the United Nations began with only 51 State Parties in 1945, it now consists of 193 State Parties.[51] The United Nations primary goal is to maintain international peace by offering State Parties a forum to "gather together, discuss common problems, and find shared solutions that benefit all of humanity."[52] In order to ensure that its goals are primed for success, the drafters of the U.N. Charter embedded a hierarchy of international agreements within its provisions.[53]

Article 103 reads, "In the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter shall prevail."[54] Simply put, the U.N. Charter preempts any legal obligations States may have agreed to if said duty conflicts with their preexisting commitments made via the Charter. This emphasizes the need to fully comprehend State Parties' duties in the U.N. Charter, prior to exploring those same States' responsibilities enumerated in the Outer Space Treaty. While some scholars refer to the Outer Space Treaty as the "Magna Carta of space", [55] Article III[56] of the Outer Space Treaty mandates its State Parties to adhere to the U.N.

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[51] United Nations, "United Nations - About Us".
[52] *Ibid*.
[53] The Charter of the United Nations, 26 June 1945, (entered into force on 15 October 1945) [hereinafter U.N. Charter] at Article 103.
[54] *Ibid*.
[55] Douglas Ligor, "Reduce Friction in Space by Amending the 1967 Outer Space Treaty" TNSR (26 August 2022).
[56] Outer Space Treaty, *supra* note 4 at Article III.

Charter, explicitly creating a direct nexus between Outer Space Treaty and U.N. Charter. Relevant U.N. Charter provisions pertaining to outer space include, but is not limited to, the U.N. Charter's preamble which lays out the United Nations' objectives, the organization's purposes, as well as State Parties' rights and obligations.

A. Preamble & Purpose

As discussed above, a preamble is not within itself legally binding, but it provides context to a treaty's objectives and the organization's purpose. The U.N. Charter's preamble notes that the United Nations are determined to establish conditions that ensure treaty and other international legal obligations maintain respect.[57] The preamble of the U.N. Charter also embodies a phase that is repeated in various sections of the Charter and also commonly found in many international treaties: "maintain international peace and security."[58] Nearly the exact phrase can be found in Article III of the Outer Space Treaty.[59] Although the Outer Space Treaty's language and its implications will be discussed later, it is worth noting that the interconnection between the U.N. Charter and the Outer Space Treaty demands State Parties to the Outer Space Treaty to ensure their space activities fully comply with relevant international law. Therefore, should a State Party of both treaties desire its military to offensively use outer space, said State has to ensure that it is abiding within the U.N. Charter's legal parameters, as well as the Outer Space Treaty.

While the U.N. Charter's preamble only provides overall context for the United Nations, the Charter is unmistakably clear about the United Nations' purposes. Article 1 in Chapter I notably sets forth the maintenance of international peace and security as the primary purpose of

[57] U.N. Charter, *supra note 53* at Preamble.
[58] *Ibid*.
[59] Outer Space Treaty, *supra* note 4 at Article III.

the United Nations, and it lays out actions the United Nations are permitted to take to preserve peacetime between State Parties.[60] According to the United Nations Office of Public Information, this is because "[f]reedom from war and from fear of war" are 'urgent and fundamental needs.'[61] Offensive military uses of outer space could presumably jeopardize international peace and security, thus activating a responsive measure the geopolitical conscious United Nations rarely takes – the option to act and eliminate any perceived threats and suppress the relevant State Party's outer space activities if the uses are considered as acts of aggression or breaches to peace.[62]

Furthermore, the remaining purposes of the United Nations include the following: development of "friendly relations among nations"; responsibility to take "appropriate measures to strengthen universal peace"; achievement of "international co-operation"; and 'to be the centre for harmonizing the actions of nations."[63] The essence of these four United Nations' purposes is reflected in current international treaties, such as the Outer Space Treaty, which were created under the United Nations' purview. Article 1 in Chapter I of the U.N. Charter also fortifies the United Nations' scope as it pertains to any space activities that could endanger international peace, security, cooperation, and understanding.[64] Nevertheless, looming geopolitics may deter a United Nations intervention, regardless of potential threats to peace or acts of aggression stemming from offensive military uses. But States are still expected to

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[60] In Article 1, para 1, of the U.N. Charter, the language proceeding after the phrase "to that end" describes steps the United Nations is expected to take in order to "maintain international peace and security"; specifically, the organization has to "…take effective collective measures for the prevention and removal of threats to the peace, and for the suppression of acts of aggression or other breaches of the peace, and to bring about by peaceful means, and in conformity with the principles of justice and international law, adjustment or settlement of international disputes or situations which might lead to a breach of the peace." U.N. Charter, *supra note 53*, Article 1, para 1.
[61] United Nations Office of Public Information, Guide To The Charter of the United Nations (New York, 1962) at 14.
[62] U.N. Charter, *supranote 53* at Article 1, para 1. See also, *ibid* at ch VII (explains the process and actions the Security Council of the United Nations will take if a threat to the peace, breach of peace, or acts of aggression exist).
[63] U.N. Charter, *supra note 53* at Article 1, paras 2-4.
[64] See Outer Space Treaty, *supra* note 4 at Article III.

understand and give due weight to their lawful responsibilities and the complex legal aspects of the Outer Space Treaty, the concept of offensive uses of outer space, as well as other international legal instruments.

B. Non-Use of Force Principle: Article 2(4)

Notwithstanding the relevance and importance Article 1 of the U.N. Charter has regarding offensive military uses of outer space, the United Nations' principles identified in Article 2 introduce chief considerations. The non-use of force principle listed in paragraph 4 of Article 2 plays a crucial role in determining the permissibility of offensive outer space activities. Article 2, paragraph 4, states, "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations."[65] The non-use of force principle identifies three prohibited use of force categories: 1) "territorial integrity"; 2)"political independence"; 3) "any other manner inconsistent…". Each phrase covers specific circumstances, which may not be entirely applicable to outer space, but require a baseline of understanding to address whether offensive uses of outer space are permissible via applicable international law. The following sections discuss use of force from a broad to narrow approach, by addressing the varying elements and considerations surrounding the "use of force" before defining the phrase itself.[66]

[65] U.N. Charter, *supra* note 53, Article 2, para 4.
[66] See Section "Use of Force: A Phrase of Grays" on page 33 to review the author's definitional analysis of "use of force."

C. Three Prohibited Use of Force Categories

1. Territorial Integrity

A State's territorial integrity is the first distinctive capacity against which United Nations State Parties must not threaten or use force. Per customary international law, codified in the General Assembly, Resolution 2625 (XXV), the U.N. Charter's protections of territorial integrity also bar forceful changes of existing international borders or lines of demarcation established under international agreements, deprivation of peoples' equal rights in a State, and military occupation of any State.[67]

2. Political Independence & Its Nexus to Territorial Integrity

Christian Marxsen fittingly underlines territorial integrity as a "crucial" aspect of the U.N. Charter's non-use of force principle, further describing it as a legal international protection of all States' sovereignty, "no matter how powerful they are".[68] He adds that a State's territory is the necessary, "spatial framework" or "exclusive zone" where a State can express itself without foreign interference,[69] which highlights the nexus between territorial integrity and political independence, the second protected notion. Similar to the detailed territorial obligations, Resolution 2625 (XXV) also identifies political tactics, such as propaganda for wars of aggression and civil strife, that would render a State Party in violation of Article 2(4) of the U.N. Charter.[70] A present-day example that triggers disputes about violations of both territorial integrity and political independence is the ongoing war between Russia and Ukraine, wherein the

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[67] UNGA Resolution 2625 (XXV), Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in Accordance with the Charter of the United Nations (United Nations, 1970). See also Accordance with international law of the unilateral declaration of independence in respect of Kosovo (International Court of Justice, 2010) at para 80 (noting various enumerated obligations State Parties must heed to avoid violating the territorial integrity of other sovereign States).
[68] Christian Marxsen, "Territorial Integrity in International Law – Its Concept and Implications for Crimea" (2015) at 9.
[69] *Ibid* at 10.
[70] Resolution 2625 (XXV), *supra* note 67 at 122, para 1.

United Nations' primary response has been a declaration of its commitment to supporting Ukraine's sovereignty, independence, and territorial integrity.[71] Although the United Nations' anticlimactical response to the Russo-Ukrainian war shows the organization's sensitivity towards geopolitics, it is irrefutable that the aforementioned protected categories of the non-use of force principle are vital to maintaining international peace and security.

Fabio Tronchetti submits the U.N. Charter's preservation of international peace and security is obtained by obliging State Parties to refrain from the threat or use of force against any State's territorial integrity and political independence.[72] Territorial integrity and political independence are separate, yet they are interconnected categories which heavily rely one core concept: sovereignty. Sovereignty generally indicates that a State has the supreme authority to reign over its territory and all people within its purview, and said State does not have to adhere to foreign rules or leaders unless it has willingly agreed to do so or customary international law exists.[73] Therefore, a State may, within the confines of certain legal limitations, exercise its sovereign power over any of its physical territories on Earth, and likewise over its space objects and personnel operating in outer space.[74]

It is still worth noting that the enumerated use of force violations pertaining to territorial integrity in Resolution 2625 (XXV)[75] primarily discuss borders, boundaries, or some physical

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[71] "Two Years after Russian Federation's Invasion, UN Remains Committed to Ukraine's Sovereignty, Independence, Assistant Secretary-General Tells Security Council", United Nations (12 February 2024).
[72] Fabio Tronchetti, Fundamentals of Space Law and Policy, SpringerBriefs in Space Development (New York, NY: Springer New York, 2013) at 8.
[73] Norman Bentwich & Andrew Martin, A Commentary on the Charter of the United Nations, 1st ed (London: Routledge, 2024) Chapter 1 at 10.
[74] Article II of the Outer Space Treaty prohibits national appropriation, explicitly including "by claim of sovereignty"; however, Article VIII of the Outer Space Treaty establishes States' "jurisdiction and control" over registered space object and individuals onboard. States are therefore able to exercise sovereign power of their national and registered space assets, as well as any persons onboard. See Outer Space Treaty, *supra* note 4, Articles II, VIII; Tronchetti, *supra*note 70 at 9, 86.
[75] Resolution 2625 (XXV), *supra* note 67 at 122-23, para 1.

domain that falls with a State's sovereignty instead of an object, like a space satellite. The prohibition of the use of force against a State's territorial integrity and political independence are fundamentally important to State activities within Earth's atmosphere, yet the concepts' dependence on a State's sovereignty seemingly results in their circumscribed application to outer space activities. Although it may be a stretch, a State Party is presumably barred from use of force against another State's space objects and personnel via the same protections afforded to States for their territorial integrity and political independence.[76] One space law expert coined this legal application as "quasi-territorial jurisdiction", describing a State's legal power over ships and aircraft, as well as onboard items and persons, as another international legal concept.[77]

While sovereignty is a key component to a State's territorial integrity and political independence, Resolution 2625 (XXV) echoes Article II of the Outer Space Treaty, bolstering that the moon and other celestial bodies are not subject to national appropriation by claim of sovereignty.[78] Resolution 2625 (XXV) also condemns and prohibits the use of force against a State's political independence, which includes using propaganda for a war of aggression, a crime against peace.[79] Further, the Outer Space Treaty's preamble emphasizes the applicability of the political independence category, specifically propaganda, to States' space activities, as it reads, "Taking account of United Nations General Assembly resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace or act of aggression, and considering that the aforementioned

[76] See Outer Space Treaty, *supra* note 4, Articles II, VIII; Tronchetti, *supra* note 70 at 9, 86.
[77] Bin Cheng, *Studies in International Space Law* (Oxford University Press, 1997) 621 at 622, 625.
[78] Resolution 2625 (XXV), *supra* note 67 at 122, Preamble; Outer Space Treaty, *supra*note 4 at Article II.
[79] *Ibid,* Resolution 2625 (XXV) at 122, para 1.

resolution is applicable to outer space."[80] The compilation of these legal instruments shows an artful nexus between political independence and States' outer space activities.[81]

If States are condemned for participating in space-related propaganda that may to provoke or encourage any threat to the peace, breach of the peace or act of aggression, it is reasonable deduce that the literal application of the non-use of force principle would bar a State's threat or use of force in outer space against another State's territorial integrity and political independence. Furthermore, the complete demilitarization clause in Article IV of the Outer Space Treaty only permits State Parties to use celestial bodies "exclusively for peaceful purposes", [82] leaving no rational argument that the use of force is allowed on celestial bodies. Protections against the use of force in the void of outer space, however, is arguably minimal and circumstantial, when considering the territorial integrity and political independence categories.

3. Any Manner Inconsistent with the United Nations' Purposes

Nonetheless, a clearer, stronger clause against the threat or use of force in outer space exists. The third non-use of force category, which specifically includes "any other manner inconsistent with the Purposes of the United Nations", fills what would otherwise be a legal gap and wholly places extraterrestrial use of force within Article 2(4)'s grasp. Plainly put, this final category safeguards against the threat or use of force via an intentional gray area, a catchall created to give the United Nations the flexibility to include actions that severely threaten or upend any of the enumerated purposes listed in Article 1 – specifically international peace and security, cooperation, and understanding. Goh labels the "residual catch-all provision" of Article

[80] Outer Space Treaty, *supra*note 4 at Preamble; UNGA Resolution 110(II), Measures to be taken against propaganda and the inciters of a new war (United Nations, 1947) 14, para 1.
[81] Outer Space Treaty, *supra*note 4 at Preamble; Resolution 110 (II), *supra* note 70 at 14, para 1.
[82] The author analyzes Article IV of the Outer Space Treaty alongside the non-use of force principle on page 52. See also Outer Space Treaty, *supra* note 4, Article IV.

2(4) as the general prohibition on the use of force, to include space warfare.[83] Tronchetti bolsters this by explaining the collective reading of Article I and Article III of the Outer Space Treaty fortifies the U.N. Charter's role in protecting against uses of force which could hinder the maintenance of international peace and security, as well as the promotion of international cooperation and understanding.[84] As a result, it is reasonable to conclude the U.N. Charter applies to, and prohibits, the use of force in outer space.

4. Customary International Law & Use of Force

Notwithstanding the U.N. Charter's written bar against the use of force, States are also largely forbidden to use force by customary international law, which is binding upon States as a *jus cogens*[85] principle with an *erga omnes*[86] effect. [87] Article 38, paragraph 1(b), of the Statute of the International Court of Justice (ICJ) notes "international custom, as evidence of a general practice accepted as law."[88] Unless a State persistently objects, a norm established as customary international law is binding upon all States, regardless of a particular State's status to any treaty.[89] Customary international law that is also considered a *jus cogens* norm does not permit any derogation.[90] Therefore, refraining from the threat or use of force is both a treaty-based duty

[83] Goh, *supra* note 16 at 263.
[84] Tronchetti, *supra* note 72 at 8.
[85] The commonly used definition of jus cogens is a peremptory norm of general international law, meaning "a norm accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law (jus cogen) having the same character." Report of the International Law Commission - jus cogens and erga omnes (United Nations, 2022), Chapter VI, Conclusion 3 at 27; see also *ibid* (ILC's commentary on Conclusion 3).
[86] Erga omnes are obligations owed to the entire international community, which are often birthed from jus cogen or peremptory norms of general international law. *Ibid,* ch VI, Conclusion 17 at 64.
[87] Hobe, *supra* note 21, at 126, para 405.
[88] The Statute of the International Court of Justice, 26 June 1945, (entered into force on 24 October 1945) [ICJ Statute], Article 38(1)(b).
[89] Draft conclusions on identification of customary international law, with commentaries (International Law Commission, 2018) fn 663 at 122 [hereinafter Draft conclusions on CIL]; Report of the International Law Commission - 68th Session (United Nations, 2016), Chapter V, Part Six, Conclusion 15, Commentary at 112; Goh, *supra* note 16 at 264.
[90] *Jus cogens*, or a peremptory norm of general international law, embodies a norm of general international law that is accepted and recognized by the international community of States as a norm without derogation, meaning

for United Nations' State Parties, and it is also a widely accepted, "way of the world" that embodies a legal obligation for all States to heed.

In its opinion for *Nicaragua v. United States*, the ICJ notes certain provisions of the U.N. Charter have been adopted "…within the realm of general international law and their application is not a question exclusively of interpreting a multilateral treaty."[91] The ICJ further explains laws regarding use of force extend beyond the U.N. Charter to State practices and obligations, without any reliance on the Charter itself.[92] Ultimately, the Court writes, "Principles such as those of the non-use of force, non-intervention, respect for the independence and territorial integrity of States, and the freedom of navigation, continue to be binding as part of customary international law, despite the operation of provisions of conventional law in which they have been incorporated."[93]

Since the ICJ's ruling that acknowledges non-use of force as customary international law, the United Nations published various resolutions which some commentators describe as authoritative interpretations or contributors to further development of customary international law.[94] Gray, nonetheless, stresses that the resolutions often suffer from ambiguity, a price of States' consensus, which consequently sets the stage for States to have disputes over the application of the law and the facts relevant for controversies involving use of force.[95] On the

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exemptions or acts to undermine the norm; it can only be modified by a subsequent norm of general international law with the same character. ILC's Report - jus cogens, *supra* note 85, ch VI, Conclusion 3-4 at 27-28.

[91] Military and Paramilitary Activities in and against Nicaragua, Nicaragua v USA, 1984 ICJ 97 [hereinafter the "Nicaragua 1984 case"] at para 71.

[92] *Ibid*.

[93] *Ibid* at 73.

[94] Christine D Gray, International law and the use of force, fourth edition ed (Oxford, United Kingdom ; New York, NY: Oxford University Press, 2018) Chapter 1 at 8 (Gray lists various resolutions "Western States have come to accept the legal significance and customary international law", to include the 1949 Resolution on the Essentials of Peace, the 1974 Definition of Aggression, the 1970 Declaration on Friendly Relations, and the 1987 Declaration on the Non-Use of Force).

[95] *Ibid* at 8-9.

other hand, Fedorov hales the General Assembly resolutions, specifically the Declaration on the Enhancement of the Effectiveness of the Principle of Non-Use of Force in International Relations[96], as reaffirmation, development, and codification of the U.N. Charter's provisions, as well as political and legal supplements of norms and rules concerning States' "negative political obligations"[97] to refrain from the use of force.[98]

Goh submits because the non-use of force has *jus cogens* status, it offers a specific prohibition to the use of force in outer space, voiding any inconsistent treaty or new custom.[99] Per the ILC's definition, a *jus cogens* can be "modified only by a subsequent norm of general international law (*jus cogen)* having the same character."[100] While the ILC's explanation of *jus cogens* expounds beyond Goh's summation regarding the permanency of the non-use of force *jus cogens* status, one fact remains true – the non-use of force is a cemented customary international legal obligation, binding and "universal in character"[101], with the girth to govern States' military outer space activities.

5. Exceptions to Use of Force: Self-Defense & U.N. Security Council

Through Article III of the Outer Space Treaty, Article 2(4) of the U.N. Charter and customary international law impose both general and specific prohibitions on the use of force in outer space. States may, nevertheless, be excused for using force if one of two exceptions apply: 1) self-defense or 2) authorization by the United Nations' Security Council. The first exception

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[96] This Resolution was birthed from the United Nations' deep concern of conflict and tension which led to continued violations of the non-use of force principle, and it expresses strong, unanimous recommendations that States are expected to follow. UNGA Resolution 42/22, Declaration on the Enhancement of the Effectiveness of the Principle of Refraining from the Threat or Use of Force (United Nations, 1987).
[97] V N Fedorov, "The United Nations Declaration on the Non-Use of Force" in W E Butler, ed, The Non-Use of Force in International Law (Brill | Nijhoff, 1989) 77 at 78.
[98] *Ibid* at 83.
[99] Goh, *supra* note 16 at 265.
[100] ILC's Report - jus cogens note 85, ch VI, Conclusion 3 at 27.
[101] Resolution 42/22, *supra* note 96, ch I, para 2 at 288.

to the non-use of force principle is found in Article 51 of the U.N. Charter. Article 51 establishes a State's right of self-defense. In part, the self-defense clause reads, "Nothing…shall impair the *inherent right of individual or collective self-defense if an armed attack* occurs against a Member of the United Nations (emphasis added)."[102] A major distinction between Article 2(4) and Article 51 are two phrases, "use of force" and "armed attack", respectively. The delineation of these two expressions will be discussed later.[103]

First, it is essential to comprehend the intended meaning of self-defense via the Charter.[104] Self-defense, a theory established in customary international law[105], was increased, yet limited by the written language of the U.N. Charter. Though the Charter acknowledges every State has an "inherent" right of self-defense, it amplifies the principle of self-defense by including a State's defense of itself and of its allies, which is usually referred to as collective self-defense.[106] This is because States within alliances often have the perspective that an attack or act of aggression against one of the allies is equivalent to aggression against all. Another simple inference is the weight of dependability and deterrence – if ally States could not depend on each other, there would be little incentive for predatory States to respect the integrity of weaker States. Thus, the drafters of the U.N. Charter strategically limited the principle of self-defense to operate as an "emergency measure" or a "fill [in] the gap" until the Security Council could evaluate the situation and take necessary measures.[107]

The second Charter based exception to the non-use of force principle, the Security Council's procedures and authorization to use force, is discussed throughout Articles 39-50.[108] These are the remaining provisions of Chapter VII, notably titled "Action with Respect to Threats to the Peace,

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[102] U.N. Charter, *supra* note 53 at Article 51.
[103] The author's "use of force" and "armed attack" discussion begins on page 33.
[104] Bentwich & Martin, *supra* note 73, ch VII at 108.
[105] *Ibid*.
[106] *Ibid*.
[107] U.N. Charter, *supra note 53* at Article 51; Bentwich & Martin, *supra* note 73, ch VII at. 108.
[108] U.N. Charter, *supra note 53* at Articles 39-50.

Breaches of the Peace, and Acts of Aggression."[109] Per the Article 42, the Security Council may choose to take military action, meaning use force, to maintain or restore international peace and security, if lesser measures, such as provisional measures and interruptions to a State's economic relations, are deemed inadequate to address the existing threat or attack.[110] Article 42 specifically includes "action by air, sea, or land forces" as domains the Security Council may exploit if it authorizes the use of force in response to an armed attack. Even though outer space is not explicitly named, Article 32 of the Vienna Convention authorizes a review of the circumstances surrounding a treaty when its interpretation is in question. Goh logically offers that outer space may have been naturally omitted, because it was still an unexplored environment when the U.N. Charter was drafted.[111] Furthermore, Article III of the Outer Space Treaty clearly states that relevant portions of the U.N. Charter are applicable. It is unquestionable that the non-use of force principle applies to outer space, therefore its exceptions are intrinsically valid.

Beyond the U.N. Charter, there is a debate regarding whether the *Caroline* case represents a customary international law definition of self-defense. The *Caroline* incident occurred in 1837, involving a British forces' attack against Canadian rebels and destruction of their ship.[112] This case birthed a definition of self-defense that embodied necessity and proportionality. Specifically, there must be proof the necessity of self-defense was "instant, overwhelming, leaving no choice of means, and no moment for deliberation."[113] According to the *Caroline* test, necessity generally means no alternate responses to an armed attack is possible; present-day, States often refer to the criteria of military necessity, a principle of the Law of Armed Conflict

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[109] *Ibid*.
[110] *Ibid* at Articles 39-42.
[111] Goh, *supra* note 16 at 266.
[112] Michael Wood, "The Caroline Incident—1837" in Tom Ruys, Olivier Corten & Alexandra Hofer, eds, The Use of Force in International Law: A Case-Based Approach (Oxford University Press, 2018) 5 at 6. See also Gray, *supra* note 94 at 157-58.
[113] *Ibid,* Wood at 8.

(LOAC) that contemplates the nature of war and allows a State participating in armed conflict to use the necessary type and degree of force needed to gain the adversary's submission.[114] A State involved in an armed conflict is therefore required to adhere to the proportionality principle of LOAC as well, meaning the State must consider the size, duration, and target of its response to ensure its military force does not result in excessive damage.[115] Even though these LOAC principles exists, there are on-going deliberations about *Caroline* test, its potential status as a customary legal definition of self-defense, and its effect on existing principles of armed conflict.

Gray notes there are two schools of thought regarding *Caroline* self-defense definition: 1) States that refer it as a mere limitation on necessity and proportionality; and 2) challengers who view it as an outdated justification for self-help that has been overcome by the U.N. Charter's preservation of a broader customary legal understanding of self-defense.[116] Regardless of a State's position on the *Caroline* case, the consensus is necessity and proportionality restrict self-defense to acts intended to stop or deter an attack, and they are not excuses for retaliation or punitive measures.[117] But why is it necessary to discuss self-defense? How does the legal authority of self-defense help evaluate whether offensive military uses of space are permissible?

6. Use of Force: A Phrase of Grays

Self-defense, an international legal right of all States, covers a State's ability to defend itself or its allies in outer space, provided an armed attack occurs. Accordingly, if a State evaluates and implements the principles of necessity and proportionality in its response to an armed attack, said State has presumably engaged in self-defense, a lawful use of force. Article 51

[114] UK Ministry of Defence, "Basic Principles of the Law of Armed Conflict" in UK Ministry of Defence, ed, The Manual of the Law of Armed Conflict (Oxford University Press, 2005) 21; Gray, *supra* note 94 at 159.
[115] *Ibid,* UK Ministry of Defence at 25; Gray, *supra* note 94 at 159.
[116] *Ibid* at 158.
[117] *Ibid* at 157-58.

of the U.N. Charter establishes an "armed attack" and self-defense as separate, yet related forms of force.[118] It would be presumptuous to argue that offensive uses of outer space are characteristically illegal and acts of force. Therefore, a baseline legal understanding of self-defense, a permissible use of force, helps to draw distinctions between varying degrees of permissible and impermissible uses of force.

Even if a State's outer space activities, like jamming transmissions from another State's satellites, appear to be "inconsistent with the Purposes of the United Nations",[119] the act in question must qualify as an unlawful use of force. It is vital to understand what the phrase "use of force" embodies and how it affects space activities, as varying spacefaring nations have differing interpretations of space law and its application regarding military uses in space. Growing competition, tension, and developments in military space capabilities among States could push the outer space domain to the edge of a precipice, such as an armed conflict stemming from debated escalatory uses of outer space activities. Accordingly, it is particularly critical to acknowledge relevant nuances between the use of force and other phrases, such as an armed attack (the self-defense trigger), acts of aggression, and weaponization pertaining to outer space.

a) Armed Attacks & Acts of Aggression

In the *Nicaragua* case, the ICJ compares and contrasts the concepts of the use of force and an armed attack.[120] The ICJ found arming and training an adversary's opposers was an unlawful use of force, but did not raise to the level of an armed attack; the Court also ruled that

[118] U.N. Charter, *supra note 53* at Article 51.
[119] *Ibid,* Articles 1, 2(4).
[120] Military and Paramilitary Activities in and against Nicaragua, Nicaragua v USA, 1986 ICJ [hereinafter Nicaragua 1986 case].

supplying money to surrogate mercenaries or forces is not a use of force.[121] Simply put, according to the ICJ, an illegal use of force seemingly embodies the direct threat or actual realization of physical damage in contrast to comprehensive perils caused by a State's calculated decision to indirectly give itself an advantage over another State. The ICJ also ruled that it is necessary to distinguish armed attacks, "the most grave forms of the use of force", from less egregious uses of force.[122] Therefore, per Article 51 of the U.N. Charter, customary international law, and the ICJ, a State is only permitted to exercise its right of self-defense, an accepted use of force, in response to an armed attack, the gravest level of force.[123] It is consequently judicious to surmise the United Nations, as well as the international community at-large, consider the non-use of force principle as a sacred and paramount legal principle needed to maintain peace.

Although self-defense is transcribed in Article 51of the U.N. Charter, the concept of an "armed attack" is not defined. The ICJ therefore looked to the Definition of Aggression, General Assembly Resolution 3314, for guidance in its consideration of what is an armed attack.[124] Per the Annex of Resolution 3314, "aggression is the most serious and dangerous form of the illegal use of force."[125] Article 1 of Resolution 3314 then defines aggression as "…the use of armed force by a State against the sovereignty, territorial integrity or political independence of another State, or in any other manner inconsistent with the Charter of the United Nations."[126] While it is interesting that the Annex amplifies the severity of aggression more than the definition itself,

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[121] *Ibid* at paras 195, 205.
[122] *Ibid* at para 191.
[123] *Ibid* at para 181 (the ICJ highlights differing and harmonious characteristics of the U.N. Charter, stating, "The essential consideration is that both the Charter and the customary international law flow from a common fundamental principle outlawing the use of force in international relations."); see also, *ibid* at para 193 (the ICJ writes, "[Resolution 2625 (XXV)] demonstrates that the States represented in the General Assembly regard the exception to the prohibition of force constituted by the right of individual or collective self-defence as already a matter of customary international law.");U.N. Charter, *supra note 53* at Article 51.
[124] Nicaragua 1986 case, *supra* note 120 at para 195.
[125] UNGA Resolution 3314 (XXIX) - Definition of Aggression (United Nations, 1974), Annex at 143.
[126] *Ibid* at Article 1.

found in Article 1, the ICJ decided that the acts of aggression examples discussed in Article 3 reflect customary international law.[127] Article 3 primarily lists scenarios involving invasions or attacks by armed forces.[128] The ICJ, therefore, ultimately concluded it is necessary to evaluate the "scale and effects"[129] of the use of force to determine whether it is an armed attack, as an armed attack is more than "a mere frontier incident" carried out by armed forces.[130]

b) Use of Force – The "Scale And Effects"

Based on the prior discussion, it is clear that all uses of force are not equal nor are all uses of force illegal. There is a magnitude of severity and permissibility that divides each category of force. This is vital, because any State hoping to expand its outer space missions to include uses of space, which extend beyond defense or humanitarian efforts, will have to identify how its actions are not illegal uses of force. Applying the ICJ's "scale and effects" analysis, a use of force spectrum can be established. An armed attack is the severest form of use of force, closely followed by or nearly synonymous to an act of aggression, which are both on the opposite end of the legality scale in comparison to self-defense and approved Security Council measures. So far, all the terms related to "use of force" refer to a State's armed force, attacks, and aggressive acts,

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[127] Resolution 3314 (XXIX), *supra* note 125, Article 3 at 143 (states, "Any of the following acts, regardless of a declaration of war, shall, subject to and in accordance with the provisions of Article 2, qualify as an act of aggression: (a) the invasion or attack by the armed forces of a State of the territory of another State, or any military occupation, however temporary, resulting from such invasion or attack, or any annexation by the use of force of the territory of another State or part thereof; (b) bombardment by the armed forces of a State against the territory of another State or the use of any weapons by a State against the territory of another State; (c) the blockade of the ports or coasts of a State by the armed forces of another State; (d) an attack by the armed forces of a State on the land, sea or air forces, or marine and air fleets of another State; (e) the use of armed forces of one State which are within the territory of another State with the agreement of the receiving State, in contravention of the conditions provided for in the agreement or any extension of their presence in such territory beyond the termination of the agreement; (f) the action of a State in allowing its territory, which it has placed at the disposal of another State, to be used by that other State for perpetrating an act of aggression against a third State; (g) the sending by or on behalf of a State of armed bands, groups, irregulars or mercenaries, which carry out acts of armed force against another State of such gravity as to amount to the acts listed above, or its substantial involvement therein."); see also Elizabeth Wilmshurst, "Definition of Aggression" (2018), United Nations, 1 at 3.
[128] Resolution 3314 (XXIX), *supra* note 125, Article 3 at 143.
[129] Nicaragua 1986 case, *supra* note 120 at 195.
[130] *Ibid* at para 195.

which all traditionally have a direct nexus to another State's physical damage, invasion, or destruction. But, what about State actions that do not have direct or physical impacts? Do those actions sufficiently qualify as uses of force?

A frequent debate is whether the use of force solely refers to military actions or if it includes strategic economic tactics as well. Due to the modern world's dependency on currency, it is a realistic deduction that economic retaliation may be just as effective to weaken an adversary as blunt, "armed" force.[131] The term "force", however, inherently carries the essence of something more than financial schemes by an opponent to seize an advantage over one's competitor or even ally. Today, it is widely agreed that the phrase "use of force"[132] as described in the U.N. Charter specifically means military or "armed" force.[133] States, nevertheless, remain divided regarding whether they support the notion that economic coercion does not consist of a use of force.[134] However, it is plausible that the Charter's drafters were in fact referring to military force instead of financial tactics, as they deliberately separated the two approaches in Article 41, identifying interruptions of economic relations, and Article 42, listing actions by air, land, and sea forces, as distinct measures available to the Security Council.[135]

The U.N. Charter was also written in the post-World War II period; this timeframe, coupled with the understanding that the use of force is considered the "essence of war",[136] make it understandable that the drafters were referring to physical, hostile force carried out by States' militaries. Imagining direct armed force in space may have once been hard to believe, but

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[131] Bentwich & Martin, *supra* note 73, ch I at 13.
[132] Russia and China unsuccessfully submitted the Draft Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects, which contained broad definitions of "use of force" and threat of force". Stacey Henderson, "Arms Control and Space Security" in Handbook of Space Security: Policies, Applications and Programs (Cham: Springer International Publishing, 2020) 95 at 103.
[133] Hobe, *supra* note 21, para 406 at 127.
[134] Gray, *supra* note 94, ch 2 at 33-34.
[135] U.N. Charter, *supra note 53* at Articles 41-42.
[136] Bentwich & Martin, *supra* note 73, ch 1 at 13.

modern technology and advancements in space make it easier to envision what use of force could look like in outer space. For example, S. Freeland and E. Gruttner describe a State's deliberate destruction of another State's satellite constitutes a use of force.[137] Thus, just as the use of force prohibition is valid on Earth, the U.N. Charter and its integration via the Outer Space Treaty, and their pertinence to space activities, undoubtedly prohibit hostile military force or acts that depict the nature of war in space.[138]

Furthermore, the debate about whether use of force requires physical damage is critical to the offensive use of space issue, as the non-use of force principle represents the general international law parameters of acceptable military tactics. The non-use of force principle is also the largest and toughest hurdle a State must overcome to argue the legitimacy of their military's offensive acts in space. When considering what constitutes a use of force, the debate extends beyond a look at States' economic and combat maneuvers. The present world's dependency on the economy and other domains, such as outer space and cyberspace, is fundamental. Outer space and cyberspace are often likened to each other as domains which are interrelated and constantly outpacing law. This reality undoubtably inserts unexpected factors that exceed the use of force considerations of the Charter's drafters and the ICJ that presided over the *Nicaragua* case.

When applying current law to the outer space domain, it is vital to consider both the letter of the law and the spirit of the law. This is because many laws and established norms did not contemplate the legal novelties associated with the latest domains. Therefore, existing laws and customs, especially those that have not been amended, may demand a unique application to each

[137] Steven Freeland & Elise Gruttner, "The Laws of War in Outer Space" in Handbook of Space Security: Policies, Applications and Programs (Cham: Springer International Publishing, 2020) 73 at 87.
[138] Hobe, *supra* note 21, para 406 at 127.

case's facts and circumstances, as most scenarios will not likely have legal precedent. Outer space and cyberspace[139] are both subject to varying threats from actors or natural elements of the domains, like meteors in space; these factors could lead to additional challenges, such as attribution and identification of the Party responsible for damage caused to, or a possible attack against, another State's assets. Why is this important to use of force?

The non-use of force principle permits self-defense to a victim State, inherently requiring positive identification of the attacking State. The novelty of cyberspace and the link of cyberattacks[140] to space assets, have reintroduced a contested question: is physical damage or harm a prerequisite for the use of force threshold? Because all space assets have a cyber component, it is helpful to look at the cyber community's approach to the use of force question. The Congressional Research Service (CRS) acknowledges there is no universal criteria identifying whether a cyberattack is a use of force, specifically an "armed attack".[141] Quoting Harold Koh, a past legal advisor for the U.S. State Department, the CRS indicates that cyber activities resulting in death, injury, or significant destruction, such as virtually triggering a meltdown at a nuclear plant or causing airplanes to crash, are likely uses of force.[142] Further, based on the ICJ's "scales and effects"[143] test, a cyberattack, which is a non-kinetic measure, that results in death, injury, or destruction could reach the threshold of an "armed attack" – "the most grave [form] of the use of force".[144]

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[139] Gray, *supra* note 94, ch 2 at 33-34 (discusses cyber-attacks and the debated applicability to the use of force threshold).
[140] *Ibid* at 34.
[141] Catherine Theohary, "Use of Force in Cyberspace" (2024) Congressional Research Service at 1.
[142] *Ibid*.
[143] Nicaragua 1986 case, *supra* note 120 at para 195.
[144] *Ibid* at para 191.

c) Space weaponization & Use of Force Concerns

Space weaponization is another concept often associated with the debate and concerns regarding the use of force in outer space. While it is logical to connect use of force to space weaponization, the two concepts are not completely one in the same. To further complicate matters, the idea of space weaponization is often synonymized and contrasted against the concept of a State potentially employing environmental modifications to use outer space as a weapon itself. Some scholars refer to the latter as the illegal military or hostile use of the outer space environment through deliberate manipulation or modification of its natural processes[145], while other space professionals describe space weaponization as the development, placement, or deployment of weapons in space. [146] Of note, Tronchetti particularly defines space weaponization as "the deployment of space weapons of an *offensive nature* in space or on the ground with their intended target located in space."[147] The complexity of the term "offensive" will be examined later in chapter 3.

Presently, it is important to point out, based on a prima facie review, both space weaponization and the modification of space into a weapon could satisfy the general definition of "use of force", as each concept involves military or "armed" force. A closer look, however, will reveal differences. The environmental modification of space, as described above, is a clear use

[145] Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 10 December 1976, 31 U.S.T. 333, 1108 U.N.T.S. 151 (entered into force 5 October 1978) [EnMod Convention], Articles I-II; see also Roman Reyhani, "Protection of the Environment During Armed Conflict" (2006) 14:2 Mo Envtl L & Pol'y Rev 323–338.

[146] One scholar proposes space weapon should be defined as follows:"… a device stationed in outer space (including the moon and other celestial bodies) or in the earth environment designed to destroy, damage, or otherwise interfere with the normal functioning of an object or being in outer space, or a device stationed in outer space designed to destroy, damage, or otherwise interfere with the normal functioning of an object or being in the earth environment; [a]ny other device with the inherent capability to be used as defined above will be considered as a space weapon." Bhupendra Jasani, "Introduction" in Peaceful and Non-Peaceful Uses of Space (Routledge, 2022) 1 at 13.

[147] Tronchetti, *supra* note 72 at 72; see also "What is the Difference Between Space Militarization and Space Weaponization?", New Space Economy (5 April 2023) (emphasis added).

of force that violates the non-use of force principle, because it involves "hostile" military use of space to overcome an adversary. On the other hand, developing space weapons or deploying them in space, alone, arguably does not fully qualify as a use of force. Yet such acts could still qualify as a threat of the use of force. It is possible that an opposer may feel threatened, but a threat of the use of force requires more than a disadvantaged or less developed State feeling exposed or being unequipped. An example of an actual use of force by a space weapon is one State using a space object to purposely collide into an adversary's spacecraft, resulting in damage or destruction of the spacecraft, as well as the injury or death of personnel onboard. This scenario, whether its within Earth's atmosphere or beyond, falls squarely within the global understanding of use of force, and it would likely meet the armed attack threshold.

d) Use Of Force - The Means & The Ends

In contrast, the mere existence of a threat or use of force alone, without a State using said force against one of the three protected categories in Article 2(4) of the U.N. Charter, should not be considered a violation of the non-use of force principle. Article 2(4) explicitly identifies and safeguards the three categories for a reason. For example, the development or placement of a space asset, to include a weapon, with varying capabilities, such as jamming or spoofing, does not violate another State's territorial integrity, political independence, or any of the United Nations' Purposes listed in Article 1 of the Charter. The aforesaid scenarios are likely insufficient to reach the armed attack threshold, as well as the degree of an act of aggression, unless the "scales and effects" are heightened; for instance, if the jamming or spoofing causes significant infrastructure damage or death on Earth, the threat or use of force could reasonably quality as an armed attack or act of aggression.

The examples above involve unprovoked, space-related acts by one State that affect another State. In American football, the team on offense seeks to exploit weaknesses in their competitor's defense. However, if the offensive players move before the regulations allow them, their team is often reprimanded or penalized. A similar outcome, such as sanctions, could occur in the international space community if one or more States decide to use their military space resources in a provocative or hostile manner. Should an alleged victim State claim another State's military uses of space qualify as the use of force, the accused State must know, or should be reasonably certain of, the legal basis it intends to assert to justify using its space assets and personnel in an offensive manner.

In accordance with the current law pertaining to the U.N. Charter and the non-use of force principle, one plausible argument is, unless space law is more restrictive, offensive uses of outer space which do not constitute an act of aggression, do not cause physical damage or destruction, nor violate one of the three protected categories are permissible. This position is bolstered by a key observation and approach made by the CRS regarding whether a cyber weapon rises to the level of the use of force. The CRS notes when determining whether an act fittingly constitutes a use of force as defined by existing international law, it is crucial to focus "…on the ends achieved rather the means with which they are carried out…".[148] Accordingly, if an offensive use of outer space is the "means", it is not a violation of the non-use of force principle if the "ends" are peaceful.

Chapter 2: Outer Space and Demilitarization

Peace, explicitly the maintenance of international peace and security, is the 'end'-goal of various treaties, but particularly both the U.N. Charter and the Outer Space Treaty. As

[148] Theohary, *supra* note 141 at 1.

previously noted, the U.N. Charter repeatedly refers to the maintenance of international peace and security in its preamble and Article 1, the United Nations' Purposes. [149] Article III of the Outer Space Treaty also expressly provides that State Parties' outer space activities must be in accordance with applicable international law, the including U.N. Charter, "…in the interest of *maintaining international peace and security* and promoting international co-operation and understanding (emphasis added)."[150] While the U.N. Charter is of key importance to addressing the permissibility of the use of force and lesser offensive uses in outer space, the Outer Space Treaty, as a whole, is the main legal instrument regulating space actors and their activities. This chapter will discuss space laws' specific limitations and allowances of military activities. Furthermore, this section explores the interplay of specific space law provisions with the legality of offensive uses of outer space.

I. Outer Space Treaty

The Outer Space Treaty is the principal legal document that governs outer space players and their space endeavors. Therefore, it is usually the first legal instrument legal advisors or space law commentators review when addressing outer space issues. It is a multilateral agreement birthed during the Cold War, as various States' primary goal was to preserve peace in outer space.[151] The Outer Space Treaty provides international regulations for space activities, establishing the foundational legal principles for outer space, also referred to as 'the void', and celestial bodies.[152] While the Outer Space Treaty currently has 114 State Parties committed to

[149] U.N. Charter, *supra note 53* at Preamble, Article 1.
[150] Outer Space Treaty, *supra* note 4, Article III.
[151] Freeland & Gruttner, *supra* note 137 at 76.
[152] Outer Space Treaty, *supra* note 4, Preamble; Vladimir Kopal, "Treaty On Principles Governing The Activities Of States In The Exploration And Use Of Outer Space, Including The Moon And Other Celestial Bodies" (2008) United Nations Audiovisual Library of International Law 10.

abide by its provisions,[153] States' interpretations of the Treaty are constantly a source of international contention.

Ironically, the Outer Space Treaty's preamble notably recognizes the "common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes".[154] It is highly probable that the drafters did not fully comprehend the full range of possibilities, nor the current scope of progress made by the modern-day space community. Nevertheless, their overall intention is unmistaken – to preserve outer space for peaceful purposes. "Peaceful purposes" appears four times throughout the Treaty, twice in the preamble and twice in Article IV.[155] Accordingly, the preamble details the drafters' desires "to contribute to broad international cooperation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes."[156] International cooperation is another objective the Outer Space Treaty shares with the U.N. Charter. Logically, one would reasonably assume that cooperation would lessen any tension among State Parties to a mutual treaty. The Outer Space Treaty uniquely identifies two specific areas of cooperation for its State Parties: scientific and legal.

While Article XI reiterates the call for international cooperation through the scientific community, the preamble is the only place in the Outer Space Treaty that legal cooperation is mentioned. [157] This is revealing, as a treaty's preamble is not legally binding. Therefore, it is not mandatory for State Parties to cooperate with one another as it pertains to the legal aspects of their exploration and use of outer space. Arguably, this loophole could be one of many reasons for the varying and competing interpretations of key provisions in the Outer Space Treaty. While

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[153] "United Nations Office for Disarmament Affairs - Outer Space Treaty", online: Office for Disarmament Affairs Treaties Database.
[154] Outer Space Treaty, *supra* note 4, Preamble.
[155] *Ibid* at Preamble, Article IV.
[156] *Ibid* at Preamble.
[157] *Ibid* at Preamble, Article XI.

it would be naïve to presume a compulsory provision for State Parties to legally cooperate would result in undisputed interpretations, it could have at minimal created a required forum for States to proactively and progressively discuss the best possible meanings of key terms and phrases in the Outer Space Treaty. The United Nations' creation of the UNCOPUOS[158] to oversee the exploration and use of outer space, analyze legal problems, and develop annual resolutions to further understanding and international cooperation as captured in the Outer Space Treaty undoubtably eliminates nominal legal concerns and mitigates substantive space law debates. Nevertheless, UNCOPUOS has not corrected the biggest shortcoming and source of contested legal interpretations of the Outer Space Treaty – the lack of a glossary. The Outer Space Treaty is riddled with broad, undefined phrases which have birthed States' constant interpretation debates, in addition to ongoing "space races". How does this connect to offensive military uses of outer space?

The first "space race" was in the 1960s between the United States and Russia, the former Soviet Union; the tension and competition among these two big space players resulted in the initial concerns pertaining to space security.[159] Antoni credits the Outer Space Treaty for resolving the space race tension, ensuring stability, and promoting international cooperation.[160] He writes, "[S]pace security – although not explicitly defined – was the result of the stabilizing effect of a treaty-based mechanism, and *vice versa* space security meant that activities in outer space ensure stability and peaceful uses of outer space."[161] Although Antoni acknowledges that "space security", like most space-related terms, does not have a universal definition, he describes

[158] UNCOPUOS, *supra* note 48.
[159] Ntorina Antoni, "Definition and Status of Space Security" in Handbook of Space Security: Policies, Applications and Programs (Cham: Springer International Publishing, 2020) 9 at 10.
[160] *Ibid.*
[161] *Ibid.*

space security as "the aggregate of all technical, regulatory, and political means that aims to achieve unhindered access and use of outer space from any interference as well as aims to use space for achieving security on Earth."[162]

Antoni's proposed definition, however, goes beyond the scope of the privileges and limitations imposed by the Outer Space Treaty. While the Outer Space Treaty governs space acts with broad strokes of legal language and allows equal access to space, it does not permit "unhindered…use" of outer space. If this was the case, the very stability that Antoni applauds the Treaty for creating would quickly dissipate. All space actors, military and civilian, would likely carry out any type of operations, offensive or otherwise, that they desire. Conversely, the Outer Space Treaty has created longstanding legal limits regarding scientific and military ventures in outer space, which largely contributed to the enduring international cooperation.[163]

The Outer Space Treaty's applicability and interpretations, however, continue to transform as progress in, and related to, space is made. These international legal transformations are primarily reflected through General Assembly Resolutions and State practices, as the Treaty has not been modernized or amended since 1967. Accordingly, some scholars deem the Outer Space Treaty as "outdated, inadequate, and insufficient to adequately address arms control in outer space."[164] The Outer Space Treaty, nonetheless, was created specifically to curtail military uses and weapons in outer space,[165] thus its language is not entirely obsolete and remains highly relevant to the matter at hand – offensive military uses of outer space. Yet, due to recent space developments, such as

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[162] *Ibid* at 15.
[163] Outer Space Treaty, *supra*note 4, Preamble.
[164] Henderson, *supra* note 116 at 108 (adopting and expounding on another author's position, but emphasizing that one of the biggest challenges is definitional which is caused by a problem – political will).
[165] Outer Space Treaty, *supra* note 4, Preamble, Article IV.

an increase in space actors, States' new ambitions, innovative technology, and establishments of space specific military branches, a new space race[166] has emerged.

The U.S. Space Force, for example, was established in 2019, and its mission is to secure national interests in, from, and to space.[167] More precisely, the U.S. Space Force is legally mandated functions include providing freedom of operation for the United States in, from, and to space, conducting space operations, and protecting the interests of the United States in space.[168] In Article 3 of the *Law of the Russian Federation "About Space Activity",* Russia states ensuring its security is one of the goals for its space activities, which is accompanied by a main task of "ensuring defense capabilities of Russian Federation and control over the implementation of international treaties concerning armaments and armed forces."[169] Furthermore, within its competence, the Ministry of Defence of Russian Federation is mandated to "elaborate draft program and annual plans of works to create and use military space technology and, in conjunction with the Russian Space Agency of space technology applied for both scientific and national-economy purposes and for the purposes of defense and security of Russian Federation."[170] Russia's recent military space activities echo the ominous tone of its 1993 law, as it conducted a 2020 anti-satellite test of its direct-assent missile system – a platform designed to intercept satellites in low Earth orbit.[171] In response, the U.S. Space Force acknowledged

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[166] In a Global News article, Ram Jakhu warns that the new space could resemble the original tension between the United States and Soviet Union, continuing to describe economic exploitation as a trigger for competition, conflict, and eventual destruction. Nathaniel Dove, "The new space race is here. Will it look like the '60s — or the 16th century?", Global News (22 August 2023).
[167] "About Space Force", online: Space Force 101.
[168] 10 USC § 9081 (2019), para (c) (1-3).
[169] *Law of the Russian Federation "About Space Activity"*, Decree No. 5663-1 of the Russian House of Soviets (1993) at Article 3, paras 1-2.
[170] *Ibid at* Article 7, para 2.
[171] "Proposed Prevention of an Arms Race in Space (PAROS) Treaty Timeline", The Nuclear Threat Initiative [PAROS Treaty Timeline].

potential adversaries are seeking and developing ways to threaten or deny the United States' access to its fundamental space capabilities.[172]

This confirms the existence of heightened tension between space players, in addition to strategic planning by States trying to poise themselves to be in the most advantageous position, essentially prepared for the mounting competition and the possibility of conflict. Hence, it is extremely likely these considerations have States wondering what military space activities are allowed within the parameters of space law. Does space law only permit a State's military to conduct defense missions, or can military uses of outer space include offensive measures?

While the preamble is not legally binding, the Law of Treaties provides that preambles provide context to a treaty's interpretation.[173] One of the Outer Space Treaty's objectives is to obtain scientific and legal international cooperation among its State Parties in order to achieve progressive exploration and uses of space for peaceful purposes. Legal cooperation sets the stage for a common understanding of what is legally permissible and impermissible in outer space. Today's moderately stable conditions in the international space community could abruptly and detrimentally change without legal cooperation regarding offensive military uses of space, which could result in unfettered space activities. Because the Cold War prompted concerns about militarization of outer space, the drafters of the Outer Space Treaty likely included legal cooperation as an objective to encourage continued collaborative development of legal measures aimed to curb an armed conflict resulting from overzealous State Parties' military uses of space.

Fittingly, Article I of the Outer Space Treaty, an obligatory provision, intensifies State Parties' obligations to the world at-large. Paragraph 1 of Article I declares the exploration and

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[172] "About Space Force", *supra*note 163. See also PAROS Treaty Timeline*, supra* note 171 (noting in 2020, the representatives of the U.S. Space Command made a statement Russia's space developments represent an ever-increasing threat to U.S. interests).
[173] Vienna Convention, *supra* note 23 at Article 31, para 2.

use of outer space must "…be carried out for the *benefit* and in the *interest of all countries*...", and "shall be the province of all mankind."[174] The language in Article I paints the picture that space activities should be conducted in such a manner that they benefit all countries, meaning developed and developing States. An example is an established spacefaring State using its technologies to assist a natural disaster struck countries that does not have its own space assets.[175]

Tronchetti suggests Article I reflects the core philosophy of space law, adding it should be read in connection with Article III.[176] Accordingly, Article III of the Outer Space Treaty essentially requires State Parties to comply with other international law, including the U.N. Charter; it continues by explaining that States' conformity to applicable general international law is in interest of maintaining international peace and security and promotes international cooperation and understanding.[177] While the drafters used phrases, such as "benefit and…interest of all" and "province of all mankind", in Article I to show their dedication to international cooperation, Article III unambiguously highlights the original space players' goals of sustaining peace, security, cooperation, and understanding within the international space community. These objectives do not, at face value, refer to military uses of outer space. However, from a policy perspective, it can be argued that hostile, unprovoked military space missions directed at another space actor would more than likely jeopardize the overarching initiatives of the Outer Space Treaty – peace and security.

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[174] Outer Space Treaty, *supra* note 4, Article I. Hobe proposes the community clause in Article I cannot be directly interpreted as a as concrete limitation on the freedom of exploration and use, because Article I is written broadly and lacks precision. Therefore, he suggests the language of Article I cannot overcome the existing legal presumption in favor of the favor of States' freedom. Hobe, *supra* note 21, para 238 at 77.
[175] Tronchetti, *supra* note 72 at 8. The understanding is space activities must not be conducted completely and solely for the exploring or using State, but instead for the overall interests of the international community. Hobe, *supra* note 21, para 239 at 77.
[176] Tronchetti, *supra* note 72 at 8.
[177] Outer Space Treaty, *supra* note 4, Article III.

The United Nations' General Assembly defined a culture of peace as "a set of values, attitudes, traditions, and modes of behaviour [sic] and ways of life based on…" varying factors, such as respect for life, equal human rights, fundamental freedoms, efforts to meet the developmental and environmental needs of present and future generations, commitment to peaceful settlement of conflicts, as well as the principles of sovereignty, territorial integrity, political independence of States, and non-intervention.[178] It is no surprise that the United Nations' definition of peace incorporates principles and goals found in its Charter and the Outer Space Treaty, but what exactly is security? Security refers to the quality or condition of being free from danger, a sense of safety, or a measure that provides protection.[179] One could consequently submit that the Outer Space Treaty acts as a protective measure, aiming to keep outer space and its space actors free from danger through international cooperation. These sentiments are supported by the 1961 General Assembly Resolution 1721 (XVI), International Cooperation in the Peaceful Uses of Outer Space, which predates the Outer Space Treaty. Resolution 1721 (XVI) confirms the United Nations' recognition of the world's "common interest" in outer space advancements and the associated "urgent need to strengthen international cooperation in [the] important field", as well as the United Nations' belief that the exploration and use of outer space "should be *only* for the betterment of mankind."[180]

Simply put, the United Nations levies "the greater good" approach upon States as they pursue and conduct their outer space activities. The United Nations' desire to proliferate international cooperation was likely caused by the Cold War tension, thus showing a clear distaste of any

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[178] UNGA Resolution 53/243, Declaration and Programme of Action on a Culture of Peace (United Nations, 1999), Section A, Article 1 at 2.
[179] Antoni, *supra* note 159 at 12.
[180] UNGA Resolution 1721 (XVI), International Co-operation in the peaceful uses of outer spaces (United Nations, 1961) Sec A at 6.

outer space uses that do not serve the common interest nor positively increase the peace and security of humanity. Consequently, even if space law does not explicitly bar all forms of offensive uses of outer space, it would be wise for States to weigh the diplomatic considerations detailed in the Outer Space Treaty's preamble, Article I, and Article III.

Beyond Articles I and III policy considerations, Article III fundamentally thrusts the legal weight of general international law upon States' uses in outer space. Hobe opines Article III shows international space law is *lex specialis*[181] in comparison to general international law[182]; he underscores international space law is not a self-contained regime, because it does not address every implementation, measure, procedure, or problem.[183] Therefore, should an issue arise that is not extensively regulated by space law, States are directed to apply general international law.[184] Some commentators suggest the degree of general international law application is not clear, as general international law was firstly developed for "terrestrial" purposes.[185]

Goh, on the other hand, describes Article III as the paramount provision for the maintenance of international peace and security, declaring it a demonstrative prohibition on actions in outer space that threaten peace.[186] General Assembly Resolution 55/122, International Cooperation in the Peaceful Uses of Outer Space, further affirms the importance of "the widest possible adherence to international treaties that promote the peaceful uses of outer space."[187] This affirmation calls for a broad application of general international law to space actors' uses of outer space. Accordingly, Resolution 55/122 weakens one author's position claiming,

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[181] Aaron X Fellmeth & Maurice Horwitz, "Lex specialis derogat legi generali" in Guide to Latin in International Law (Oxford University Press, 2011).
[182] Hobe, *supra* note 21, para 180 at 53-56.
[183] *Ibid* at 55.
[184] *Ibid*.
[185] Freeland & Gruttner, *supra* note 137 at 79.
[186] Goh, *supra* note 16 at 261.
[187] UNGA Resolution 55/122, International cooperation in the peaceful uses of outer space (United Nations, 2001) at 1.

"[Ho]wever, many principles of international law, as they are today e.g. those concerning appropriation of unclaimed territories, and provisions of the United Nations Charter e.g. those concerning the use of force in certain exceptional circumstances like self-defence, cannot and should not be made applicable to outer space."[188] No provisions in the Outer Space Treaty nor any other space law instrument addresses the use of force in the void of outer space.[189] Therefore, the Outer Space Treaty's *lex specialis* status, coupled with the United Nations affirming a wide application of any international law that promotes peaceful uses of outer space, solidify that the U.N. Charter and non-use of force principle, as discussed in Chapter 1, are undeniably necessary legal hurdles a State must overcome to answer whether any of its desired offensive uses of outer space are permissible.

While space law does not have a provision to address specific offensive uses of outer space that may raise to the level of an illegal use of force in the void, Article IV of the Outer Space Treaty does generally govern military uses of outer space. The first paragraph of Article IV[190] prohibits the placement and installation of nuclear weapons and weapons of mass destruction in outer space or on celestial bodies. Because this passage only mentions nuclear weapons and weapons of mass destruction, the space community commonly refers to Article IV, paragraph 1, as the partial prohibition of arms in outer space.[191]

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[188] Patrick K Gleeson, Legal Aspects Of The Use Of Force In Space McGill University, Faculty of Law, 2005) [unpublished] at 76 (quoting M Chandrasekharan, "The Space Treaty" (1967) 7 Indian Journal of Int'I Law 61 at 63).
[189] A COPUOS Report reflecting State Parties' discussions at the World Space Forum 2023 confirms space law itself does not have a legal instrument that addressing the use of force; concerned State Parties stressed "the necessity of ensuring the peaceful uses of outer space and the safety of space operations was highlighted, as participants emphasized the importance of drafting a multilateral legally binding instrument on the prevention of an arms race in outer space which would stipulate the prohibition of placement of weapons in outer space and the prohibition of the threat or use of force in outer space." Report on the United Nations/Austria World Space Forum 2023: Space for our common future (United Nations, 2024).
[190] Outer Space Treaty, *supra* note 4, Article IV.
[191] Hobe, *supra* note 21 at 128 (reflects a Table depicting Article IV prohibitions in applicable areas of space).

The use or installment of weapons of mass destruction in space or on celestial bodies is an extreme example of a prohibited military use of outer space. Such activities would also easily qualify as extreme threats or uses of force, which are clearly prohibited by the Outer Space Treaty, the *lex specialis*, and via general international law[192], specifically Article 2(4), U.N. Charter, and the customary international non-use of force principle.[193] On the other hand, it is prominently argued the incidental passage of nuclear weapons through space and the placement or use of less perilous weapons in the void of outer space is permissible via the drafters' default of an explicit restriction.[194] Some weaponry may be acceptable in outer space via space law, but a critical distinction between the void of outer space and celestial bodies is made in the second paragraph of Article IV.

Paragraph 2 of Article IV is described as the total prohibition of any weapons, military bases, and military maneuvers of outer space.[195] Two of the three sentences in Article IV, paragraph 2, are noteworthy for offensive uses of space. Article IV, paragraph 2, starts by declaring "the moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes"; then, it also reads "the use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited."[196] Both of the identified portions of Article IV contain the phrase "peaceful purposes" which is the most complex component to determining the legality of offensive uses of space. The matter of "peaceful purposes", however, will be

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[192] Per Rule 145 of the McGill MANUAL, international law prohibits inter alia the testing of any chemical, biological or nuclear weapon in outer space, including on the moon and other celestial bodies. Ram S Jakhu & Steven Freeland, McGill Manual on International Law Applicable to Military Uses of Outer Space (Centre for Research in Air and Space Law, McGill University, 2022) Rule 145 at 20.
[193] See Chapter 1 at pages 23-41 (details the use of force via the U.N. Charter and customary international law).
[194] Scholars argue the drafters of the Outer Space Treaty unmistakably intended to allow ICBM launches through orbit. Gleeson, *supra* note 188 at 45; Goh, *supra* note 16 at 261; McGill Manual, *supra* note 192, Rule 146 at 20.
[195] Hobe, *supra* note 21, Article IV Table at 128; George D Kyriakopoulos, "Security issues with Respect to Celestial Bodies" in Handbook of Space Security: Policies, Applications and Programs (Springer International Publishing, 2020) 341 at 344-45.
[196] Outer Space Treaty, *supra* note 4, Article IV.

tackled in Chapter 3. The focal points of Article IV at this time are the phrases "exclusively for peaceful purposes" and "any other peaceful purposes shall not be prohibited." Starting with the former phrase, the initial sentence in Article IV's second paragraph reserves the moon and celestial bodies "exclusively" for peaceful purposes. Per Rule 119 of the McGill MANUAL, the exclusive clause in Article IV forbids military activities "thereon" celestial bodies, to include the moon, unless is for peaceful purposes.[197] Various analysts support this interpretation, explaining celestial bodies were intended to be wholly excluded from any military activities.[198]

Furthermore, Cheng declares Article IV's exclusivity pointedly demilitarizes all celestial bodies except for Earth, thus permitting military activities in the outer void of space.[199] Conversely, Lachs deduces that one should only read Article IV's allowance of military personnel and equipment in space for scientific or "other peaceful purposes" as an exception to the demilitarization on celestial bodies, which he argues does not affect the basic provisions of the law. [200] He also endorses the position that all outer space activities should be in support of the Outer Space Treaty's overall objective – the use of outer space exclusively for peaceful purposes.[201] While the Outer Space Treaty's goals are centered around peaceful purposes, Lachs' reliance on the preamble's peaceful purposes language seemingly adds obligations and restrictions on States that Article IV does not contemplate.

Per Article 31 of the Vienna Convention, the initial method of interpretation requires a look at the ordinary meaning of a treaty's language in context with its object and purpose. While the

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[197] McGill Manual, *supra* note 192 at Rule 119.
[198] Kazuto Suzuki, "Historical Evolution of Japanese Space Security Policy" in Handbook of Space Security: Policies, Applications and Programs (Cham: Springer International Publishing, 2020) 555 at 568; Henderson, *supra* note 130 at 97.
[199] Cheng, *supra* note 77 at 518.
[200] Manfred Lachs, *The law of outer space: an experience in contemporary law-making,* ed by Tanja L Masson-Zwaan & Stephan Hobe (Leiden; Boston: Martinus Nijhoff Publishers, 2010*)* at 100-01.
[201] *Ibid* at 101.

Outer Space Treaty's language is generally ambiguous, Article IV's exclusive clause is the only place in the entire Treaty where the word "exclusively" is distinctively attached to the phrase "peaceful purposes." It also appears the drafters consciously chose the environmental focus of each provision, as they expressly wrote "outer space, including the moon and other celestial bodies" in some Articles and only identified "outer space" or "celestial bodies" in other Articles. There is no reference at all to "outer space" in Article IV, paragraph 2; it is largely focused on the moon and celestial bodies.[202] Accordingly, Article IV, paragraph 2, does not require space activities in the void of outer space to be used "exclusively for peaceful purposes."

This opens a window of opportunity to argue offensive uses of outer space are permissible. While Reijnen proclaims, "It is submitted here that…the spirit of the Outer Space Treaty 1967 is to further the peaceful use of outer space as long as no nuclear weapons, or any other kind of weapon of mass destruction have either been placed in orbit around the Earth, installed on celestial bodies, or stationed in outer space",[203] the legal analysis does not end there. There is not an explicit exclusivity clause requiring peaceful purposes for States' uses in the void, yet State Parties still must conduct their space activities in the interest of maintaining international peace, security and promoting international cooperation and understanding, as required in Article III of the Outer Space Treaty. [204] Thus, State Parties' offensive military uses of outer space may be slightly curbed by the binding interests of peace noted in Article III of the Outer Space Treaty.

Another provision in the Outer Space Treaty relevant to the offensive uses of outer space is Article IX. Per Article IX, State Parties must conduct all their outer space activities with due regard to the interest of other State Parties.[205] Article IX also enacts planetary protection by

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[202] Outer Space Treaty, *supra* note 4, Article IV, para 2.
[203] Bess C M Reijnen, The United Nations Space Treaties Analysed (France: Editions Frontieres, 1992) at 104.
[204] Outer Space Treaty, *supra* note 4, Article III.
[205] Outer Space Treaty, *supra* note 4, Article IX.

requiring States to ensure their space activities avoid harmful contamination and adverse changes.[206] Additionally, State Parties must have international consultations if they reasonably believe their space activities may cause "potentially harmful interference" to another State Party's outer space activities.[207] Based on Article IX's requirements, Henderson suggests the provision may have incidental application to the testing of Earth-based ASAT weapons.[208] Henderson also links the debris caused from testing ASAT weapons to the standard for avoiding harmful contamination, opining that the Article IX standard should only be taken as highly suggestive, since it has never been invoked, even after some incidents produced large amounts of debris.[209]

Nevertheless, the Committee on Space Research (COSPAR), a scientific entity established to promote spacefaring nations' compliance with the Outer Space Treaty, implements "an international voluntary and non-binding" Policy on Planetary Protection; the Policy encourages spacefaring nations to follow certain standards and procedures for "the avoidance of organic-constituent and biological contamination introduced by planetary missions", and it acknowledges certain missions need contamination controls imposed.[210] Chapter 7 of the COSPAR's Policy on Planetary Protection, in part, "recommends entities conducting activities in outer space provide to authorizing entities a reasoned argument that planetary protection objectives will be or have been satisfied."[211] The COSPAR Policy on Planetary Protection bolsters the importance of Article IX in the Outer Space Treaty, yet it is a non-binding policy itself and States can choose not to follow it, just as they have seemingly ignored Article IX. Furthermore, Bureau bolsters

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[206] *Ibid*.
[207] *Ibid*.
[208] Henderson, *supra* note 132 at 98.
[209] *Ibid*.
[210] Editorial to the New Restructured and Edited COSPAR Policy on Planetary Protection, COSPAR Policy on Planetary Protection (Space Research Today, COSPAR Business, 2024), Chapter 1-2 at 15-16.
[211] *Ibid,* Chapter 7 at 21.

Henderson's observations of Article IX's shortcomings by proclaiming the "noninterference" principle does not prevent "passive hostile" acts, such as an unidentified satellite traveling in close proximity of another State's satellite and dangerously lingers near the latter satellite.[212]

Article IX, nevertheless, is an existing, binding provision upon State Parties. Even though there is no record reflecting State Parties following the procedures set forth, the "due regard principle" imposes limits upon States' freedom of action in outer space.[213] These limits hinder State Parties from conducting space activities that will likely harm others. Hobe also cites the Resolution of the Institut de Driot International of 1960 as another legal protection against any weapon with uncontrollable consequences, as their destructive effect may not be limited to military space targets.[214] Therefore, any offensive uses of outer space that lack the ability of control may be impermissible. This legal consideration has an intrinsic correlation to Article IX and its effects on offensive uses of outer space.

While it is plausible to conclude that Article IX alone could hinder harmful offensive military uses of space, the "due regard principle", coupled with the legal protection against weapons with uncontrollable consequences, increase States' responsibility to assess the possible damage of their offensive space activities. Article IX, at the very least, adds a procedural requirement for one State to consult[215] with another State whose space activities may experience harmful interference as a result of the acting State's offensive space activities against a third State. Nevertheless, this proactive and precautious consultation is unlikely, because the acting State

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[212] Jean F Bureau, "Space Security and Sustainable Space Operations: A Commercial Satellite Operator Perspective" in Handbook of Space Security: Policies, Applications and Programs (Springer International Publishing, 2020) 1065 at 1068.
[213] Outer Space Treaty, *supra* note 4, Article IX; Jack Beard & Dale Stephens, eds, The Woomera Manual on the International Law of Military Space Operations, 1st ed (Oxford University Press, 2024) Rule 17 at 170-176.
[214] Hobe, *supra* note 21, para 410 at 127. 7
[215] Outer Space Treaty, *supra*note 4, Article IX.

may fear the consultation with a collateral State will thwart its offensive mission targeting the third State.

The lack of any records showing Article IX consultations in the past further undercuts the likelihood that States would be willing to cooperate to safeguard against harmful interference caused by their offensive space activities. International consultations, as detailed in Article IX, undoubtably demonstrate that the Outer Space Treaty was largely drafted with international cooperation, peace, and security at the forefront of the drafters' minds. States, however, are seemingly reluctant to cooperate or share information regarding certain space activities. Nevertheless, present-day militaries' heightened space interests, developing space capabilities, and undeniable dependence on outer space warrant a review of other treaties and their militarization provisions to further determine how offensive military uses of outer space should be handled.

II. Other Treaties & Military Uses: Moon Agreement and Antarctic Treaty

A. Moon Agreement

The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement) was the last international space treaty established, aiming "to prevent the moon from becoming an area of international conflict."[216] Today, it only has 4 signatories and 17 ratifying States.[217] Of note, the big space players, such as the United States, China, and Russia, are not Parties to the Moon Agreement. The Moon Agreement regulates the exploration, use, and exploitation of the moon and its natural resources.[218] While its legal reach only spans

[216] Moon Agreement, *supra* note 4, Preamble; Tronchetti, *supra* note 72 at 13.
[217] Report of the Committee on the Peaceful Uses of Outer Space (32nd Session), Status of International Agreements relating to activities in outer space as at [sic] 1 January 2024, (United Nations, 2024), Sec A, para 5 at 2, Sec C at 5-10.
[218] Moon Agreement, *supra*note 4 at Preamble; Tronchetti, *supra* note 72 at 13.

over a nominal number of States, its requirements and interpretations are relevant and applicable to any State Parties that is a Party to both the Moon Agreement and the Outer Space Treaty.

Article 3, paragraph 1, of the Moon Agreement begins with similar language and impact as the second paragraph in Article IV of the Outer Space Treaty, stating, "The moon shall be used by all State Parties exclusively for peaceful purposes."[219] The phrase "exclusively…peaceful" is suggested to be a specification of peaceful, which is the intention to maintain space as a peaceful region.[220] Further, Reijnen describes the term "exclusively" as a "mere repetition of texts of other regions beyond national jurisdiction", like in Article 1 of the 1959 Antarctic Treaty.[221] The Outer Space Treaty, like the Moon Agreement, was established after the Antarctic Treaty, so the same conclusion can be made about its "exclusively…peaceful" phrase found in Article IV, paragraph 1.

Similar to Article IV, paragraph 2, [222] of the Outer Space Treaty, the Moon Agreement enacts an exclusivity clause for the moon. Article 3, paragraph 2, of the Moon Agreement prohibits "any threat or use of force or any other hostile act or threat of hostile act" on the moon or in relation to earth, spacecraft, personnel on spacecraft, or man-made space objects. [223] Although one writer claims the Moon Agreement does not impose additional arms control obligations than those required from the Outer Space Treaty,[224] that is not the case. Article 3, paragraph 2, of the Moon Agreement yields persuasive guidance for non-State Parties about demilitarization and military uses in outer space. The Moon Agreement provides a broader protection than the Outer Space Treaty, as it explicitly outlaws any hostile acts, to include threats

[219] Moon Agreement, *supra* note 4, at Article 3(1); Outer Space Treaty, *supra* note 4, Article IV, para 2.
[220] Reijnen, *supra* note 203 at 104.
[221] *Ibid*.
[222] Outer Space Treaty, *supra* note 4, Article IV, para 2.
[223] Moon Agreement, *supra* note 4, Article 3(2).
[224] Henderson, *supra* note 132 at 99.

of and use of force. Unlike the Outer Space Treaty, the Moon Agreement does not have to rely on the U.N. Charter or customary international law to fill in those regulatory gaps.

Further, Article 3, paragraph 3, of the Moon Agreement lays out its prohibition of any kind of weapons of mass destruction; except for the use of the words "celestial bodies", Article 3, paragraph 4, is nearly verbatim to the language found in Article IV, paragraph 2, of Outer Space Treaty.[225] The Moon Agreement, like the Outer Space Treaty, only embodies a partial demilitarization of outer space at-large, as Article 3, paragraph 4, only pertains to the moon and other celestial bodies.[226] Consequently, if any issues reach beyond the areas governed by the Moon Agreement, its State Parties will have to look to the Outer Space Treaty and applicable general international law for guidance.

B. Antarctic Treaty

The 1959 Antarctic Treaty governs States activities involving Antarctica.[227] It has 67 State Parties, to include the three big space players – United States, China, and Russia.[228] While outer space presents unique environmental challenges may result in slightly different legal analysis, the Antarctic Treaty strikes a similar tone as the Outer Space Treaty, the Moon Agreement, and other space law. Lachs analogizes this the Antarctic Treaty with the Outer Space Treaty, explaining the Antarctic Treaty expressly includes prohibitive language for military measures.[229] For example, the preamble of the Antarctic Treaty reads, in part, "the interest of all mankind that Antarctica shall continue forever to be used *exclusively for peaceful*

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[225] Although Article 3, paragraph 4, of the Moon Agreement only mentions "the moon", Article 1 states, "The provisions of this Agreement relating to the moon shall also apply to other celestial bodies within the solar system, other than the earth, except in so far as specific legal norms enter into force with respect to any of these celestial bodies." Moon Agreement, *supra* note 4, Article 1, 3(3-4).
[226] Hobe, *supra* note 21, paras 404,408 at 126; see also *ibid* at para 546 at 169.
[227] The Antarctic Treaty, 1 December 1959 (entered into force on 23 June 1961); "The Antarctic Treaty | About Antarctic Treaty".
[228] See also "The Antarctic Treaty, About Parties", online: Secreatariat of the Antarctic Treaty.
[229] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 98.

purposes and *shall not* become *the scene or object of international discord"*[230]; the preamble also notes the use of Antarctica is for *"peaceful purposes only and the continuance of international harmony"* which will further the purposes and principles of the U.N. Charter.[231]

Furthermore, Article I, paragraph 1, of the Antarctic Treaty reserves Antarctica for "*peaceful purposes only*" and prohibits "*any measures of a military nature*", including military bases and maneuvers as well as any type of weapon.[232] Paragraph 2 of Article I, Antarctic Treaty, makes an exception for military personnel or equipment for scientific research or *"for any other peaceful purpose"*.[233] The aforesaid language presents almost as if the drafters simply copied and pasted the Antarctic Treaty's provisions into the Outer Space Treaty and the Moon Agreement. One writer suggests the Antarctic Treaty was used as the model for space law because of its decades of success in sustaining Antarctica's status as an international commons.[234] Although space is an environmental medium, like the land, sea, and air,[235] outer space, especially with the modern-day space advancements, introduces far more unknowns than terrestrial circumstances. It is no wonder why the space law community struggles to accurately understand and apply the existing legal regime to outer space scenarios, and it is for this very reason sufficiently addressing the possible permissibility of offensive uses of outer space is not a simple task.

Nevertheless, Lachs cites Article I, paragraph 1, of the Antarctic Treaty as an example of "complete demilitarization of certain parts" of Earth, specifically Antarctica, which shows no military activities can be totally eliminated from certain areas to ensure it is used only for

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[230] Antarctic Treaty, *supra* note 227, Preamble.
[231] *Ibid*.
[232] *Ibid* at Article I, para. 1.
[233] *Ibid* at Article I, para. 2.
[234] John J Klein, Space warfare: strategy, principles, and policy, Space power and politics 1 (London; New York, NY: Routledge, 2006) at 72.
[235] *Ibid*.

"peaceful purposes".[236] Other scholars, however, look to the United Nations Convention for the Law of the Seas (UNCLOS)[237] to clarify the meaning of "peaceful purposes" in its varying contexts; these authors explain the UNCLOS draws a distinctions between *"exclusively for peaceful purposes,"*[238] meaning non-military use of the seabed, and *"shall be reserved for peaceful purposes,"*[239] *representing* military but nonaggressive use.[240] In contrast to Lach's position, one writer cites to State practices[241] to distinguish the Outer Space Treaty's "peaceful purposes" from the Antarctic Treaty's interpretation; it is asserted that military uses of space have been publicly known and conducted for almost half a century, based on the understanding that the term "peaceful" does not in itself negate military acts.[242] Along those lines, Chapter 3 dissects and analyzes the longstanding debate centered around "peaceful purposes", military uses, and their influence on the permissibility of offensive uses of outer space.

Chapter 3: A Magnified View of Military Use of Outer Space

Military use of outer space has been scrutinized by States since the dawn of the space age. The Outer Space Treaty was intended to calm the international fear of uncertainty and mistrust caused by the geopolitical environment of the Cold War.[243] Even before the Outer Space Treaty was established, the Soviet Union's 1957 launch of Sputnik prompted the United Nations' concerns about ensuring outer space was only used for peaceful purposes.[244] The General

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[236] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 100.
[237] United Nations Convention for the Law of the Seas, 10 December 1982 (entered into force on 16 November 1994) [hereinafter UNCLOS].
[238] *Ibid* at Article 141.
[239] *Ibid* at Article 88.
[240] Ulrike M Bohlmann & Gina Petrovici, "Space Export Control law and Regulations" in Handbook of Space Security: Policies, Applications and Programs (Cham: Springer International Publishing, 2020) 185 at 193.
[241] Gleeson, *supra* note 188 at 61.
[242] *Ibid* at 62.
[243] Freeland & Gruttner, *supra* note 137 at 80.
[244] United Nations, "Peace and Security", online: United Nations <https://www.un.org/en/global-issues/peace-and-security>.

Assembly soon after responded by urging States affiliated with the Disarmament Commission to provide a joint study focused on ensuring objects sent through "outer space shall be exclusively for peaceful and scientific purposes."[245] One year later, the General Assembly published Resolution 1348 (XIII) titled *Question of the Peaceful Use of Outer Space*.[246] Resolution 1348 (XII) emphasized the General Assembly's recognition of "the common aim that outer space should be used for peaceful purposes only."[247] While these Resolutions pre-date the Outer Space Treaty, they show the longevity of questions and concern surrounding States' space competition and their uses of outer space. The General Assembly also expressed its wish "to avoid the extension of present national rivalries into the new field", and it created an *ad hoc* UNCOPUOS to address matters regarding "peaceful purposes."[248] Despite then-major spacefaring States, the United States and Soviet Union, agreeing to establish the Outer Space Treaty, their choice to leave many terms and phrases, such as "peaceful purposes", undefined has resulted in long-lasting, unsettled legal issues.

Article IV's "exclusively for peaceful purposes" language is only the tip of the iceberg for definitional issues in space law. While a majority of the States have adopted the understanding that only celestial bodies, including the moon, are exclusively reserved for peaceful purposes,[249] the space community, especially the space legal sphere, have continuously scrutinized the drafters' intended meaning of the core phrase, "peaceful purposes."[250] Space law

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[245] UNGA Resolution 1148 (XII), Regulation, limitation...all armed forces and all armaments; conclusion of an international convention (treaty) on the reduction of armaments and the prohibition of atomic, hydrogen and other weapons of mass destruction (United Nations, 1957) 3, para 1(f) at 4.
[246] UNGA Resolution 1348 (XIII), Question of the peaceful use of outer space (United Nations, 1958).
[247] *Ibid* at Preamble.
[248] *Ibid*.
[249] Tronchetti, *supra* note 72, 71-72.
[250] Bhupendra, *supra* note 146 at 7 (noting the varying interpretations for "peaceful" include "non-military", "non-aggressive", or possibly total absence of the military and force or conflict).

scholars[251] and many General Assembly resolutions also interchangeably refer to the phrase "peaceful use" when referring to the legal significance of "peaceful purposes" of outer space.[252] However, is it possible the terms "use" and "purpose" are related, yet represent different concepts? Chapter 4 will explore the varying delineations between "use" and "purpose" and their potential impact on the definitional and legal interpretations in space law. Nevertheless, the phrase "peaceful purposes" is found in many treaties[253], but does anyone really know what they mean?

I. Non-aggressive v. Non-military Interpretations

Shades of gray are inherent in the world of law, and this fact is amplified by the varying legal interpretation of "peaceful purposes" or "peaceful use". Furthermore, peaceful human relations are typically the objectives of law, meaning law and its effects on humanity should never be separated. The "peaceful purposes" language in the Outer Space Treaty, however, has been historically construed differently amongst States; likewise, some States' individual interpretation of the phrase has drastically evolved over time.[254] Although the phrase "peaceful purposes" is not explicitly defined in the Outer Space Treaty, and it is only mentioned in the body of the Treaty via Article IV's exclusive clause for celestial bodies, including the moon, Blount surmises "peaceful purposes" is the normative threshold for the legality of any space

[251] Cheng, *supra* note 77 at 514.
[252] While the following General Assembly resolutions predate the Outer Space Treaty, the phrase "peaceful uses of outer space" may be found in each one: Resolution 1348 (XII); Resolution 1472 (XIV); Resolution 1721 (XVI); and Resolution 1802 (XVII). See Resolution 1348 (XII), *supra* note 209; UNGA Resolution 1472 (XIV), International co-operation in peaceful uses of outer space (United Nations, 1959); Resolution 1721 (XVI), *supra* note 148; and UNGA Resolution 1802 (XVII), International Co-operation in the Peaceful Uses of Outer Space (United Nations, 1962).
[253] As previous discussed, each of following treaties require use of specific environments for "peaceful purposes": Outer Space Treaty, *supra* note 4, Article IV; UNCLOS, *supra* note 200, Articles 88, 141; and Moon Agreement, *supra* note 4, Article 3.
[254] Jeremy Grunert, "The 'Peaceful Use' of Outer Space?" TNSR (22 June 2021).

activities.[255] Two other authors conversely stress the Outer Space Treaty loosely refers to "peaceful purposes" regarding outer space as a whole via the Treaty's preamble, by citing the Law of Treaties[256] explanation of preambular language and noting the preamble on its own does not include legal norms nor immediate legal significance.[257] To overcome the drafters' conscious decision to place "peaceful purposes" in the preamble, and to ensure the void of space is used peacefully, States have resorted to Article III's application of international law, specifically the U.N. Charter's obligations, underlining that space activities must not upend the maintenance of international peace and security.[258] Cheng, nevertheless, proposes the underlying definitional challenge with the "peaceful purposes" phrase is the term "peaceful."[259] While States have gradually developed two competing interpretations of "peaceful purposes", non-aggressive and non-military, the key to determining whether an outer space use is illegal via space law is by assessing if the activity has to be peaceful. The apparent, legal ambiguity of "peaceful purposes" or "…use", combined with growing military focus and activities in outer space, present a bigger issue – how do offensive uses of outer space interact with the historical perceptions of "peaceful purposes?" Nevertheless, the first step to answering the offensive use of outer space question is deciphering the two schools of thought about "peaceful purposes": non-military and non-aggressive.

A. Non-aggressive, The United States Led Approach

It is no surprise that two major spacefaring States, the United States and the then-Soviet Union, were central front runners to establishing the competing interpretations of "peaceful

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[255] PJ Blount, "Peaceful Purposes for the Benefit of All Mankind: The Ethical Foundations of Space Security" in Cassandra Steer & Matthew Hersch, eds, War and Peace in Outer Space, 1st ed (Oxford University Press New York, 2020) 109 at 114.
[256] See Vienna Convention, *supra* note 23, Article 31(1-2).
[257] Beard & Stephens, *supra* note 213, Rule 3 at 50.
[258] *Ibid* at 52.
[259] Cheng, *supra* note 77 at 513.

purposes" well before the Outer Space Treaty was established.[260] Today, the United States' position is non-aggressive space activities in the outer space sufficiently meet the Outer Space Treaty's "peaceful purposes" goal, while the Soviet Union interprets "peaceful purposes" as non-military[261] uses of space. However, the United States' current non-aggressive approach was not its original official perspective. The United States initially proposed outer space should generally be reserved exclusively for peaceful purposes.[262] In 1957, soon after the Soviet Union's successful launch of Sputnik, Henry Cabot Lodge, United States Representative to the General Assembly, reflected on the impact of World War II and States' rejection of the United States' proposed plan to ensure peaceful use of atomic energy[263]; he made the following official statement and proposal:

> "The world knows now that a decade of anxiety and trouble could have been avoided if that plan had been accepted. We now have a similar opportunity to harness for peace man's new pioneering efforts in outer space. We must not miss this chance. We have therefore proposed that a technical committee be set up to work an inspection system which will assure the use of outer space for exclusively peaceful and scientific purposes."[264]

Lodge's proposal was arguably a responsive reflex and an attempt to lessen the Soviet Union's competitive edge in outer space, as the Soviet Union was the first State to successfully launch a humanmade object into Earth's orbit.[265]

The United States displayed its commitment to the "peaceful purposes" agenda by enacting the National Aeronautics and Space (NAS) Act of 1958, a national space-oriented

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[260] Grunert, *supra* note 254.
[261] *Ibid*.
[262] *Ibid*.
[263] The Department of State Bulletin (Office of Public Communication, Bureau of Public Affairs, 1957) Vol 37 at 671-72.
[264] *Ibid* at 672.
[265] "USSR Launches Sputnik", online: National Geographic.

legislation.[266] While the NAS Act created a civilian agency, the National Aeronautics and Space Administration (NASA), to oversee the United States' non-military space activities, the legal instrument specifically discusses the nation' policy regarding "peaceful purposes."[267] Section 102, paragraph 1, of the NAS Act partially reads, "[I]t is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind."[268] One scholar highlights the noteworthy fact that the United States' NAS Act was enacted six months prior to the General Assembly Resolution 1348 (XIII)[269], thus emphasizing the United States triumph in imploring the United Nations to accept "peaceful purposes" as a "supranational norm" for outer space.[270] The United States' foresight of the future direction of outer space endeavors allowed it to launch a military friendly platform for peaceful uses of outer space, which may be easily tailored to later objectives of national security and self-preservation.

For example, in 1959, only two years after Lodge's 1957 proposal, the United States' official perspective on peaceful purposes quickly evolved, and the non-aggressive approach was tactfully introduced by President Dwight D. Eisenhower's national space policy, officially titled "U.S. Policy in Outer Space."[271] Specifically, the Eisenhower Administration stated the following:

> "It is possible that certain military applications of space vehicles may be accepted as peaceful or acquiesced in an non-interfering [sic]. On the other hand, it may be anticipated that [S]tates will not willingly acquiesce in unrestricted use of outer

[266] National Aeronautics and Space Act of 1958 (NAS Act), Pub. L. No. 85-568, 72 Stat. 426 (1958); Blount, *supra* note 255 at 115; John Uri, "65 Years Ago: The National Aeronautics and Space Act of 1958 Creates NASA - NASA", NASA (26 July 2023).
[267] NAS Act, *supra* note 266, §102 (a); Uri, *supra*note 229.
[268] NAS Act, *supra* note 266, §102 (a).
[269] The General Assembly's starts Resolution 1348 (XIII) by "Recognizing the common interest of mankind in outer space and recognizing that it is the common aim that outer space should be used for peaceful purposes only…". This shows the United Nations fully adopted the United States urgent push to quickly declare outer space as a peaceful, international domain. Resolution 1348 (XIII), *supra* note 246 at 5.
[270] Blount, *supra* note 255 at 115.
[271] National Security Council, United States Policy on Outer Space, 1-26 (U.S. National Security Council, 1959).

> space for activities which may jeopardize or interfere with their national interests."[272]

The Eisenhower policy also required a study of the implications of "peaceful uses of outer space" upon national security, "with a view to defining this expression in a manner that would best serve the interest of the [United States]."[273] The policy further compelled a study regarding the control and character of safeguards required in the international system designed to assure peaceful use of outer space, which "does not necessarily exclude military applications."[274] Accordingly, the Eisenhower Administration's 1959 space policy launched the United States' existing understanding and approach to "peaceful purposes" nearly a decade before the Outer Space Treaty was created.

The United States' non-aggressive read of "peaceful purposes" became more steadfast and conspicuous throughout the years. In 1962 at the 17th Session, Mr. Gore addressed the General Assembly and explicitly emphasized the United States' views on the "most pressing aspects" regarding "peaceful purposes", stating "...[O]uter space should be used only for peaceful – that is, non-aggressive and beneficial – purposes."[275] Moreover, the United States intentionally and strategically stressed the nexus between terrestrial and outer space military missions, persuasively redirecting the "peaceful purposes" dilemma from whether the military should be allowed in space and turning the focus to States' international space legal obligations.[276] Three years later, in December of 1965, another United States Ambassador, largely echoed Gore's prior statements:

> "Since the beginning of the space age, the United States had constantly endorsed the principle that outer space should be used for peaceful purposes. In that context,

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[272] *Ibid*, para 25 at 9.
[273] *Ibid*, para 44 at 12.
[274] *Ibid*, para 46 at 13.
[275] United Nations General Assembly, Meeting Notes (Doc AC.1PV. 1289) (United Nations, 1962) at 13.
[276] *Ibid*.

> "peaceful" meant non-aggressive rather than non-military. The United States space programme had been notable for its predominantly civilian character, but military components and personnel had made indispensable contributions. There was no practical dividing-line between military and non-military uses of space: United States and Soviet astronauts had been members of their countries' armed forces; a navigation satellite could guide a warship as well as a merchant ship; communication satellites could serve military establishments as well as civilian communities. The question of military activities in space could not be divorced from the question of military activities on earth. The test of any space activity must therefore be not whether it was military or non-military but whether it was consistent with the Charter and other obligations of international law."[277]

As a result, before the Outer Space Treaty was realized, the United States unambiguously and successfully linked the term "peaceful" to "non-aggressive." The United States also repeatedly highlighted the importance of the U.N. Charter and other relevant general international law when determining whether a use of outer space is for peaceful purposes.[278] Such sentiments were later mirrored in Article III of the Outer Space Treaty.[279]

Correspondingly, one author points out the legitimacy and impact of Article III's language and its effect on meaning of "peaceful purposes." He argues Article III of the Outer Space Treaty offers meaningful support to the United States' "non-aggressive" interpretation, by encompassing States' responsibilities and restrictions imposed through all international law, including the U.N. Charter.[280] He does not, however, specify those responsibilities and restrictions nor any particular general international law which solidify the United States' stance that "non-aggressive" acts align with the Outer Space Treaty's "peaceful purposes".[281] Another

[277] United Nations General Assembly Summary Record, 1422nd (United Nations, 1965) at 429 (statements from Charles Yost, the United States' Representative at the General Assembly).
[278] UNGA Meeting Notes - 1289, *supra* note 275 at 13; UNGA 1422nd Meeting Summary, *supra*note 240 at 429.
[279] Outer Space Treaty, *supra* note 4, Article III.
[280] Grunert, *supra* note 254.
[281] *Ibid*.

author conversely notes general international law, to include the U.N. Charter, continues to lack any obligatory prohibitions against States' use of outer space for military purposes.[282]

On the other hand, a third commentator identifies other international legal instruments, such as the Comprehensive Nuclear Test Ban Treaty of 1996 (Nuclear Test Ban Treaty) and the Anti-Ballistic Missile Treaty (ABM Treaty), which are not space specific legislation, but have an effect upon military activities in outer space.[283] The Nuclear Test Ban Treaty prohibits the testing of nuclear weapons and nuclear explosions in outer space, while the ABM Treaty, an agreement between the United States and the Soviet Union to stop any development or stationing of space-based rocket interceptors, restricted the use of ABMs against ICBMs and submarine-launched missiles.[284] The third commentator also explains the United States' 2002 withdrawal from the ABM Treaty resulted in the Outer Space Treaty being "reinstalled" as the primary, yet "less far-reaching" missile control regime for outer space.[285] The same space law expert acknowledges the nexus between Article III of the Outer Space Treaty and international humanitarian law, explaining such regulations also apply to hostilities birthed from outer space conflicts.[286] As previously discussed in Chapter 1[287] of this thesis, pertinent State international responsibilities and restrictions, such as the non-use of force principle and State Parties' agreement to abide by the principles set forth in the U.N. Charter, bring life and logic to the United States' led perspective to synonymize "non-aggressive" with "peaceful purposes".

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[282] Cheng, *supra* note 77 at 515.It is vital to acknowledge there is a difference between the general international legal gap, resulting in no restrictions upon States' use of outer space for military purposes, and existing space treaties with some restrictions upon the military use of outer space.
[283] Hobe, *supra* note 21, paras 412-14, 129-30.
[284] *Ibid.*
[285] *Ibid.*
[286] Hobe submits various international humanitarian laws are applicable to possible consequences resulting from hostile space conflicts. *Ibid*, para 415 at 130.
[287] See Chapter 1 (the author begins the non-use of force principle analysis on page 23).

The effects of Article IV upon the "non-aggressive" interpretation arguably offer a more persuasive perspective. Specifically, the omitted language in Article IV of the Outer Space Treaty, regarding the outer space void, only outlaws a specific category of military uses of interplanetary space.[288] The singular restriction on military uses in the void of space bars State Parties from placing objects into Earth's orbit with a *nuclear weapon* payload or *any other kind of weapons of mass destruction* or stationing those types of weapons in outer space.[289] Article IV's lingual omissions inherently permit some military uses of interplanetary space, such as military missions not encompassing nuclear weapons or weapons of mass destruction, assuming no international legal prohibitions exists.[290] The Article IV loophole distinction is vital because it shows and explains the importance of a treaty's language, as well as its omissions, particularly regarding "peaceful purposes."

Words matter, and the absence of certain words matter just as much. Based on the drafters' decision not to prohibit "all" weapons and "all" military activities, it is no wonder various "non-aggressive" proponents conclude that a complete demilitarization of outer space as a whole does not exist and was never intended.[291] It also tracks that allowing any military uses in space opens the door for States to assert rights to freely conduct activities that are beneficial to their national security, in addition to their right to defend their space assets, resulting in the need to determine what, if any, defensive or offensive uses are permitted in the void of space. Later sections in this chapter parse out the details surrounding current State practice, their inherent personification of the non-aggressive interpretation of "peaceful purposes", the defensive and

[288] Outer Space Treaty, *supra* note 4, Article IV; Grunert, *supra* note 254.
[289] Outer Space Treaty, *supra* note 4, Article IV, para 1.
[290] Goh, *supra* note 16 at 261.
[291] *Ibid*; see also Hobe, *supra* note 21, para 404 at 126; Beard & Stephens, *supra* note 213, Rule 3 at 55.

innate offensive nature of military outer space activities, and the legal bounds of those endeavors.

B. Non-Military Perspective

While the "non-aggressive" interpretation of "peaceful purposes" was introduced by the United States, a staple spacefaring State, the "non-military" perspective of "peaceful purposes" was originally promoted by another major space player, the Soviet Union.[292] The Soviet Union described itself and others as "peaceful countries," noting it "…was naturally in favour [sic] of a total ban on the use of outer space for military purposes."[293] Unlike the United States, the Soviet Union's initial interpretation of "peaceful purposes" appear to be a mere political façade vice its legitimate belief. A common quote comes to mind, "Actions speak louder than words." The Soviet Union may have outwardly pushed the "non-military" agenda for uses of outer space, but both the Soviet Union and the United States were using German defense technology to build rockets for space exploration and military purposes.[294]

Nevertheless, the "non-military" viewpoint of "peaceful purposes" resonated with some States[295] and commentors. For example, Cheng, a space law expert and one of the biggest

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[292] *Ibid* at 53.
[293] UNCOPUOS Legal Sub-Committee Summary Record 66 (UNCOPUOS, 1966) at 6-7.
[294] The Military Rockets that Launched the Space Age, August 9, 2023 (detailing the buildup of the Space Age and race which was intensified by the Soviet Union's first successful launch of an ICBM, carrying the Sputnik satellite into space).
[295] During a UNCOPUOS Legal Sub-Committee meeting, the ambassador for India expressed concern and disagreement with the changing perspective of "peaceful purposes", reiterating the leaders of the United States and Soviet Union "…had stated it was essential that space should not be used for military purposes." UNCOPUOS Legal Sub-Committee Summary Record 66, *supra* note 293 at 5-6; Beard & Stephens, *supra* note 213, Rule 3 at 53-54; UNCOPUOS Legal Sub-Committee Summary Record 71 (UNCOPUOS, 1966) at 22 (protestation of military use of outer space by the Hungarian representative, expressing "[t]he use of military personnel in space activities was an inescapable necessity under present conditions, but was acceptable only on condition that it was not intended to serve a military purpose"). See Hashimoto Nobuaki, "Establishment of the Basic Space Law – Japan's Space Security Policy", The National Institute for Defense Studies News (July 2008) at 1 (cites Article 1 of the National Space Development Agency of Japan and explains Japan limited its development and use of space exclusively for peace purpose, thus bolstering its decades long adoption of the "non-military" meaning of "peaceful purposes"). See also Kazuto Suzuki, "Space Security in Japan's New Strategy Documents" (2023) (Japan's past "non-military" approach to space presently leaves it without its own satellites for military purposes).

challengers of the "non-aggressive" application, proposes the underlying interpretation challenge is definitional, specifically with the term "peaceful."[296] He also asserts the United States' "non-aggressive" interpretation is wrong and inherently carries great harm.[297] Cheng further acknowledges the Outer Space Treaty does not confine the "outer void of space…to 'peaceful uses' only", thus States are entitled to use outer space in the narrow sense[298], meaning the void, for military purposes, apart from nuclear weapons and weapons of mass destruction.[299] However, Cheng distinguishes the potential allowances of military uses in the void of space from the complete demilitarization of the moon and other celestial bodies, by relying on the idea of the United States' space law pioneer, former President Eisenhower, to adopt similar language from the Antarctic Treaty for Article IV, paragraph 2, of the Outer Space Treaty.[300] Cheng ultimately argues the term "peaceful" in Article IV, paragraph 2, of the Outer Space Treaty is parallel to its use in the Antarctic Treaty, which means "non-military" and the exception for military research or other peaceful purposes does not alter the bearing of "peaceful".[301]

Accordingly, Cheng proclaims the United States' interpretation is simply wrong when applied to Article IV, paragraph 2, of the Outer Space Treaty, along with Article III's undertaking of other international law and the Charter of the United Nations.[302] Cheng continues to explain "aggressive acts" are prohibited in outer space as a whole via the application of general

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[296] Cheng, *supra* note 77 at 513.
[297] *Ibid* at 520.
[298] Cheng uses the phrase "narrow sense" to identify "the void in between all the celestial bodies", also known as the "outer void of space." *Ibid* at 517.
[299] Outer Space Treaty, *supra* note 4, Article IV; Cheng, *supra* note 77 at 518 (discusses the partial demilitarization of Earth's orbits and of the outer space in general, per Article IV, paragraph 1, of the Outer Space Treaty).
[300] Cheng declares three points from Article I of the Antarctic Treaty, with consideration of the respective differences, appear applicable to Article IV, paragraph 2, of the Outer Space Treaty; the three points are as follows: "(i) 'peaceful' means non-military; (ii) references to military installations, military maneuvers and so forth the provision are exemplificative and not exhaustive; (iii) the possibility of using military personnel and equipment for scientific research or other peaceful purposes in no way invalidates point (i)…".Cheng, *supra* note 77 at 518-19.
[301] *Ibid* at 519.
[302] *Ibid* at 521.

international law through Article III of the Outer Space Treaty, declaring the word "peaceful" has meaning and adding "non-aggressive" to the provisional language would be superfluous.[303] On the other hand, Lachs, a space law specialist and former judge of the ICJ, takes a different interpretive approach, but fundamentally reinforces Cheng's position that "peaceful purposes" means "non-military."[304] Lachs asserts Article III of the Outer Space Treaty, as well as its inclusion of other international law obligations, further the meaning of "peaceful purposes" rather than being a redundancy.[305] Lachs then opines if the Outer Space Treaty was intending to "forbid aggressive use only", it only needed to reference international law and the U.N. Charter.[306] He concludes, "[T]he additional words 'for peaceful purposes'…can therefore hardly be considered as meaningless, the expression of a pious desire devoid of legal effect."[307]

Additionally, Cheng notes that the United States' "non-aggressive" interpretation of "peaceful use" could gravely influence the interpretation of other treaties using similar language, such as the Antarctic Treaty.[308] He acknowledges the United States is a Party to the Antarctic Treaty and a State whose *opinion juris* carries great weight in the formation of international law, but he questions the United States' attitude and preparedness to address the fallout of its "strange" interpretation of the word "peaceful".[309] Similarly, Lachs underlines similarities between the "peaceful purposes" language in the Outer Space Treaty and the Antarctic Treaty, and he emphasizes the nexus of "peaceful purposes" and the Antarctic Treaty's prohibition of "any measures of military nature."[310] Lachs then references Article II of Statute of the

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[303] *Ibid*.
[304] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 97-98.
[305] *Ibid* at 98.
[306] *Ibid* at 97.
[307] *Ibid* at 98.
[308] *Ibid* at 521-22.
[309] *Ibid* at 522.
[310] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 98; see also Antarctic Treaty, *supra* note 227, Article I, paragraph 1.

International Atomic Energy Agency (IAEA), noting this treaty's provision linked "the contribution of atomic energy to peace, health and prosperity throughout the world" with the objective to make sure atomic energy is "not used in such a way as to further any military purposes."[311] It is evident that both legal scholars believe the meaning of "peaceful purposes" is "non-miliary" vice "non-aggressive." According to Lachs, the "sense of 'peaceful' is thus clearly defined."[312]

Both commentators' arguments are logical, but overreaching. Cheng's challenge[313] to the "non-aggressive" interpretation of "peaceful purposes" is narrowly tailored and dependent on the Article IV's complete demilitarization clause for the moon and other celestial bodies. However, as Cheng conceded,[314] paragraph 2 of Article IV in the Outer Space Treaty is focused on the moon and other celestial bodies. Every sentence, except for one, in Article IV, paragraph 2, at minimum mentions the phrase "celestial bodies."[315] It is a stretch to argue that Article IV's complete demilitarization clause, the sole legally binding provision referring to "peaceful purposes", integrally compels "non-military" uses for ***all*** space activities involving the moon, celestial bodies, ***and*** the void of outer space.[316] Concluding that Article IV, paragraph 2, of the Outer Space Treaty innately affects uses in the void of space is unrealistic, as the term "exclusively" fortifies the provision's concern is "the moon and other celestial bodies."[317] It is also widely accepted that there are two different degrees of demilitarization in space: 1) a partial

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[311] Lachs, Masson-Zwaan & Hobe, *supra* note 200, at 98; The Statute of the International Atomic Energy Agency, 23 October 1956, (entered into force on 29 July 1957) [IAEA Statute], Article II.
[312] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 98.
[313] Cheng proclaims, "[I]t is quite unnecessary for the United States to interpret, or rather misinterpret, the term 'peaceful' in Article IV(2) of the Space treaty as meaning 'non-aggressive' and not 'non-military' in order to enable itself to use outer space in the narrow sense of the term for military purposes…". Cheng, *supra* note 77 at 520.
[314] *Ibid* at 518.
[315] Outer Space Treaty, *supra* note 4, Article IV, para 2.
[316] Cheng asserts the United States' "non-aggressive" interpretation is wrong, if applied to Article IV, paragraph 2, of the Outer Space Treaty, which is where the term "peaceful" is found in provision. Cheng, *supra* note 77 at 521.
[317] Outer Space Treaty, *supra* note 4, Article IV, para 2.

demilitarization[318] of outer space, meaning the void and celestial bodies; and 2) a complete demilitarization[319] of the moon and celestial bodies, with the exception of scientific and other peaceful purposes.

Therefore, it follows "peaceful purposes" is not limited to "non-military" uses for the void of outer space, as it is only partially demilitarized. It is undeniable that there is always more information and further understanding nestled beyond the letters of the law, such as ethical, philosophical, or even political motivations. Cheng makes strong policy arguments about potential grave collateral effects[320] of the "non-aggressive" interpretation, but policy and law are completely different concepts. Furthermore, legal language is often interpreted in different ways, as seen in the Law of Treaties, [321] consequently a holistic approach to treaty interpretation requires more than mere comparisons of treaties with similar language. One of the biggest considerations to interpreting the "peaceful purposes" language found in the Outer Space Treaty is subsequent State practice.[322] Accordingly, States' activities, laws, and policies are firmly and increasingly aligned with the "non-aggressive" interpretative of peaceful purposes.[323]

C. "Peaceful Purposes", State Practice, & "Non-Aggressive"

"If you want to know the future, look at the past," stated Albert Einstein.[324] Therefore, before examining State practice which occurred after the conclusion of the Outer Space Treaty, it

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[318] *Ibid* at 517-18 (partial demilitarization of Earth's orbits and of Outer space in the wide sense of the term, meaning space in general). See also Goh, *supra* note 16 at 261.
[319] Cheng, *supra* note 77 at 518 (details Article IV, paragraph 2, of the Outer Space Treaty and its cosmographical and material complete demilitarization of the moon and other celestial bodies, excluding Earth); see also Goh, *supra* note 16 at 261.
[320] Cheng, *supra* note 77 at 521-522.
[321] See Vienna Convention, *supra* note 23, Articles 31-33.
[322] The Vienna Convention uses subsequent State practice in two different categories: 1) via Article 31(b) as general method of interpretation; and 2) as supplementary means of interpretation through Article 32, which is used when treaty language remains ambiguous after a general interpretation approach. Therefore, the subsequent State practice discussed throughout this thesis falls with the supplementary means category. *Ibid*; Draft conclusions on subsequent practice, *supra* note 26, Part Two, Conclusions 2-4 at 2.
[323] Beard & Stephens, *supra* note 213, Rule 3 at 55-60.
[324] Albert Einstein Quote, online: Quote Fancy.

is worth briefly recapping the circumstances that incited the Outer Space Treaty and its highly debated phrase, "peaceful purposes." The Law of Treaties does not give leeway to refer to State practice which pre-date a treaty, as Article 32 only permits reference to supplementary means, such as preparatory work of the treaty or the circumstances surrounding its conclusion, as authorized methods to interpret a treaty's provisions and language when the general textual approach leaves the meaning of the language ambiguous or obscure. [325]

Nevertheless, knowing the foundation or the basis a treaty was built upon, as well as the events leading up to said treaty, help provide insight about the drafters' mindset and intentions for the treaty's language. The circumstances therefore prompting the drafters to create the Outer Space Treaty were prior State activities, namely the Soviet Union's and the United States' use of modified intercontinental ballistic missiles (ICBM) to launch satellites into space.[326] Soon after said events, the Outer Space Treaty *travaux preparatories* began. The *travaux preparatories* are reflected in various United Nations transcript discussions, draft documents, and summary records, as well as reports, and the Outer Space Treaty's drafting history.[327] Simply put, both preparatory work and historical events provide insight into the drafters' mindset when they authored the Outer Space Treaty, and they develop any context gathered from the preamble[328] to answer the legal questions at hand.

While the United States' promoted the "non-aggressive" interpretation of "peaceful purposes" before the Outer Space Treaty, "peaceful purposes", also known colloquially as "peaceful use", remain highly debated and infamously ambiguous, especially when paired with

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[325] Vienna Convention, *supra* note 23, Articles 31-32.
[326] The increasing Cold War tensions and the original space race caused by the Soviet Union's successful launch of Sputnik and the United States' eventual success with launching the Explorer birth States' point of view that outer space should be for "peaceful purposes". "Milestones in the History of U.S. Foreign Relations, Sputnik 1957", Office of the Historian.
[327] See "Travaux Préparatoires, The Outer Space Treaty", online: Office of Outer Space Affairs.
[328] Vienna Convention, *supra* note 23, Article 31(2) (notes preambles provide initial context for treaty language).

States' military activities. Subsequent State practice, however, shows "non-aggressive" has gained general acceptance as the definition of "peaceful purposes" in the international space community.[329] Therefore, a thorough understanding of States' non-aggressive uses of outer space undoubtedly feeds the analysis of offensive uses of space, and said examination may ensure States do not run afoul of applicable legal standards.

D. A Closer Look: Space Players & "Non-Aggressive" State Practice

Per the ILC, subsequent State practice, as a supplementary means of treaty interpretation under Article 32 of the Law of Treaties, involves conduct by one or more Parties in the application of a treaty, after its conclusion.[330] Any outer space State activities which link to "peaceful purposes", as well as military use of space, and occurred after the Outer Space Treaty was established in 1967 would therefore properly qualify as an informative subsequent State practice. Since the Outer Space Treaty was established, dominant spacefaring States have largely aligned their conduct, as well as their domestic laws and policies, with the understanding that the terms "non-aggressive" and "peaceful" are parallel or similar. National space policies and activities directed by varying space players, such as the United States, Russia, China, Japan, the European Union, Canada and India, demonstrate the growing acceptance of the "non-aggressive" interpretation.[331] Each spacefaring State in one capacity or another has adopted the "non-aggressive" interpretation of "peaceful purpose"; the nature of these developed States' missions

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[329] Bohlmann & Petrovici, *supra* note 240 at 193.
[330] Draft conclusions on subsequent practice, *supra* note 26, Part Two, Conclusion 4 at 2.
[331] Jana Robinson, "Space Security Policies and Strategies of States: An Introduction" in *Handbook of Space Security: Policies, Applications and Programs* (Cham: Springer International Publishing, 2020) at 359-365 (detailing expert views on space security policies of established spacefaring nations, including the United States, China, Russia, European countries, Japan, and India, and reviews of emerging space powers' space security policies). For example, Robinson notes in March 2018, the Russian Defense Minister Sergey Shoigu stated: "only with support from space will it be possible for the Armed Forces to reach maximum effectiveness", while also identifying the latest version of Japan's Basic Space Plan of 2017 aims to respond to "the growing threat of ASAT weapons and the increasing quantity of space debris by putting emphasis on space security." *Ibid* at 361-62.

and military uses in space are relevant to this debated interpretation, because "they evidence a consistent and common practice on the part of…Parties."[332]

Even throughout the preparatory stages of the Outer Space Treaty, proponents of the "non-aggressive" interpretation have continuously levied their allies to join their military approach to outer space activities.[333] The United States and the Soviet Union, as previously discussed, were the initial States to launch satellites into space for military purposes.[334] These launches occurred before the Outer Space Treaty, yet the United States and Soviet Union did not cease use of their satellites after the Outer Space Treaty was finalized.[335] Thus, military satellites are the earliest and "particularly powerful" example of "non-aggressive" State practice in outer space.[336] Two experts highlight military missions, in the past and present-day, heavily depend on various satellite capabilities: global communication; positioning, navigation, and timing; environmental monitoring; space-based intelligence, surveillance, and reconnaissance; and warning services for commanders.[337] Consequently, a review of relevant subsequent State practice is not confined to the time period immediately after the Outer Space Treaty was created. Subsequent State practice, as a supplementary means, only demands State Parties' conduct is in connection to the application of the Outer Space, after it is conclusion.[338] While the Outer Space Treaty was finalized nearly sixty years ago, States activities within the last thirty years overwhelming show consistent increases in military uses of outer space, thus rejecting the "non-military" interpretation of outer space.[339]

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[332] Irina Buga, "Subsequent Practice as a Means of Treaty Interpretation" in Modification of Treaties by Subsequent Practice (Oxford University Press, 2018) 16 at 59.
[333] Beard & Stephens, *supra* note 213, Rule 3 at 51.
[334] History of U.S. Foreign Relations, Sputink, *supra*note 286.
[335] Jasani, *supra*note 126 at 2.
[336] Beard & Stephens, *supra* note 213, Rule 3 at 55.
[337] *Ibid*.
[338] Draft conclusions on subsequent practice, *supra* note 26, Part Two, Conclusion 4 at 2.
[339] Beard & Stephens, *supra* note 213, Rule 3 at 55-59.

From the 1990s through the early 2000s, Russia developed and launched space based military satellites to support operations of the Russian armed forces via early-warning systems, military communication, optical reconnaissance, navigation, and signal intelligence systems.[340] China targeted and destroyed its own weather satellite with a missile in 2007.[341] Although the Chinese successful missile launch and targeting into space prompted concern from the United States, the United States shot down a failed spy satellite the following year.[342] In 2009, Canada presented a working paper[343] to the Conference on Disarmament, clearly indorsing "non-aggressive" military use of outer space:

> "The Outer Space Treaty represents the best that could have been accomplished for space security during that era of the Cold War. It successfully banned the placement of weapons of mass destruction in outer space. It also banned the military use of the Moon and other celestial bodies, but permitted the military use of outer space for peaceful purposes. Space objects were granted freedom from harmful interference for peaceful purposes - a phrase that came to be interpreted as "non-aggressive." To deal with the potential for the aggressive behaviour of space objects, the Outer Space Treaty referenced the United Nations Charter to ensure that a State's legitimate right to self-defence would also apply in relation to its activities in outer space."[344]

Canada's support of the "non-aggressive" interpretation was further demonstrated in 2013 when it successfully launched its first dedicated operational military satellite.[345]

States' outer space military activities are becoming more ambitious and audacious, reflecting a combination of mounting intensity and developing capabilities in space. For example, India's Defense Space Agency completed simulated space combat drills and

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[340] Pavel Podvig & Hui Zhang, "Russia and Military Uses of Space" in Russian and Chinese Responses to US Military Plans in Space (American Academy of Arts and Sciences), Tables 1-5.
[341] Japan strongly criticized China's self-inflicted missile attack, citing national security concerns and a possible beginning of an arms race in outer space. PAROS Treaty Timeline, *supra* note 171.
[342] *Ibid.*
[343] On the Merits of Certain Draft Transparency and Confidence-Building Measures and Treaty Proposals for Space Security (Canada at Conference on Disarmament, 2009).
[344] *Ibid.*
[345] "Canadian Armed Forces space milestones - Royal Canadian Air Force" (21 March 2023).

successfully intercepted one of its own satellites via its anti-satellite trial in 2019.[346] Also, beyond Russia's 2020 anti-satellite tests of its direct-assent missile system, it also ran non-destructive tests of a new space-based non-anti-satellite weapon that year.[347] Then, in 2021, Russia carried out a direct ascent hit-to-kill anti-satellite test, destroying one of its own satellites into more than 1,500 pieces of orbital debris.[348]

After observing other States' space activities, the European Union's leaders developed their 2022 Space Strategy for Security and Defence, aiming to maximize the use of space for security and defense purposes.[349] Two years later, in June of 2024, the United States added another ICBM test launch to its list of over 300, sending an unarmed ICBM on a re-entry vehicle into outer space to showcase the nation's "global combat capability."[350] Based on this extensive timeline and varying levels of States' outer space conduct, it is undeniable that States' subsequent practice shows growing rejection of the "non-military" interpretation of the Outer Space Treaty's "peaceful purposes" language.

E. Non-Aggressive" State Practice & Customary International Law

The next big question is whether the favored "non-aggressive" interpretation among States has solidified into customary international law. In order for State practice to become customary international law, it must reflect a general practice, in conjunction with the practice

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[346] Rajat Pandit, "Eye on China, India set to kickstart 1st space war drill", Times of India (24 July 2019). See also PAROS Treaty Timeline, *supra* note 171.
[347] *Ibid.*
[348] Jaganath Sankaran, Russia's Anti-Satellite Weapons: An Asymmetric Response to U.S. Aerospace Superiority | Arms Control Association (Match 2022).
[349] 19 of the 27 States Parties of the European Union have national space strategies, with France and Germany having specifically established military space commands. "EU Space Strategy for Security and Defence - European Commission", online: <defence-industry-space.ec.europa.eu/eu-space/eu-space-strategy-security-and-defence_en>. see also "EU space strategy for security and defence" (2023) European Parliament 1 at 3.
[350] "Minuteman III test launch showcases readiness of US nuclear force's safe, effective deterrent", Air Force Global Strike Command Public Affairs, (4 June 2024).

being accepted as law.[351] General practice is the "material" or "objective" element of customary international law.[352] The primary evidence of a general practice is the actual practice of States, which is supplemented by a review of the practice by international organizations with certain competences, such as treaty developments and deploying military forces, conferred upon them by States.[353] State practice refers to physical and verbal acts or inaction, reflecting the exercise of a State's executive, legislative, judicial, and other functions.[354]

These actions or inactions must show consistency, be sufficiently widespread, and demonstrate uniform usage, yet universal participation is not required.[355] While many States consistently conduct outer space activities in alignment with their "non-aggressive" understanding of "peaceful purposes", the "non-aggressive" State practice pertaining to space is not yet uniformed, and certainly not settled.[356] Some States continue to promote the "non-military" agenda, and they conduct themselves accordingly.[357] Other States verbally and politically champion the idea of exclusively using space for "non-military" uses, while their space activities portray the complete opposite.[358] Although there is some deviation in States' approaches to military uses of outer space, the "non-aggressive" interpretation of "peaceful purposes" is gradually becoming more widespread. Yet the first element of customary

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[351] Draft conclusions on CIL, *supra* note 89, para 2, Part Two, Conclusion 2 at 124.
[352] *Ibid*, Part Three at 129.
[353] *Ibid*, Part Three, Conclusion 4, Commentary Notes at 130-31.
[354] *Ibid*, Part Three, Conclusion 5-6, Commentary Notes at 132-34.
[355] *Ibid*, Part Three, Conclusion 8, Commentary Notes at 136 (quoting the ICJ's ruling that a general practice must be "both extensive and virtually uniform", as well as a "settled practice" in North Sea Continental Shelf, Judgment, I.C.J. Reports 1969 at 43, para 74, and at 44, para 77).
[356] PAROS Treaty Timeline, *supra* note 171.
[357] Nobuaki, *supra* note at 294. See also Kazuto, *supra*note at 294.
[358] Henderson, *supra* note 132 at 101(noting in 2004, Russia announced a policy of "no first deployment of weapons in outer space, followed by a 2014 draft resolution on no first placement of weapons
in outer space, the United States responded by emphasizing that "Russia's military actions do not match their diplomatic rhetoric").

international law is not met, because there is no prevalent definition of "peaceful purposes" or an established practice of States' usage of space.

Although both elements must be satisfied for a State practice to become customary international law, the rising trajectory of States supporting the "non-aggressive" interpretation of "peaceful purposes" incites legitimate legal value in proactively discussing the relevant status of the second element of customary international law – the acceptance of a general practice as a law. After determining if a general practice exists, the "subjective" or "psychological" element must be evaluated, meaning it must be established whether a general practice is accepted as law among States.[359] Acceptance of a general practice as a law is more than "mere usage or habit", instead it exemplifies a State's "sense of legal right or obligation…accompanied by a conviction that it is permitted."[360] Accordingly, it is critical to establish whether States' actions demonstrate a belief they are legally compelled or entitled to act in a particular manner, which is often accompanied by their exercise of the practice as a matter of right or obligation.[361]

A State complying with a treaty obligation in accordance with said treaty obligation does not satisfy the acceptance of a law element of customary international law.[362] However, per the ILC, "when States act in conformity with a treaty provision by which they are not bound, or apply conventional provisions in their relations with non-Parties to the treaty, this may evidence the existence of acceptance as law (*opinio juris*) in the absence of any explanation to the contrary."[363] Acceptance as law may include States' public statements, official publications, government legal opinions, diplomatic correspondence, decisions of national courts, treaty

[359] Draft conclusions on CIL, *supra* note 89, Part Four at 138.
[360] *Ibid*, Part Four, Conclusion 9, paras 1-2, Commentary Notes at 138.
[361] *Ibid*.
[362] *Ibid*, Part Four, Conclusion 9, Commentary Notes at 139.
[363] *Ibid*.

provisions, conduct in connection with adopted resolutions by international organization or at an intergovernmental conference, or a State's failure to react to a practice.[364] While acceptance of a general practice by all States is not essential, broad and representative acceptance with little to no objection is required.[365]

Some States, particularly the United States, have publicly and officially declared "non-aggressive" as the meaning of "peaceful purposes", then proceeded to exercise their belief by launching military assets into space.[366] Furthermore, States conducting "non-aggressive" military activities in the void have technically acted in conformity with the Outer Space Treaty. The biggest hurl of the second element's criteria is the minimal objection requirement. Minimal objection is not necessary a quantifiable component, but it does demand broad support of the "non-aggressive" approach among States within the international space community. Presently, the "non-aggressive" practice of "peaceful purposes" is riddled with uncertainties and objections by "non-military" proponents.[367] One author declares it seems possible to refer to the principle of "peaceful purposes" as a rule of customary international law,[368] but existing discord regarding the "non-aggressive" and "non-military" interpretations of "peaceful purposes" undercuts his assessment. Nevertheless, States' increased military uses of the outer space void are gradually pushing the "non-aggressive" approach of "peaceful purposes" into the endzone of customary international law.

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[364] *Ibid*, Part Four, Conclusion 10, paras 2-3 at 140.
[365] *Ibid*, Part Four, Conclusion 9, Commentary Notes at 139.
[366] UNGA Meeting Notes - 1289, *supra* note 275 at 13.
[367] Cheng states, "[T]o interpret "peaceful" as meaning "non-aggressive" is, to use the words of Article 32 [of the Vienna Convention], "manifestly absurd and unreasonable." He continues, "In addition, if this is the correct interpretation, since Article IV(2) applies only to celestial bodies and not the outer void space, the absence of such a stipulation in, say, Article IV(l) or anywhere else in the Treaty immediately gives rise to the argument, as we have said, that contrariwise *aggressive* activities are permissible in outer void space." Bin Cheng, "Properly Speaking, Only Celestial Bodies Have Been Reserved for Use Exclusively for Peaceful (Non-Military) Purposes, but Not Outer Void Space" (2000) 75 International Law Studies 81 at 101. See also Cheng, *supra* note 77 at 520.
[368] Alexander Proelss, "Peaceful Purposes" (2021) Oxford Public International Law, at para 1.

II. Non-Aggressive Uses: The Interplay Of Defensive & Offensive Acts

Whether the "peaceful purpose" principle, specifically the "non-aggressive" interpretation, is customary international law or not does not hinder or enlarge States' ability to conduct military activities in the outer void of space. In fact, no international law, to include space, general, and customary, prohibits military use of the space void.[369] This inference is a reality directly attached to the notion that the outer space void is only partially demilitarized, and States are implicitly free to use or station weapons in the void that do not fall within the nuclear weapon or weapons of mass destruction categories. It remains that the non-use of force principle and its requirements, as reflected in Article 2(4) the U.N. Charter and customary international law, are legal restrictions and obligations States must adhere to when conducting military operations in space.[370] However, the non-use of force principle only governs the degree or severity of an armed force's operations, not the nature of military activities.

Some States do not agree with this assessment, arguing only self-defense, as defined within Article 51 of the U.N. Charter and customary international law, is permissible in outer space.[371] While it is undisputed that defensive military activities are permissible in space,[372] there is no law or custom that makes a States' offensive use of the outer void of space illegal. Another unavoidable certainty is military assets typically have dual functions, meaning they have both offensive and defensive capabilities. Therefore, it is arguable that States have been

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[369] Cheng states, "Whether "peaceful" means "non-military" or "non-aggressive" consequently has no effect whatsoever on the contracting States' freedom to use the outer void space for military purposes in accordance with international law." Cheng, "Properly Speaking", *supra* note 367 at 109.
[370] U.N. Charter, *supra* note 53 at Article 2(4).
[371] For example, Suzuki states the Japanese traditional interpretation is any space activities should be peaceful, meaning the military shall not play any part of it. This position challenges the very nature of military space activities, as Suzuki identifies updates to Japanese space law focuses on self-defense, strengthening Japan's capability in settling disputes, managing crises by peaceful means, and ultimately prevents any use of space by Japan's military authority. Suzuki, *supra* note 198, 561-62.
[372] Goh, *supra* note 16 at 266.

offensively using outer space in tandem to its defensive uses of space. It is for this reason, coupled with the previously discussed details, that a striking truth is revealed – offensive uses of outer space are legally permissible. Although offensive uses of outer space are implicitly legal, this does not mean States may conduct any type of offensive military space activities they desire.

But what is the difference between a defensive and an offensive military measure? How does understanding these categories of military activities interplay with the outer void of space and the capabilities of military assets? Furthermore, how does the growing State practice of "non-aggressive" military uses of outer space influence a State's ability to offensively use the void? Because the United States is the biggest and longest proponent of the "non-aggressive" interpretation of "peaceful purposes", its military definitions and doctrine will be the primary references for the examination of "non-aggressive" space activities and its interplay with offensive and defensive military measures.

A. Defensive & Offensive Military Measures

The distinctions between defensive and offensive military measures involve different approaches and strategies to military operations.[373] Because military activities are gradually evolving, and no attributable conflict has occurred to reference regarding offensive uses of space, a review and comparison with terrestrial military activities is necessary. First, the word "defense" was created from the Latin term *defensum*, which means "thing protected or forbidden."[374] The phrase "national security" is regularly correlated with "defense."[375] The base word of "national security" is "security", which is defined as being protected and free from

[373] Wilhelm Agrell, "Offensive versus Defensive: Military Strategy and Alternative Defence" (1987) 24:1 Journal of Peace Research 75 at 76.
[374] Antoni, *supra* note 159 at 12.
[375] *Ibid*.

danger.[376] Therefore, the nature of a State's defense involves protection of its territory including property and population, through diplomatic channels or the use of force.[377] One author describes "offense", however, as a term associated with confrontational actions, such as taking and holding of territory or attacking a territory.[378] Such a narrow view of offense reflects the core of many States' fear of space becoming a war zone. It is overlooked that defensive and offensive military measures are often indistinguishable or executed simultaneously as complimentary operations. For example, one scholar notes it is nearly impossible to make meaningful distinctions between defensive and offensive tactics executed by air and naval forces.[379] Many States created their military space commands from existing military branches, such as air, naval, and army forces, thus it is plausible to assume outer space military activities involve similar commingling of offensive and defensive operations. Furthermore, the United States Department of Defense (DoD) Law of War Manual reads, "Outer space may be viewed as analogous to the high seas in certain respects."[380] It is therefore important to discuss the offensive and defensive spectrum of military space activities in comparison to military measures in other domains, by reviewing the different scopes of military operations, their application in space, and how these concepts can inform a State who desires to conspicuously use outer space in an offensive manner.

B. Legal Framework for Self-Defense & Countermeasures

There are numerous types of defenses, such as active or anticipatory defense, but traditional self-defense is the overarching type of defense. To briefly recap the discussion in

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[376] *Ibid*.
[377] *Ibid*.
[378] Stephen van Evera, "Offense, Defense, and the Causes of War" (1998) 22:4 The MIT Press (International Security) at 5.
[379] Agrell, *supra* note 373 at 76.
[380] DoD Law of War Manual, *supra* note 5, para 14.10.1 at 953.

Chapter 1, self-defense is a use of force exception established in Article 51 of the U.N. Charter and customary international law.[381] Self-defense has two categories: the defense of oneself and collective self-defense. A State generally has the inherent right to defend itself or another State within the United Nations if either of them are the target of an active or imminent armed attack.[382] While Article 51 only States self-defense is authorized if an armed attack "occurs",[383] many States have gradually begun to support a broader exercise of self-defense, one which includes self-defense against an imminent attack.[384] This form of self-defense is typically referred to as anticipatory self-defense. Accordingly, some States cite the *Caroline* case as their basis for anticipatory self-defense, referencing a "necessity of self-defence, instant, overwhelming, leaving no choice of means, and no moment for deliberation."[385]

A narrow and explicit reading of self-defense does not pose any major issues terrestrially or in outer space, while anticipatory self-defense introduces varying issues in both environments. One author, Goh, distinguishes these forms of self-defense into two categories: reactive and anticipatory.[386] Reactive defense is a responsive State action to defend itself or others against an armed attack, but anticipatory defense is a preventative act against an impending planned armed attack.[387] Accordingly, anticipatory defense is characteristically inclusive of "preemptive" and "preventive" measures.[388] This simplifies to a State's ability to claim defense against possible future attacks, without a requirement of certainty and imminence.[389] The essence of preemptive and preventive operations embody proactive actions, which could be exploited by an overzealous

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[381] See Chapter 3 at page 90 to review the author's analysis of self-defense.
[382] U.N. Charter, *supra note 53* at Article 51; see also Beard & Stephens, *supra* note 213, Rule 26 at 250.
[383] U.N. Charter, *supra note 53* at Article 5.
[384] Beard & Stephens, *supra* note 213, Rule 26 at 254.
[385] Wood, *supra* note 112 at 8.
[386] Goh, *supra* note 16 at 261.
[387] *Ibid*.
[388] Beard & Stephens, *supra* note 213, Rule 26 at 255.
[389] *Ibid*.

State. Two experts, Beard and Stephens, note when applied to space, these concepts may result in an unlawful exercise of self-defense.[390] The fallibility of preemptive or preventive self-defense in space is demonstrated in the following example: a State attacking another State's direct-ascent ASAT without evidence of an imminent armed attack.[391] In order to avoid these types of illegal and exploited assertions of self-defense, States must conduct a good faith basis assessment of the imminence of an armed attack via a case-by-case determination of the nature of the threat, the capabilities of the attacker, and the probability of the attack occurring without additional warning.[392]

Similar to the ongoing debate about the meaning of "peaceful purposes", space law commentators have differing perspectives regarding anticipatory self-defense, particularly in space. Contrary to the observations made by Beard and Stephens, Huskisson seemingly believes a liberal exercise of anticipatory self-defense is necessary, writing, "'Protection,' in military space parlance, includes both active and passive defensive measures."[393] He then describes active defense as "employment of limited *offensive* action and counterattacks."[394] This perspective widens the scope of defense and reinforces the notion that military operations are usually multifaceted, involving a mixture of offensive and defensive actions. Per the United States' Army Field Manual 3-90, the purpose of defense is to create conditions for the offense to regain initiative; this partly involves countering an enemy action, yet a defending force does not passively wait for an attack.[395] The aforesaid details prompt the need to explore countermeasures and their connection to defensive and offensive military tactics.

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[390] *Ibid*.
[391] *Ibid*.
[392] Beard & Stephens, *supra* note 213, Rule 26 at 256.
[393] Darren Huskisson, "Protecting the Space Network and the Future of Self-Defense" (2007) 5:2 Astropolitics 123 at 124.
[394] *Ibid*.
[395] Army Field Manual 3-90, Tactics (United States Department of the Army, 2023), para 8-1 at 2.

C. Distinguishing Self-Defense vs. Countermeasures

Like many legal concepts, there is more than one meaning for the term "countermeasure." The international legal definition of countermeasures is considered customary international law and is established in Articles 22 and 49-54 of the ILC's Articles on Responsibility of States for Internationally Wrongful Acts.[396] In part, Article 49, paragraph 1, provides "an injured State may only take countermeasures against a State which is responsible for an internationally wrongful act in order to induce that State to comply with its obligations."[397] Simply put, a countermeasure is an exempted, reversible, and internationally wrongful act by an injured State to induce the State responsible for committing original wrongful act to comply with relevant international obligations.[398]

Punishment is not the goal of countermeasures, instead its aims are to achieve the affected States' overall compliance with international obligations and restore lawfulness between them.[399] The responsive nature of countermeasures could erroneously lead to a conclusion that it is a form of self-defense. However, the two reactive actions are completely different. One difference between countermeasures and self-defense is the requirement of proportionality. States seeking to use countermeasures are required to conduct an evaluation of proportionality,[400] which is distinguishable the proportionality assessment associated with self-defense.[401]

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[396] Articles on Responsibility of States for Internationally Wrongful Acts, 2001, at Articles 22, 49-54.
[397] *Ibid*. at Article 49, para 1.
[398] *Ibid*. at Article 49, para 3.
[399] A lawful "countermeasure" must satisfy six conditions: 1) only responsive to a prior internationally wrongful act by the State responsible; 2) solely directed against the responsible State; 3) a call upon the responsible State to fulfill its obligations or become compliant; 4) a proportionate response to the original internationally wrongful act conducted by responsible State; 5) a generally reversible and temporary measure; and 6) ended as soon as responsible State has compiled. *Ibid*. at Articles 51-53; see also Beard & Stephens, *supra* note 213, Rule 25 at 245-48.
[400] Articles on Responsibility of States, *supra* note 396 at Article 51.
[401] Beard & Stephens, *supra* note 213, Rule 25 at 247.

Regardless of its differences from self-defense, countermeasures are also permissible in outer space via Article III of the Outer Space Treaty, which incorporates applicable international law. Two space law minds submit that a State action resulting in permanent damages to another State's satellite would likely fall outside of the scope of a countermeasure.[402] But for the legal concept of countermeasures being recognized as customary international law, this example would be valueless and invalid. "Peaceful purposes" is only a goal, not a requirement, in the void of space, and the only space law that explicitly narrows the scope of military uses in the void solely restricts nuclear weapons and weapons of mass destruction. Therefore, various military space maneuvers are permissible in the void unless they violate an applicable general or customary international law, such as the lawful use of countermeasures.

Countermeasures, as identified via international law, is completely different from the operational concept of countermeasures.[403] Operational countermeasures generally fall within two categories: passive countermeasures and active countermeasures; passive countermeasures involve redundancy, camouflage, and frequency-hopping for communications channels, while active countermeasures pertain to internally hosted decoys and space-based defense systems.[404] The United States' Air Force Doctrine Publication (AFDP) 3-14 discusses counterspace operations[405]. It defines a counterspace mission an integration of offensive[406] and defensive operations with a goal of attaining and maintaining the desired control and protection in and through space.[407] Defensive counterspace operations primarily seek to preserve the ability to use space for military advantages by protecting friendly space capabilities from attack, interference,

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[402] *Ibid* at 248.
[403] *Ibid* at 244.
[404] *Ibid*.
[405] Air Force Doctrine Publication (AFDP) 3-14, Counterspace Operations (United States Air Force, 2021).
[406] The author examines offensive measures, to include offensive counterspace operations, in the section immediately following this discussion, starting on page 92.
[407] AFDP 3-14, *supra* note 405 at 1.

and unintentional hazards; these defensive capabilities include "the space segment (e.g., on-orbit satellites), the ground segment (e.g., space operations centers and telemetry, tracking, and commanding stations), and the link segment (the electromagnetic spectrum)."[408]

A statement within the United States' AFDP 3-14 plainly demonstrates how operational "counterspace" measures differ from the international legal concept of "countermeasures": "When exercising self-defense, [defensive counterspace operations] may include the use of force in response to a hostile act or demonstrated hostile intent."[409] A lawful "countermeasure", per Article 50(1)(a) of the Articles on Responsibility of States, prohibits the threat or use of force.[410] It is clear the legal concept of countermeasure is more restrictive and intended to be less severe than self-defense. Accordingly, the United States appears to be reorienting its measures and aligning them closer to the international legal concepts of self-defense and "countermeasures." The United States' 2022 Space Doctrine Note contains nearly the exact statement as the 2021 AFDP 3-14, but the "counter" aspect is removed, and the mirroring statement is included in a section simply labeled "defensive operations."[411] Both countermeasures and self-defense are legal military uses of outer space, offering legal and policy insight into what types of offensive military activities are likely to become, or should be, prohibited.

D. Examination of Offensive Measures

1. The Meaning and Purpose of Offensive Military Operations

One United States' Army instruction states the purpose of offense is to secure decisive terrain, deprive enemies of resources, gain information, fix an enemy in position, disrupt an

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[408] *Ibid* at 2.
[409] *Ibid*.
[410] Articles on Responsibility of States, *supra* note 396 at Article 50(1)(a).
[411] *Spacepower Doctrine for Space Forces*, Space Capstone Publication (Headquarters U.S. Space Force, 2022) at 15.

attack, and set the conditions for future successful operations.[412] While the United States Army handles land-based missions, its approach to offense is mirrored by scholars' and States' perspective regarding the strategic uses of space. Similar to the gain of information mentioned by the Army, the U.S. Space Force's mission and capabilities involve securing the United States interests in, from, and to space via various resources, to include a global network of space surveillance sensors which provide vital information.[413] The U.S. Space Force also leans into the Outer Space Treaty's "free use principle" in Article 1, noting its "access to, and freedom to operate in space, underpins [the United States'] national security and economic prosperity."[414] Some proponents for military use of space assert the "free use principle" as "the international legal basis for all activity in outer space", thus arguing that it "serves as the point of departure for any argument in favour [sic] of a particular use of outer space."[415] The United States stands firmly on this perspective, as it declares defensive and offensive operations provide "a desired level of freedom of action relative to an adversary."[416] States therefore use offensive operations, considerably like defensive[417] measures, to deter adversarial States.

2. Offensive Activities vs. Responsive Actions

Per AFDP 3-14, offensive counterspace operations are initiatives to negate an adversary's use of space capabilities, reducing the effectiveness of adversary forces in all domains.[418] As

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[412] Army FM 3-90*, supra* note 395, para 3-1 at 89.
[413] U.S. Space Force Statute, *supra* note 168.
[414] *Ibid.*
[415] Beard & Stephens, *supra* note 213, Rule 1 at 35-36 (citing Canada, 'Terminology Relevant to Arms Control and Outer Space' (Working Paper Conference on Disarmament, 16 July 1986) CD/716, CD/OS/WP.15 (Canada, 'Terminology Relevant to Arms Control and Outer Space') 6).
[416] Space Doctrine Note Operations, *supra* note 411 at 15.
[417] Deterrence by punishment is a credible and possibly overwhelming threat of force or other retaliatory action against potential adversaries to sufficiently deter them from attempting hostile actions in space. John J Klein & Nickloas Boensch, "Role of Space in Deterence" in *Handbook of Space Security: Policies, Applications and Programs* (Cham: Springer International Publishing, 2020) at 114 (noting in a 2018 Joint Chiefs of Staff publication, the United States expressed it may use space assets to target aggressors' space capabilities as a form of deterrence against possible threats).
[418] AFDP 3-14, *supra* note 405 at 1.

previously discussed, military countermeasures, particularly for the United States, are traditionally viewed differently than legally established "countermeasures" found in the Articles on Responsibility of States. Just as the conventional defensive counterspace operations mirror self-defense more than the law-based "countermeasures", the United States description of offensive counterspace operations resemble pure offensive military operations. This reality is confirmed via AFDP 3-14, as it reads, "These operations target an adversary's space capabilities (space, link, and ground segments, or services provided by third Parties), using a variety of reversible and non-reversible means."[419] AFDP 3-14 also states offensive counterspace actions may include "strikes against adversary counterspace capabilities before they are used against friendly forces."[420]

However, per Article 49 of the Articles on Responsibility of States, "countermeasures" must be reactive and reversible, to the fullest extent possible, to the responsible State's initial internationally wrongful act conduct.[421] Offensive counterspace capabilities, as detailed above, include reversible and non-reversible means, thus making some of those capabilities unlawful "countermeasures." An unprovoked military operation screams pure offense, a separate category than the legally defined responsive nature of self-defense and "countermeasures." Therefore, it is no surprise that the United States once again recently wrote the exact language within its description of "offensive operations", noting offensive operations have a greater opportunity to reduce an adversary's ability to conduct hostile acts.[422] It is reasonable to deduce that the confidence of the United States and nations with similar approaches are becoming bolder with declarations and application of offensive military uses of outer space.

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[419] *Ibid.*
[420] *Ibid.*
[421] A*rticles on Responsibility of States*, *supra* note 396 at Article 49(1-3).
[422] Space Doctrine Note Operations, *supra* note 411 at 15.

While applicable international law explicitly authorizes States exercise of self-defense and "countermeasures" in space via Article III of the Outer Space Treaty, States boldness with offensive use of outer space results from the omitted language in the Outer Space Treaty and relevant international law, which implicitly gives States the freedom to conduct offense-oriented space activities. Two experts consequently surmise all use of outer space is presumed to be permissible or lawful unless it is prohibited under international law.[423] Similarly, retorsion, a traditionally reactionary measure, is established through a State's fundamental and sovereign right to freely engage in all acts that are not otherwise prohibited by international law.[424] Retorsion is defined as a legal, yet "unfriendly", act by an aggrieved State against another State in accordance with general and customary international law. [425] Some writers submit retorsion is reactionary, retaliatory or coercive, [426] but others argue it is not exclusively a responsive action, like self-defense or "countermeasures".[427] This means States may conduct a "unfriendly" lawful act of retorsion at any time, regardless of another State's prior actions.[428] Thus, a State can conduct an act of retorsion in outer space. A non-reactionary act of retorsion resembles the general understanding of offensive operations the most, in comparison to aforesaid military measures. It adds yet another point of reference towards defining what offensive military operations of outer space should or could look like within the construct of written legal parameters.

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[423] Beard & Stephens, *supra* note 213, Rule 24 at 241.
[424] *Ibid*.
[425] *Ibid*.
[426] Thomas Giegerich, "Retorsion" (2020) Oxford Public International Law (Max Planck Institute for Comparative Public Law and International Law) at para 1.
[427] Richard B Lillich & John Norton Moore, "Forcible Self Help Under International Law" 62 (International Law Studies) 131. See also Bruce Harlow, "The Use of Force... Short of War", (1966) 92:11 (United Slates Naval Institute Proceedings) at 81.
[428] Beard & Stephens, *supra* note 213, Rule 24, fn 282 at 242.

3. Offensive Acts in Space

States' investment and focus on outer space is increasing on a constant basis.[429] As space becomes more congested and essential to daily operations, the tension among competing States will characteristically escalate. The United States' 2023 Space Policy Review and Strategy on Protection of Satellites discusses China's development of space capabilities, its tests, offensive cyberwarfare capabilities, and direct-ascent anti-satellite missiles, which are presumably intended to target the United States' and its allied satellites.[430] Likewise, the Space Policy Review identifies Russia's comparable developments, testing, and fielding of reversible and irreversible systems to degrade or deny the United States' space-based services, counterbalancing the United States' perceived military advantage.[431] From least to most severe, the United States describes deception, disruption, denial, degradation, or destruction as offensive military actions.[432]

Denial is an intermediate measure designed to temporarily eliminate an adversary's use, access, or operation of its system, and it does not normally result in physical damage to the system.[433] Degradation is one of the most severe military space measures, as it involves a partial or entire permanent impairment to an adversary's system, which is usually accompanied with some physical damage.[434] The United States correspondingly recognizes the legitimate risks its

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[429] Brian Goodman, "Offensive Dominance in Space" (2024) 3:1 Æther 66 at 72 (details 70 percent increase of Russian and Chinese satellites over a short three-year period).
[430] *Space Policy Review and Strategy on Protection of Satellites* (U.S. Department of Defense, 2023) at 2-3.
[431] *Ibid.*
[432] Space Doctrine Note Operations, *supra* note 411 at 15.
[433] AFDP 3-14, *supra* note 405 at 1.
[434] AFDP 3-14 defines the remaining operations as follows: 1) deception includes measures designed to mislead an adversary by manipulation, distortion, or falsification of evidence or information into a system to induce the adversary to react in a manner prejudicial to their interests; 2) disruption is a measure designed to temporarily impair an adversary's use or access of a system for a period of time, usually without physical damage to the affected system.; and 3) destruction is permanently eliminating the adversary's use of a system, which usually with physical damage to the affected system). *Ibid.*

competitors pose to its national security, population, and outer space assets. Thus, the United States essentially acknowledges and asserts the promotion of a flawed legal instruments[435] drafted by China and Russia to refrain from placing weapons in space is a façade of leaning into the Outer Space Treaty's "peaceful purposes" objective.[436]

Lachs argues the inherent right of "self-defence should be viewed as a special exception to the rule" of peacefulness,[437] yet it is evident State practice and space law commentators equate offensive military uses of space to peacefulness. One writer concludes offense involves maintaining initiative, and an offensive spirit must be central to conduct all defensive operations, which must be active, not passive.[438] Conversely, another author writes, "Offense dominance intensifies arms racing, whereas defense dominance slows it down."[439] It is undeniable that the States' present-day vigilance focused on one another's space capabilities may upend the international peace and cooperation the Outer Space Treaty's drafters hoped to sustain throughout the future. Accordingly, Lachs asserts that the objective of international cooperation and its benefit for all leans to "the formal outlawing of military activities" in certain environments, like space.[440] He also proclaims that the rule of peaceful use of outer space should be viewed as a limitation upon States' freedom to engage in activities, with hopes of

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[435] *Security: Policies, Applications and Programs* (Cham: Springer International Publishing, 2020) 555 at 568; Henderson, *supra* note 132 at 101(summarizes the United States' position on Russia's 2014 draft "No First Placement of Weapons in Outer Space" resolution, where the United States stated, "Russia's military actions do not match their diplomatic rhetoric," observed that any space "object with maneuvering capabilities can in theory be used for offensive purposes," and noted that the lack of a "common understanding of what we mean by a space weapon [in the resolution]. . .would increase mistrust or misunderstanding with regard to the activities and intentions of States").
[436] Space Policy Review and Strategy on Protection of Satellites, *supra* note 430 at 3.
[437] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 98.
[438] David Evans, *War: A Matter of Principles* (London: Palgrave Macmillan UK, 1997) at 36.
[439] Evera, *supra* note 378 at 13.
[440] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 99-100.

confining them to peaceable actions.[441] Nevertheless, the United States maintains offensive operations or neutralizing adversary assets may occur in all domains, to include space.[442]

The United States also cites "Information Warfare capabilities" as an offensive space operation that successfully discourages attacks against space assets via communications of a credible threat of unacceptable counteraction and the resolve to use miliary instruments of national power.[443] The use of reconnaissance satellites for intelligence collection is another military space activity which can support both defensive and offensive operations, and its acceptance via law and State practice is proof that some offensive operations are legal and inherently peaceful.[444] Fortunately, there are not any historical space competition or conflict events reflecting a devastating offensive use of outer space. Nevertheless, States' expanding liberal view of the Outer Space Treaty's "free use principle", coupled with Article IV's limited restriction of military use, requires clarity and parameters for the nearly "anything goes" reality of offensive space activities in the void.

Chapter 4: Review of Findings: Offensive Uses Proposal and Additional Considerations

I. Proposed Way Forward, Evolution of State Practice

Space law needs a refresh. Since the 1967 Outer Space Treaty was enacted, the space law regime remains unclear, and it is steadily losing its effect on military uses of outer space, particularly the void of space. Article IV of the Outer Space Treaty only partially demilitarizes the outer void of space, meaning it "does not explicitly restrict (and so allows) other military-related activities in outer space, such as the deployment of military satellites and conventional

[441] Lachs, Masson-Zwaan & Hobe, *supra* note 200 at 100.
[442] Space Doctrine Note Operations, *supra* note 411 at 15.
[443] *Ibid.*
[444] AFDP 3-14, *supra* note 405 at 1.; Space Doctrine Note Operations, *supra* note 411 at 15; Beard & Stephens, *supra* note 213, Rule 24 at 241.

weapons in outer space".[445] As one author eloquently concludes, the Outer Space Treaty fails to effectually prohibit "the deployment of offensive devices in orbit", if they are not nuclear or other weapons of mass destruction, nor does it prohibit "the development, storage, and testing of ground-based ASAT devices."[446] The Outer Space Treaty may provide minimal guidance for military uses of outer space in the void, but Article III gives general international law a voice to address space law matters which are not anticipated or directly accounted for via the primary space law treaty or its counterparts. While some scholars may assert some aspects of general international law merely governs specific matters, such as aggression and the use of force, this author proposes a collective application of space, general, and customary international law is vital to properly advise and guide States' current and future military uses of the outer void of space.

Reading and interpreting a law too broadly or narrowly may result in unintended consequences. Therefore, a complimentary reading and interpretation of relevant international laws can be beneficial in framing the currently non-existent legal framework, or at the very least policy, for States' seeking to freely use their offensive capabilities in space. The Outer Space Treaty does not expressly identify and regulate offensive uses of outer space, nor do other space treaties or any supplemental resolutions. However, the space law *travaux-preparatoires*, as well as general and customary international law, discussed throughout this thesis outline legal characteristics and elements that may improve the current political climate and space law regime regarding offensive military space measures. Thus, the following legal elements are proposed to identify offensive military uses of outer space that should be considered legally acceptable: 1) a

[445] Henderson, *supra* note 132 at 97 (citing and expounding on remarks from Tronchetti F, Hao L (2015) The 2014 updated draft PPWT: hitting the spot or missing the mark? Space Policy 33:38–49).
[446] *Ibid.*

military space activity solely affecting or directed at assets in the void, regardless if the offensive asset is Earth-based or stationed in space); 2) an unprovoked act, meaning it is not in response to an initial act or attack by another State; 3) a non-escalatory measure, which excludes any hostile acts and accounts for the level of a target State's assets and capabilities. The three proposed elements reflect an intersection of varying military acts detailed in law, such as use of force, acts of aggression, self-defense, countermeasures, retorsion, and conventional State practice of "non-aggressive" uses of outer space. Accordingly, any offensive military uses of space that exceed the aforementioned perimeters should be deemed illegal.

In the proposed legal approach to offensive uses of space, the first element is the easiest to identify and satisfy. It requires a finding that the military space operation did not violate the complete demilitarization of Article IV, paragraph 2, in the Outer Space Treaty, meaning the offensive use was contained within the void of outer space as opposed to "the moon and other celestial bodies".[447] The second element is also fairly simple to address. Per the second element, an offensive use of outer space is separate from the responsive State measures established in the U.N. Charter, customary international law, and the Articles on Responsibility of States.[448] It is necessary to ensure the circumstances around the military space activity is closely examined to determine whether space operations by another State prompted the acting State to conduct its own military space measure. This element basically seeks to distinguish between defensive or reactionary military operations and offensive space activities.

Because retorsion, a "unfriendly" yet lawful act, can qualify as proactive or reactive, attention to detail is required. The best way to identify an offensive military measure would

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[447] Outer Space Treaty, *supra* note 4, Article IV.

[448] See author's discussion regarding customary international law in Customary International Law & Use of Force in Chapter 1 on page 28; see also U.N. Charter, *supra* note 53 at Article 2(4), Article 51; Articles on Responsibility of States, *supra* note 396 at Articles 22, 49-54.

involve an assessment of the space assets' capabilities and the degree of its effects. For example, if an orbital or terrestrial space asset performed an unprovoked act of deception, disruption, denial, degradation, or destruction, such as, but not limited to, jamming or spoofing, it is highly probable the acting State conducted an offensive use of space. The intent of the first and second element is to provide clear definitions and approaches to positively identify and distinguish an offensive use of space from a defensive use of space. This is important because the type of military space activity conducted drives what laws are applicable, as well as the rights States are given, regarding the matter.

The third component of the proposed legal approach is the most involved element. It requires that the offensive use of space is non-escalatory, which embodies a two-part analysis: a) an evaluation to determine if the act is qualifiable as hostile; and b) an assessment of the level of a target State's assets and capabilities. This element is a compilation of States' "non-aggressive" interpretation of military space activities, the Outer Space Treaty's goal to maintain international peace and security, and the non-use of force principle via general international law. While it is argued and obvious that the Outer Space Treaty does not require the void to be used exclusively for "peaceful purposes",[449] it is highly probable the growing State practice of "non-aggressive" uses of space will become customary international law.

Both past and present United States' statements, with support from its allies, display an appetite to consistently refrain from and negate extraterrestrial hostilities. In 1962, at a General Assembly, Gore noted, "The United States…is determined to pursue every non-aggressive step which it considers necessary to protect its national security and the security of its friends and allies, until that day arrives when such precautions are no longer necessary."[450] Then, in 2022,

[449] Cheng, "Properly Speaking", *supra* note 367 at 109.
[450] UNGA Meeting Notes - 1289, *supra* note 275 at 13.

over 62 years later, the United States declared, "The [United States] may undertake offensive operations within the bounds of [its] domestic laws and policy, and international law to negate an adversary's use of military or hostile space capabilities, reducing the effectiveness of adversary forces in all domains."[451] A hostile act in the legal sense is often described as an act of aggression or the use of force,[452] which are both illegal concepts and completely detached from the understanding and application of "peaceful purposes" in the Outer Space Treaty. Nevertheless, by creating a nexus between those law-based matters, international peace and security may be maintained.

The second analysis required by the third element of the proposed legal approach is influenced by the ICJ's analysis of an armed attack, specifically borrowing the "scales and effects"[453] test. Therefore, the final analysis takes the "scales and effects" test, a defense-oriented examination that was originally focused on a State's response to another State's act, and uses it from an offensive perspective as an assessment of the level of a target State's assets and capabilities. This requires a case-by-case determination of what may be an acceptable offensive use of space by looking at a State's assets and capabilities to decide the severity of impairment or damage the target State could absorb, without declaring the acting State's operation as an escalatory use. The "scales and effect" type of assessment is quite similar to a proportionality evaluation. It is important because some States may not have developed many, if any, space assets and capabilities, thus a State with minor defensive space capabilities may be overwhelmed by a denial operation used on one its satellites.

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[451] Space Doctrine Note Operations, *supra* note 411 at 15.
[452] Resolution 3314 (XXIX), *supra* note 125, Article 3 at 143.
[453] Nicaragua 1986 case, *supra* note 120 at 195.

Conversely, a State with various space assets and a healthy level of redundancy, like China or Russia, may not be fazed by the degradation of one its space assets. Yet it is important to be mindful of the overall "effect" of the offensive measure. Using the previously mentioned example involving Russia and China, a relevant consideration of effects resulting from an attributable offensive operation against them is a State's ability to respond in an equal or greater manner, as well as the current competitive and intense climate between those States and others, such as the United States and its allies. If it is determined a State's offensive space activity is egregious, considering the severity of impairment or damage the target State sustained, the initiating State's offensive use should be condemned as an illegal, escalatory use of space. The proposed legal evaluation of a target State's assets and capabilities is thus essential to include in any law intended to address the legitimacy of any offensive uses of outer space. Nevertheless, the proposed elements and analyses only offer a springboard for the international space community to address offensive military operations. The reality is space law needs an established enforcement mechanism to support the proposed legal measures and definitions. Furthermore, offensive military uses of outer space are multifaceted and will demand legal considerations of numerous issues.

II. Additional Considerations for Offensive Uses of Space

It is not hard to discern convoluted legal issues are intertwined throughout the compilation of the outer space environment's natural threats, the growing population of space assets, and the increasing intensity between States' military perspective and missions. Accordingly, this portion of the chapter is intended to highlight additional challenges to a State's endeavor to offensively use space to the highest degree. The author is hopeful that the concepts in this section also prompt further research, discussions, and action to clarify and improve the legal framework of

space. Ultimately, the author seeks to introduce novel and existing thought-provoking considerations for States and their legal advisors to contemplate as they determine whether a particular military activity in space is worth the risk.

A novel consideration is whether the terms "purpose" and "use" do, or should, have legal distinctions in outer space. The Outer Space Treaty never uses the phrase "peaceful uses"; it only refers to "peaceful purposes", which is mentioned twice in the preamble and twice in Article IV.[454] It is possible the meaning of "purpose" was conflated with "use" because various General Assembly Resolutions discuss the "peaceful uses" of space. However, most of these resolutions predate the Outer Space Treaty.[455] The definition of "purpose" is an object or end to be attained, and it is synonymous to an intention.[456] The term "use" is defined as an action or service to carry out a purpose.[457] It presents a potentially overlooked aspect of "peaceful purposes": should the intent of a State matter when assessing its use of outer space or does the ends justify the means? One author asserts "peaceful purposes" is the dominant narrative of how space actors should use space in ethical and legal senses, yet it gives little indication of what it truly means to use space for "peaceful purposes".[458] It is for those very reasons the meticulous comparison between States' "use" of space and the concept of "peaceful purposes" should be explored, as it will help clarify what offensive uses of space should be prohibited.

Another consideration is the domain classification of space. Outer space has been labeled as an operational domain by some, and a warfighting domain by others. Therefore, a reasonable question arises: does the domain classification of space influence what offensive military uses

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[454] Outer Space Treaty, *supra* note 4 at Preamble, Article IV.
[455] "Peaceful uses of outer space" may be found in each one: Resolution 1348 (XII); Resolution 1472 (XIV); Resolution 1721 (XVI); and Resolution 1802 (XVII).
[456] *Purpose*, Definition & Meaning (Merriam-Webster Dictionary, 2024).
[457] *Use,* Definition & Meaning (Merriam-Webster Dictionary, 2024).
[458] Blount, *supra* note 255 at 116.

involve? In 2019, NATO declared outer space as an operational domain, explaining this declaration will help make sure there is a coherent approach to the integration of space into its overall deterrence and defense posture.[459] Furthermore, a 2021 report notes, "Military strategists increasingly consider space as a warfighting domain – a location where offensive and defense military operations take place – similar to air, land, and sea."[460]

A prima facia comparison of the two domain descriptions presents as if they should signify separate approaches. However, NATO also considers "land, maritime, air, and cyber" as operational domains.[461] This shows NATO intends to approach space in a similar manner as it approaches the other environments. NATO's declaration of space as an "operational" domain does not seem to bear much difference from military strategists' and some States' assertion that space is a "warfighting" domain. One writer notes the way a domain is defined determines the organizational constrict of a State's military forces.[462] Accordingly, many States are posturing themselves for a possible surge of offensive military presence and use of space.[463] States changing perspective[464] towards space's domain classification should be surveyed to proactively determine how law and policies can curb calamitous consequences resulting from ambiguous declarations of States' perspective towards space.

The last consideration is possibly the most complex one. Due to the advancements in outer space, space actors are both military and civilian. Often military, civilian, or commercial space actors work together. When the United States created NASA, it also established a

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[459] *NATO's overarching Space Policy*, by North Atlantic Treaty Organization (NATO) (2019, updated 2024).
[460] Stephen McCall, *Space as a Warfighting Domain: Issues for Congress* (Congressional Research Service, 2021).
[461] NATO's Overarching Space Policy, *supra* note 459.
[462] Dolman, *supra* note 7 at 85.
[463] Space Policy Review and Strategy on Protection of Satellites, *supra* note 430 at 2(discusses the United States', China's, and Russia's developments and warfighting approach towards space).
[464] The European Union reviews space as a strategic domain. See "EU Space Strategy For Security and Defence" | EEAS (2024).

"Civilian-Military Liaison Committee", requiring them to advise and consult each on all matters relating to air and space activities.[465] More importantly, sometimes military and space use the same space assets to serve military and civilian purposes.[466] Space assets which serve, or are capable of serving, civilian and military purposes at the same time or sequentially are called dual-use space objects.[467] The commingling of military and civilian objectives via one space object complicates offensive military uses of space.

Not only does Article VI of the Outer Space Treaty attribute governmental and non-governmental entities' space activities to States,[468] LOAC and other customary international law declare that civilian space assets carrying out military objectives are lawful targets.[469] The compounded issues and circumstances dual-use assets introduce into the offensive uses of space demand a future detailed examination of how the current law applies to dual-use objects during peacetime and armed conflict, whether possible bifurcation of objectives may protect the civilian partner of a dual-use space asset from claims of offensive uses of space, and if a particular level of seemingly "non-aggressive" offensives uses of space may shield dual-use space assets from reactionary attacks. The review and analyses of the aforesaid additional considerations would likely provide helpful and crucial datapoints to the legal deliberations surrounding offensive uses of outer space.

Conclusion

After careful review of space law, relevant preparatory work, general international law, and customary international law, an unwritten truth is revealed – offensive military uses of the outer

[465] NAS Act, *supra* note 266, §204.
[466] Beard & Stephens, *supra* note 213, Rule 34 at 321.
[467] Freeland & Gruttner, *supra* note 137 at 86.
[468] Outer Space Treaty, *supra* note 4 at Article VI; Beard & Stephens, *supra* note 213, Rule 10 at 109-10.
[469] *Ibid*.

void of space are permissible. The biggest and most daunting revelation is the void of space is only partially demilitarized, and space activities in the void are not legally restricted to peaceful purposes. These implications, coupled with the "free use principle", give States plausible standing to argue their offensive uses of outer space are not illegal. However, should a State's offensive military use of space rise to the level of a "use of force", said State would be in direct violation of the non-use of force principle. An armed attack against another State's on-orbit space assets would also be a clear breach of legal restrictions.

Yet, there is concern with the lack of clarity surrounding what qualifies as an armed attack or hostile act in space, and policymakers are deliberating when an act necessitates a retaliatory response, such as self-defense.[470] Both general and customary international law correspondingly apply to space and authorize a State's inherent right of self-defense, as well as other reactionary measures, such as "countermeasures."[471] Lawful "countermeasures" are applicable in outer space, but military operational countermeasures remain subject to scrutiny and debates, as they typically involve preemptive, non-reversible military activities which do not properly satisfy the legal conditions of "countermeasures."[472] While international law at-large provides some insight into what types of military space activities are authorized and prohibited, looming concerns largely remain regarding military uses of space.

States' offensive investments, developments, and exercises have only amplified deficiencies in space law and general international law as it pertains to regulating military uses of space. Military exercises, for example, are permissible in space, to include offensive uses of outer space, unless they involve nuclear weapons or other weapons of mass destruction and do

[470] Klein & Boensch, *supra* note 417 at 114.
[471] U.N. Charter, *supra* note 53 at Article 2(4), Article 51; Articles on Responsibility of States, *supra* note 396 at Articles 22, 49-54.
[472] See Beard & Stephens, *supra* note 213, Rule 25 at 245-48.

not violate international law. Although international law generally provides nominal guidance and parameters about military uses in space, it does not particularly comment on offensive military uses of space. The omitted language in the Outer Space Treaty favorably leans into present-day offensive military strategies and operations, but States, space lawyers, policymakers, and even military leaders must come together to establish clarity and regulations. The condensed criteria below are proposed as a starting point for defining and regulating offensive uses of outer space.

> A legal offensive military uses of outer space should encompass the following elements:
> 1) a military space activity solely involving the outer void of space;
> 2) an unprovoked act, meaning it is not in response to an initial act or attack by another State; and
> 3) a non-escalatory measure, which a) excludes any hostile acts and b) accounts for the level of a target State's assets and capabilities.

The elements above rest at the intersection of pertinent international law, and they incorporate the growing State practice of "non-aggressive" uses of outer space, as the author anticipates this interpretation will eventually become customary international law.

The author acknowledges an offensive use of outer space is implicitly legal, irrespective of those uses falling within or outside of the "non-aggressive" interpretation. The author also recognizes unless there is a violation of an applicable general international law, via Article III, or existing customary international law, there is no requirement for activities in the void to be for peaceful purposes. Thus, there is no explicit prohibition of non-peaceful activities in the void, resulting in most offensive uses of outer space being permissible. Liberal exploitation of space law's loopholes for offensive military uses of outer space, however, will likely have major consequences. Simply because an act is technically legal, or excused by omission, does not mean the beneficiary should overly take advantage of the legal vacuum. Pursuing some space

activities, even if they do not raise to the level of a use of force, are not worth the probable dire effects it will have on humankind, Earth, the outer void of space, and celestial bodies.

While this author is optimistic and hopeful that the Outer Space Treaty's goal of "international peace and security" will be sustained, even if States' self-preservation is the source of the stability, it is urgent that clearer policy and "soft law" is used to bridge the legal gaps of "hard law" pertaining to military uses of outer space. General Assembly resolutions proceeded and led to the creation of the Outer Space Treaty. A similar path can be taken by the United Nations to ease the growing tension among big space players and developing spacefaring nations. Even though this author believes there is a legitimate nexus between "non-aggressive", "peaceful", and "offensive" acts, it would be naïve to believe "soft law" alone will convince States to curb their current offensive space capabilities and developments.

One "non-military" proponent offers valid cautionary considerations regarding the collateral consequences of completely severing the interpretative line between "peaceful" and "military" acts.[473] A "non-aggressive" advocate also acknowledges that the growing "non-aggressive" approach and practice have encouraged competing States' military efforts in outer space.[474] Furthermore, numerous authors have highlighted dangers of not having a clear interpretation of "peaceful use", including military uses of outer space, yet space law remains unchanged. In 1997, a renowned space law expert wrote:

> "What is now required is that super-space powers themselves should clarify in their own mind what they really need and want and are willing to give up, that there should be sufficient guarantees that agreements will be kept in good faith, and that, in any arrangement or organization to be set up, States' interests, capability, responsibility , and their gains and concessions in real terms, are all duly taken into account."[475]

[473] Cheng, *supra* note 77 at 521-522.
[474] Grunert, *supra* note 254.
[475] Cheng, *supra* note 77 at 537-38.

It is nearly three decades later, and this statement still rings true. The biggest spacefaring States are seizing every opportunity to assert their military dominance in the outer space domain, refusing to make compromises to establish new agreements and certainly ignoring the legal requirement to explore and use outer space for the "benefit and... interests of all countries."[476] Due to the deficiencies of international law, States are only subject to limited penalties, such as sanctions, for the most egregious offensive uses of outer space. But competition is getting steeper, and risky offensive space capabilities are being developed and tested. Thus, the international space community must act swiftly to clarify and regulate military uses, by defining debated terminology, setting boundaries, and establishing an enforcement mechanism.

C. Northcote Parkinson said it best, "Delay is the deadliest form of denial."[477]

[476] Outer Space Treaty, *supra* note 4 at Article 1, para 1.
[477] C Northcote Parkinson, "Quote: "Delay is the deadliest form of denial."

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