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The Outer Space Legal Regime: Peace in Name, Power in Practice, and the Call for a New Treaty

Jaeden Esquivel

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Jaeden Esquivel*

Space warfare poses grave dangers that many fail to appreciate. Modern technologies and data-driven services have transformed the domain of space from a distant scientific frontier into the backbone of twenty-first century life. GPS navigation, supply chain logistics, aviation systems, weather forecasting, disaster planning, emergency services, and countless other essential, everyday data-driven systems depend on satellites operating in orbit. If these satellites were permanently disabled or destroyed, the critical Earth-bound infrastructure that relies on them would collapse as well.

For nearly fifty years, space as a geopolitical domain has relied on the 1967 Outer Space Treaty *(*OST*) to ensure that it is used for "peaceful purposes." Despite this, the dominant military superpowers—the United States, China, and Russia—are openly preparing for conflict in orbit. This Note examines how the militarization and weaponization of outer space have proliferated under the outdated* OST. *Although the* OST *was intended to preserve space for peaceful purposes, its narrow prohibition on nuclear weapons and other weapons of mass destruction has permitted States to deploy both destructive and non-destructive space weapons under the guise of national security.*

Because the superpowers increasingly rely on both Earth-based and space-based weapons for deterrence, this Note argues that any realistic response must account for that reliance rather than ignore it. Accordingly, this Note proposes a new, U.S.-led treaty that would prohibit debris-generating space weapons while allowing reversible, non-destructive weapons. Disarmament under this treaty would occur gradually and be modeled after the Strategic Arms Reduction Treaty. *This treaty would protect critical infrastructure on which billions of people depend not only for convenience, but for survival.*

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I. INTRODUCTION

In *Star Wars*, the fates of civilizations are not decided on terrestrial battlefields, but in space, where fleets clash and "evil space lasers" are unleashed against one another. That vision has shaped public understanding of space as a future hypothetical battlefield. Today, however, it is no longer mere speculation. Lasers may remain largely fictional, but conflict in space is rapidly becoming reality, and the next major war may well hinge on one decisive factor: space superiority.[1] The start of a modern war for space superiority will not be the crack of a pistol shot; it will be the gradually fading thunder of a missile launch.

This reality is reflected in the views of three of the world's major military powers—the United States (U.S.), Russia, and China[2]—which now regard space as a "distinct warfighting domain."[3] The danger that follows this reality is the use of destructive space weapons in the pursuit of space superiority. Such weapons could disrupt the lives of millions of citizens worldwide, making their prevention a top priority for the international community.[4]

However, not all space weapons pose the same danger. Non-destructive space weapons may, in fact, *prevent* the unnecessary loss of life and collateral damage. For these reasons, to protect the infrastructure and citizens of these countries, only the use of destructive space weapons should be banned. Alterna-

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1 *See* C. Todd Lopez, *Shanahan: Next Big War May Be Won or Lost in Space*, U.S. DEP'T OF DEF. (Apr. 9, 2019), https://www.defense.gov/News/News-Stories/Article/Article/1810100/shanahan-next-big-war-may-be-won-or-lost-in-space/ [https://perma.cc/7A94-6W27].

2 This Note will only discuss a multilateral treaty between these three countries, as the only other country that has demonstrated destructive anti-satellite capability is India. *See generally* SECURE WORLD FOUND., GLOBAL COUNTERSPACE CAPABILITIES (Brian Weeden & Victoria Samson eds., 2024) (assessing the counterspace capabilities of countries actively developing this technology).

3 *See* U.S. DEP'T OF DEF., DEFENSE SPACE STRATEGY SUMMARY 1 (2020) [hereinafter DEFENSE SPACE STRATEGY].

4 NAT'L SPACE INTEL. CTR. & NAT'L AIR & SPACE INTEL. CTR., COMPETING IN SPACE 1 (2d ed. 2023) [hereinafter COMPETING IN SPACE] ("Every day, billions of people rely on spacecraft orbiting hundreds and thousands of miles above Earth. Complex satellite constellations support the world's finances, transportation, and agriculture, providing essential services that transcend international borders and touch the lives of virtually every person on Earth. Major disruptions to satellite services would cause significant, perhaps irreparable, damage to 21st century life.").

tively, this could be phrased as a ban on all debris-generating space weapons.[5]

The weaponization of space has been debated since the creation 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* (*OST*), which only explicitly bans the use of nuclear weapons and weapons of mass destruction (WMD).[6] This debate is primarily focused on the limited ban on the weaponization of space. This narrowly tailored ban has left a gap in the legal regime governing the use of space and cannot prevent an arms race in outer space.[7]

Because the *OST* does not explicitly prohibit the weaponization of space, its historical interpretation has allowed these countries to use space weapons for decades.[8] Outside the United Nations (U.N.), the closest effort toward a binding agreement has been the proposed *Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects* (*PPWT*), co-sponsored by China and Russia.[9] Un-

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5 For purposes of this Note, the terms "debris-generating space weapons" and "destructive space weapons" are used interchangeably to refer to the same category of weapons.

6 *See* Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. IV, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter OST]; *see also* Adam G. Quinn, Note, *The New Age of Space Law: The Outer Space Treaty and the Weaponization of Space*, 17 MINN. J. INT'L L. 475, 481–87 (2008) (discussing post-treaty disagreements about the appropriation of space resources).

7 *See* G.A. Res. 36/97, at 73 (Dec. 9, 1981); Rep. of the Grp. of Governmental Experts on Further Prac. Measures for the Prevention of an Arms Race in Outer Space, transmitted by Letter dated 23 August 2024 from the Chair of the Grp. of Governmental Experts on Further Prac. Measures for the Prevention of an Arms Race in Outer Space Established Pursuant to G.A. Res. 77/250 (2022), ¶ 42, U.N. Doc. A/79/364 (Sep. 20, 2024) [hereinafter U.N. Expert Report]; Saada Daher Hassan (Rapporteur), *Prevention of an Arms Race in Outer Space*, at 5, U.N. Doc. A/69/438 (Nov. 12, 2014) ("*Recognizing* that the prevention of an arms race in outer space would avert a great danger for international peace and security[.]"); G.A. Res. 78/238, at 2 (Dec. 28, 2023) ("[W]hile the existing international treaties related to outer space and the legal regime provided for therein play a positive role in regulating outer space activities, they are unable to fully prevent an arms race in outer space, the placement of weapons in outer space and the threat or use of force in outer space, from space against Earth and from Earth against objects in outer space, and preserve outer space for peaceful purposes . . . .").

8 *See* G.A. Res. 78/238, *supra* note 7.

9 *See* Permanent Rep. of the Russian Federation & Permanent Rep. of the People's Republic of China to the Conference on Disarmament, Letter Dated 12 Feb. 2008 from the Permanent Rep. of the Russian Federation and the Permanent Rep. of China to the Conference on Disarmament Addressed to the Secretary-General of the Conference Transmitting the Russian and Chinese Texts of 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

fortunately, this proposed treaty has little to no support from the U.S., primarily because it does not require complete disarmament.[10] This Note will explore the impracticality of complete disarmament in today's geopolitical climate, where mutually assured destruction remains a necessary deterrent.

Accordingly, this Note argues that, to preserve future generations' access to space and to ensure the self-preservation of States themselves, debris-generating space weapons must be banned. However, disarmament must happen gradually over decades, not instantaneously. Such an approach would build confidence between these three military superpowers and help establish international norms of using space for peaceful purposes.

Today, technology is advancing faster than ever before, which in turn has made the space domain more relevant than it was in the past. This relevance is true for both civilians and the military.[11] If destructive space weapons were used, the harm would not be limited to just the military; the result would be permanent, irreversible damage to critical infrastructure, with civilians paying the ultimate price.[12]

Part II of this Note will first discuss the historical development and creation of the legal regime that governs space law to this day. Part III analyzes how the U.S., Russia, and China have

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(PPWT)" Introduced by the Russian Federation and China, U.N. Doc. CD/1839 (Feb. 29, 2008) [hereinafter 2008 PPWT Draft]; Permanent Rep. of the Russian Federation & Permanent Rep. of the People's Republic of China to the Conference on Disarmament, Letter Dated 10 June 2014 from the Permanent Rep. of the Russian Federation and the Permanent Rep. of China to the Conference on Disarmament Addressed to the Acting Secretary-General of the Conference Transmitting the Updated Russian and Chinese Texts of 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 (PPWT) Introduced by the Russian Federation and China, U.N. Doc. CD/1985 (June 12, 2014) [hereinafter 2014 PPWT Draft].

10 *See* Permanent Rep. of the United States of America to the Conference on Disarmament, Letter Dated 19 Aug. 2008 from the Permanent Rep. of the United States of America Addressed to the Secretary-General of the Conference Transmitting Comments on 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 (PPWT)" as Contained in Document CD/1839 of 29 February 2008, ¶ 7-10, U.N. Doc. CD/1847 (Aug. 26, 2008) [hereinafter 2008 PPWT U.S. Analysis]; Delegation of the United States of America to the Conference on Disarmament, Note Verbale Dated 2 September 2014 from the Delegation of the United States of America to the Conference on Disarmament Addressed to the Acting Secretary-General of the Conference Transmitting the United States of America Analysis of the 2014 Russian–Chinese Draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects, ¶ 1, U.N. Doc. CD/1998 (Sep. 3, 2014) [hereinafter 2014 PPWT U.S. Analysis].

11 *See* COMPETING IN SPACE, *supra* note 4.

12 *See id.*

interpreted the *OST*'s call for space to be used for "peaceful purposes" in a way that essentially makes it obsolete with today's technology. Part IV will then discuss the militarization and weaponization of space that has resulted from this interpretation. Part V then analyzes how this interpretation has impacted the current state of space law. Part VI considers various proposals to bridge the gap in space law and their feasibility. Finally, Part VII sets forth a treaty that the U.S. should propose to abate the looming arms race in outer space.

II. ORIGINS OF SPACE LAW: *THE OUTER SPACE TREATY* AND BEYOND

The "Magna Carta of space law[,]" the *OST*, was a direct result of the space race between the U.S. and the Soviet Union (USSR) during the height of the Cold War.[13] These years were a time of extreme tension between the U.S. and the USSR, and rightfully so. The tension was at its peak in 1957 due to the USSR's tests of the first intercontinental ballistic missile (ICBM),[14] and the launch of Sputnik.[15] These developments raised immediate fears of a possible arms race in outer space and prompted the U.N. to establish the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) as an ad hoc committee in 1958.[16]

This eighteen-member ad hoc committee attempted to reflect a balance between the rival blocs (East and West), with eleven aligned with the West, four aligned with the East, and three neutral.[17] Its purpose was to halt the arms race in space between the U.S. and the USSR and to ensure space was only used for peaceful purposes[18] by fostering dialogue between the two sides.[19] But the ad hoc committee failed to foster that dialogue, primarily be-

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13 *See* MICHAEL FRIEDL, SECURE WORLD FOUND., THE COPUOS BRIEFING BOOK 16, 34 (Christopher D. Johnson ed., 2d ed. 2025).

14 *See Sputnik, 1957*, U.S. DEP'T OF STATE: OFF. OF THE HISTORIAN, https://history.state.gov/milestones/1953-1960/sputnik [https://perma.cc/8V7F-AEQK] (last visited May 1, 2025).

15 *See id.*

16 *See* G.A. Res. 1348 (XIII), at 5–6 (Dec. 13, 1958).

17 *See id.* at 6.

18 *See* FRIEDL, *supra* note 13, at 11 ("Given the geopolitical context in which COPUOS was created, the aim of maintaining international peace and security in outer space played a role in the creation of COPUOS.").

19 *See Committee on the Peaceful Uses of Outer Space*, U.N. OFF. FOR OUTER SPACE AFFS., https://www.unoosa.org/oosa/en/ourwork/copuos/index.html [https://perma.cc/M4KH-PVB5] (last visited Oct. 23, 2025).

cause the Soviet bloc refused to attend either of the two meetings held by the committee in 1959.[20] In response, the General Assembly passed a resolution establishing UNCOPUOS as a permanent committee of twenty-four members.[21]

The creation of UNCOPUOS was just the first (and easiest) step toward halting the arms race in space.[22] During the height of the Cold War, negotiations between the two nations were anything but swift. President Kennedy advocated for a "peace race" rather than an "arms race," but the USSR instead accelerated nuclear testing, conducting thirty-one tests in just a three-month span in 1961.[23] In response, the U.S. carried out the Starfish Prime nuclear test on July 9, 1962.

That test, conducted over the Pacific near Hawaii, stunned the population. The detonation of a nuclear warhead in outer space briefly turned night into day, and its electromagnetic pulse (EMP) caused blackouts that left streets in Hawaii, over 900 miles away, in darkness.[24] But streetlight blackouts were the least of the world's concerns because "[o]f the 24 satellites in orbit in 1962, Starfish Prime damaged at least" eight of them.[25] At the time, the loss of one third of all satellites was significant; today, it would be catastrophic. With over 13,000 satellites currently in orbit, a comparable explosion could damage over 4,000 satellites and devastate critical infrastructure worldwide.[26]

Fortunately, both the U.S. and the USSR understood the repercussions of an arms race in outer space, and the first step toward preventing it was put into motion: the *Limited Test Ban*

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20 FRIEDL, *supra* note 13, at 5.

21 *See* G.A. Res. 1472 (XIV), at 5 (Dec. 12, 1959).

22 It is relatively "easier" than getting rival countries to cooperate with another because article 22 of the U.N. Charter allows the General Assembly to establish subsidiary organs it deems necessary to perform its functions. *See* U.N. Charter art. 22.

23 *Nuclear Test Ban Treaty*, JOHN F. KENNEDY PRESIDENTIAL LIBR. & MUSEUM (Nov. 7, 2024, at 15:43 ET), https://www.jfklibrary.org/learn/about-jfk/jfk-in-history/nuclear-test-ban-treaty [https://perma.cc/BGD2-6C7S].

24 *See* Liz Boatman, *Sixty Years After, Physicists Model Electromagnetic Pulse of a Once-Secret Nuclear Test*, AM. PHYSICAL SOC'Y: APS NEWS (Nov. 10, 2022), https://www.aps.org/apsnews/2022/11/electromagnetic-pulse [https://perma.cc/T8HR-UK4V].

25 *Id.*

26 *See Online Index of Objects Launched into Outer Space*, U.N. OFF. OF OUTER SPACE AFFS. [hereinafter UNOOSA], https://www.unoosa.org/oosa/osoindex/ [https://perma.cc/BH9V-NU3W] (choose "filter by" dropdown; then click "in orbit"; then click "yes") (last visited Feb. 25, 2025); *see also* COMPETING IN SPACE, *supra* note 4, at 2 (explaining the various types of infrastructure that rely on satellites).

Treaty (*LTBT*) was drafted.[27] Formerly known as the *1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Underwater*, the *LTBT* prohibited these tests but also included a pledge toward disarmament and an end to the arms race.[28] This took the international community one step closer to ending the arms race in outer space. But the biggest step of all, and the focus of this Note, the *OST*—the first of five legal instruments developed by UNCOPUOS that governed activities in space—took eight years of negotiations before it was ratified by the U.S. and the USSR.[29]

The second treaty, *The Agreement on the Rescue of Astronauts, the Return of Astronauts and Return of Objects Launched into Outer Space* (*Rescue Agreement*), entered into force in 1968.[30] As the name implies, the *Rescue Agreement* elaborated further on what obligations States have with regard to distressed astronauts under article 5 of the *OST* and distressed spacecraft under article 8 of the *OST*.[31] In 1971, UNCOPUOS then drafted the *Convention on International Liability for Damage Caused by Space Objects* (*Liability Convention*), which elaborated on the *OST*'s obligations even further.[32] The *Liability Convention* established that if a State's space object causes damage, the determination of liability that follows will be fault-based or absolute, depending on the circumstances.[33] Conversely, the *OST* does not categorize liability.[34]

The last two legally binding treaties created by UNCOPUOS were the *Convention on Registration of Objects Launched into Outer Space* (*Registration Convention*)[35] and the *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (*Moon Agreement*).[36] The *Registration Convention* required States to register space objects that were launched into orbit or beyond, and to provide the U.N. Secretary General with that registry.[37] Lastly, the *Moon Agreement* elaborated on the

27 *See* Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, 14 U.S.T. 1313, 480 U.N.T.S. 43.

28 *Id.*

29 *See* OST, *supra* note 6.

30 *See* G.A. Res. 2345 (XXII), at 5–7 (Dec. 19, 1967).

31 *See id.* annex.

32 *See* G.A. Res. 2777 (XXVI), ¶¶ 1–4 (Nov. 29, 1971).

33 *Id.* art. IV(1)(a)–(b).

34 *See* OST, *supra* note 6, art. VII.

35 G.A. Res. 3235 (XXIX), at 16 (Nov. 12, 1974).

36 G.A. Res. 34/68, at 77 (Dec. 5, 1979).

37 G.A. Res. 3235, *supra* note 35, arts. II(1)–(2), IV.

OST's principles by reaffirming the use of the Moon for peaceful purposes.[38] Although these treaties build on the principles of the *OST*, it is important to note that States Parties to the *OST* have no obligation to become parties to any of the mentioned treaties, and many have not.[39]

Because these four aforementioned treaties expand on the basic principles of the *OST*, the *OST* is the most important legal instrument governing space law (in a military context). As such, it is sometimes referenced as the "Magna Carta of space law"[40] and consists of seventeen articles, but this Note will focus on article IV, which states:

> States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.
>
> The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.[41]

At the time, the narrow limitations on prohibited weapons reflected both the grave consequences that would result if they were ever used and the limited technology available. When the *OST* was ratified, neither the U.S. nor the USSR could envision the technology used in space today. This six-decade gap in technological development is why the U.S. should propose a new treaty banning the use of all debris-generating space weapons.

III. THE ILLUSION OF PEACEFUL PURPOSES AND ITS STRATEGIC AMBIGUITY

Throughout history, technological advancements have consistently driven military capabilities to new heights.[42] The tech-

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38 G.A. Res. 34/68, *supra* note 36, art. 3(1).

39 As of 2025, there are 116 States party to the *OST*, 100 to the *Rescue Agreement*, 100 to the *Liability Convention*, 76 to the *Registration Convention*, and 17 to the *Moon Agreement*. FRIEDL, *supra* note 13, at 36 tbl. 1.5.

40 *Id.* at 34.

41 OST, *supra* note 6, art. IV.

42 The invention of gunpowder in the 1300s initiated the Gunpowder Revolution, introducing "'fiery weapons'" which "revolutionized the art of war." Geoffrey Parker, *The*

nology available today would have been unimaginable to the U.S. and the USSR when the *OST* was drafted. To put this into perspective, the ubiquitous smartphone has more processing power than the computers used by NASA to launch Apollo 11, the first manned mission to the moon.[43] Modern-day technology has far outpaced the language of the *OST*, and the *OST*'s original notion of "peaceful purposes" has been subject to continual reinterpretation. Combined with its narrow prohibition on weaponization, this evolving interpretation has rendered the *OST* outdated.

No article of the *OST* explicitly requires that *all* of outer space should be used exclusively for peaceful purposes. Rather, the notion that outer space should be used for peaceful purposes is found in the annex.[44] Although the annex is not legally binding, it nonetheless carries significant weight when interpreting the purpose of the *OST*.[45] The 1969 *Vienna Convention on the Law of Treaties* provides that "the purpose of the interpretation of a treaty shall comprise, in addition to the text, . . . annexes."[46] Thus, while the *OST*'s express language lists only a few specific activities to be carried out for peaceful purposes, the treaty's overall purpose is clear—outer space is to be used for peaceful purposes only.[47]

In principle, peaceful purposes would exclude both the weaponization and militarization of space. Yet that is not how the U.S., China, and Russia have interpreted it. The prevailing view among these three countries is that "peaceful purposes" encompasses national security and other non-aggressive purposes.[48] Under this interpretation, the military use of space—if used in pursuit of national security or for non-aggressive reasons—is not considered a violation of the *OST*. Such uses include the use of satellites for military support functions such as intelligence collection (surveillance and reconnaissance), monitoring troop movement, military communications, and related activities.[49]

Gunpowder Revolution, *in* THE CAMBRIDGE HISTORY OF WARFARE 101, 101 (Geoffrey Parker ed., 2d ed. 2020).

43 *See* Wendy Gittleson, *Today's Computers vs. the Apollo 11 Moon Landing Machine*, HACK REACTOR (July 15, 2021), https://www.hackreactor.com/resources/todays-computers-vs-the-apollo-11-moon-landing-machine/ [https://perma.cc/PLF4-TL83].

44 *See* OST, *supra* note 6, annex.

45 Vienna Convention on the Law of Treaties, art. 31, *opened for signature* May 23, 1969, 1155 U.N.T.S. 331 [hereinafter Vienna Convention].

46 *Id.*

47 *See* OST, *supra* note 6, art. IV.

48 *See infra* Sections III.A–C.

49 *See infra* Section IV.A.1.

A. United States

Eight years before the *OST* was ratified, the U.S. was already searching for ways to ensure its space activities remained unconstrained. When negotiations to prevent the arms race in outer space began, the U.S. had made arrangements to interpret peaceful purposes in a way that would not impair its military advantage.[50] Its solution to this problem was simple—interpret "peaceful purposes" to permit actions taken in the interest of national security.[51] President Eisenhower first mentioned this solution in 1959, in America's first Space Policy, when he asked for a study to interpret "peaceful uses of outer space" in a way "that would best serve the interests of the U.S."[52] Notably, the Eisenhower administration specifically indicated that peaceful purposes "does not necessarily exclude military applications."[53]

In 1962, the U.S. shared its findings in the U.N. General Assembly's First Committee meeting. There, Senator Gore articulated the U.S. position "that outer space should be used only for peaceful – that is, non-aggressive and beneficial – purposes."[54] At the same time, the U.S. was careful in its phrasing and reiterated that this stance *does not exclude military uses*, even going as far as to assert that there was no difference between "military and non-military uses of space."[55] However, the definition of peaceful purposes went "officially" undefined by American Space Policy until 1978, when the Carter administration released its Space Policy. That Space Policy declared that peaceful purposes of outer space included "military and intelligence-related activities" if used for national security or "other goals."[56] Under this interpretation, almost anything could be justified as a peaceful purpose as long as the purpose—peaceful or hostile—is in pursuit of a "goal."[57]

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50 *See* NAT'L AERONAUTICS & SPACE COUNCIL, EXEC. OFF. OF THE PRESIDENT, NSC 5918/1, U.S. POLICY ON OUTER SPACE ¶ 44 (1959).

51 *See id.*

52 *Id.*

53 *Id.* ¶ 45.

54 U.N. GAOR, 17th Sess., 1289th mtg. at 13, U.N. Doc. A/C.1/PV.1289 (Dec. 3, 1962).

55 *Id.*

56 OFF. OF SCI. & TECH. POL'Y, EXEC. OFF. OF THE PRESIDENT, NSC-37, NATIONAL SPACE POLICY ¶ 1(a) (1978).

57 *See id.*

This interpretation was carried forward by successive administrations until 1996,[58] when President Clinton's Space Policy fundamentally went against the express purpose of the *OST*. It reaffirmed the U.S.'s treaty obligations, but simultaneously declared that it would maintain space superiority to ensure its own freedom of action, and, if necessary, "deny such freedom of action to adversaries."[59] In line with this directive, the U.S. Air Force developed a counter-space operations doctrine that detailed how the U.S. would achieve and preserve its superiority in space.[60] The doctrine defined space superiority as encompassing both the "freedom *to* attack as well as freedom *from* attack."[61] But the U.S.'s inclusion of military superiority in its interpretation of peaceful purposes is not unique to the *OST* or space.

An analogous provision, calling for a warfighting domain (the sea) to be used for peaceful purposes, can be found in the *United Nations Convention on the Law of the Sea* (*UNCLOS*).[62] Signed in 1982, the *UNCLOS* mandates that State parties enjoy "freedom of navigation" and that the "high seas shall be reserved for peaceful purposes."[63] Despite this language, the U.S.'s Naval Doctrine on Naval Warfare provided that the basic role of its naval forces was to "promote and defend [its] national interests by maintaining maritime superiority."[64] This maritime superiority protected the principle of "freedom-of-navigation operations" and "[d]en[ied] the enemy commercial and military use of the seas."[65] Evidently, regardless of the warfighting domain, the U.S. recognizes military superiority and military presence as peaceful purposes.

The U.S.'s Space Policy continued along this trajectory by consistently expanding on its interpretation of peaceful purposes even further in its 2006 Space Policy. That policy diverged even

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58 *See id.*; OFF. OF SCI. & TECH. POL'Y, EXEC. OFF. OF THE PRESIDENT, NSDD-42, NATIONAL SPACE POLICY 1 (1982); OFF. OF SCI. & TECH. POL'Y, EXEC. OFF. OF THE PRESIDENT, NSPD-1, NATIONAL SPACE POLICY 1 (1989); OFF. OF SCI. & TECH. POL'Y, EXEC. OFF. OF THE PRESIDENT, NATIONAL SPACE POLICY 1 (1996) [hereinafter 1996 SPACE POLICY].

59 1996 SPACE POLICY, *supra* note 58, ¶ 6(g).

60 *See* U.S. A.F., AIR FORCE DOCTRINE DOCUMENT 2-2.1, COUNTERSPACE OPERATIONS 1 (2004).

61 *Id.*

62 *See* U.N. Convention on the Law of the Sea art. 88, Dec. 10, 1982, 1833 U.N.T.S. 397.

63 *Id.* arts. 87–88.

64 DEP'T OF THE NAVY, NAVAL DOCTRINE PUBLICATION 1: NAVAL WARFARE 15 (Mar. 28, 1994).

65 *See id.* at 21, 26.

further from the *OST*'s purpose and provided that the U.S. will oppose any legal regimes that prohibit or limit its use of space.[66] Furthermore, it expressed that "[p]roposed arms control agreements or restrictions must not impair the rights of the United States to conduct research, development, testing, and operations or other activities in space for U.S. national interests."[67] With this declaration, President George W. Bush's administration became the first to explicitly state its opposition to any limits on the weaponization of space.

Just four years later, President Obama recognized the incompatibility between the *OST* and America's Space Policy. In contrast to President Bush's Space Policy, President Obama's Space Policy provided that, "[t]he United States will consider proposals and concepts for arms control measures if they are equitable, effectively verifiable, and enhance the national security of the United States and its allies."[68] The Obama administration's view on peaceful purposes remained the same, "allow[ing] for space to be used for national and homeland security activities."[69] President Obama's Space Policy thus came the closest to realigning U.S. Space Policy with the *OST* since the Clinton era.

This progress was short-lived and quickly erased when President Trump reframed the U.S. conception of space. In 2019, President Trump created the Space Force, transferring responsibility for space superiority from the Air Force to the new branch.[70] Its mission statement is to "secure our Nation's interests in, from, and to space."[71] These interests are articulated into three core functions: defend the domain (space control), integrate the domain (passive militarization), and access the domain.[72] The following year, President Trump released his Space Policy, the first to declare unequivocally that space "has become a warfighting domain," and emphasized that both the inherent right of

66 *See* OFF. OF SCI. & TECH. POL'Y, EXEC. OFF. OF THE PRESIDENT, NATIONAL SPACE POLICY OF THE UNITED STATES OF AMERICA 1 (2006).

67 *Id.* at 1–2.

68 *See* OFF. OF SCI. & TECH. POL'Y, EXEC. OFF. OF THE PRESIDENT, U.S. NATIONAL SPACE POLICY OF THE UNITED STATES OF AMERICA 7 (2010).

69 *Id.* at 3.

70 U.S. A.F., *supra* note 60, at 1.

71 U.S. SPACE FORCE, SPACE FORCE 101, at 2, https://www.spaceforce.mil/Portals/2/Documents/SF101/ussf_101_glossy_FINAL_e-version.pdf [https://perma.cc/923X-7TS4] (last visited Nov. 3, 2025).

72 *Id.*

self-defense and the freedom to operate in space are vital national interests.[73]

In effect, the U.S. conception of peaceful purposes has come to encompass anything tied to national security, including military superiority and presence in a warfighting domain (land, sea, air, and space).

B. China

Unlike the U.S. and Russia (previously part of the USSR), China did not become a party to the *OST* until 1983, sixteen years after its adoption.[74] And due to China's space industry being run entirely by the State, China's space program remained far behind the U.S.[75] This continued until 2014, when China opened up its space industry to private investment and China has spent the last decade transforming its space program to compete with the U.S.[76]

This competition was publicly announced in 2015, when China issued a white paper that stated "[t]hreats from such new security domains as outer space and cyber space will be dealt with to maintain the common security of the world community."[77] Four years later, China described outer space as "a critical domain in international strategic competition."[78] Despite acknowledging space as a military domain, China has simultaneously ridiculed the U.S., accusing it of being the chief proponent of a space war by "pursu[ing] unilateral military and strategic superiority

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73 *See* NAT'L SPACE COUNCIL, EXEC. OFF. OF THE PRESIDENT, NATIONAL SPACE POLICY OF THE UNITED STATES OF AMERICA 1 (2020).

74 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, U.S. DEP'T OF STATE, https://2009-2017.state.gov/t/isn/5181.htm [https://perma.cc/5Z2H-ZKRQ] (last visited Sep. 25, 2025).

75 Ryan Nelson, Taylor Rhoten & Brian MacCarthy, *Eastern Stars Rising: The Rise of China's Commercial Space Industry*, WAR ON THE ROCKS (July 29, 2025), https://warontherocks.com/2025/07/eastern-stars-rising-the-rise-of-chinas-commercial-space-industry/ [https://perma.cc/2GPN-HG9G].

76 *See id.*

77 *See* THE STATE COUNCIL INFO. OFF. OF THE PEOPLE'S REPUBLIC OF CHINA, CHINA'S MILITARY STRATEGY (2015) [hereinafter CHINA 2015 WHITE PAPER], https://english.www.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm [https://perma.cc/3USS-HE5Q].

78 THE STATE COUNCIL INFO. OFF. OF THE PEOPLE'S REPUBLIC OF CHINA, CHINA'S NATIONAL DEFENSE IN THE NEW ERA 10 (2019), https://english.www.gov.cn/archive/whitepaper/201907/24/content_WS5d3941ddc6d08408f502283d.html [https://perma.cc/8TWE-MVBN].

in space."[79] However, China's explicit statements to the U.N. General Assembly indicate that it doesn't believe space is a warfighting domain.[80] Thus, to discern the true stance of China, its conduct and military activities are the most determinative; while China has not explicitly admitted it, China's view on space is clear—it's a military domain.[81]

China has not explicitly defined its interpretation of peaceful purposes, but its military strategy makes that interpretation clear. China's military strategy details that it will monitor outer space and address threats, protect its space assets for national development, and uphold space security.[82] In effect, China has committed itself to doing whatever is necessary to preserve its security in both space and on Earth, without formally stating so.[83] Accordingly, China's interpretation of peaceful purposes aligns closely with that of America, despite vehemently opposing America's position.

China's actions further confirm this alignment. In 2015, it created the Strategic Support Force (SSF), its counterpart to the U.S. Space Force.[84] The SSF's mission was to "centralize the [People's Liberation Army]'s strategic space, [and] cyberspace" capabilities.[85] Within the SSF were two departments: the Space Systems Department (SSD), responsible for all of China's military space operations,[86] and the Network Systems Department (NSD), responsible for information warfare.[87] Surprisingly, in April 2024, China unexpectedly dissolved the SSF without offering a detailed explanation.[88] Despite the dissolution of the SSF, both the SSD and NSD survived, moving directly under the authority of the Central Military Commission (CMC), China's high-

79 U.N. Secretary-General, *Reducing Space Threats Through Norms, Rules and Principles of Responsible Behaviours*, at 30, U.N. Doc. A/76/77, annex (July 13, 2021).

80 *Id.* at 30 ("The North Atlantic Treaty Organization has for the first time defined space as an operational domain . . . . Such actions have exacerbated the trend of an arms race in outer space [and] increased the risk of turning outer space into a war-fighting domain . . . .").

81 *See* SECURE WORLD FOUND., *supra* note 2, at 03-23.

82 *See* CHINA 2015 WHITE PAPER, *supra* note 77.

83 *See generally id.* (explaining China's goals to develop its national defense in a new military domain, outer space).

84 U.S. DEP'T OF DEF., ANNUAL REPORT TO CONGRESS: MILITARY AND SECURITY DEVELOPMENTS INVOLVING THE PEOPLE'S REPUBLIC OF CHINA 68 (2024).

85 *Id.*

86 *Id.*

87 *Id.*

88 *Id.* at 67–68.

est military decision-making body.[89] The NSD was rebranded as the Cyberspace Force, while the SSD became the Aerospace Force.[90]

Although China has created and maintained its own functional equivalent of a Space Force, it continues to publicly condemn the U.S. for doing the same, casting the U.S. as a warmonger while pursuing nearly identical capabilities itself.[91]

C. Russia

Russia's conduct demonstrates it views space as a warfighting domain and believes space superiority will be a key factor in future conflicts.[92] Publicly, though, Russia's stance is the complete opposite.[93] Russia's stance is that any military use of space, whether offensive or defensive, is motivated by the pursuit of military dominance.[94] Implicitly, then, Russia seems to interpret any use of space for a military purpose as incompatible with the *OST*'s principle of peaceful purposes.[95]

Yet just three years earlier, Russia defended the creation of its own space force under the guise that it was only for "purely defensive" activities.[96] Specifically, Russia "believes that developing and fielding counterspace capabilities will deter aggression from adversaries reliant on space" and, if deterrence fails, Russia will destroy its adversaries' space systems.[97] In other words, Russia's military activities in space are for national security.[98] Therefore, Russia's position mirrors that of the U.S. and China: military activities in space are permissible so long as they are tied to national security.

This interpretation provided the foundation for Russia's establishment of the Russian Aerospace Forces in 2015, which merged the Air Force and Aerospace Defense Force into a single

89 *Id.* at 69.

90 *Id.*

91 U.N. Secretary-General, *supra* note 79, at 30.

92 *See* DEF. INTEL. AGENCY, CHALLENGES TO SECURITY IN SPACE 21 (2022) [hereinafter CHALLENGES IN SPACE].

93 *See* U.N. Secretary-General, *supra* note 79, at 79.

94 *Id.*

95 *See id.*

96 Kyle Rempfer, *Russia Warns of a 'Tough Response' to Creation of US Space Force*, A.F. TIMES (June 21, 2018), https://www.airforcetimes.com/flashpoints/2018/06/21/russia-warns-of-a-tough-response-to-creation-of-us-space-force/ [https://perma.cc/G2FM-3NHV].

97 *See* CHALLENGES IN SPACE, *supra* note 92, at 21.

98 *Id.*

branch.[99] After the merger, Russia's Aerospace Forces were divided into three branches: the Air Force, the Air and Missile Defense Forces, and the Space Forces.[100] Russia's Space Forces was tasked with overseeing all military operations in outer space, including preventing attacks from space.[101] Despite this, Russia publicly opposed the creation of the U.S. Space Force.[102] Victor Bondarev, then Commander-in-Chief of the Russian Aerospace Forces, even warned that "[m]ilitarization of outer space is the path to disaster,"[103] and described it as a direct violation of international law, presumably referring to the *OST*.[104]

Russia's Space Forces is nearly equivalent to America's, but Russia maintains that it complies with using space for peaceful purposes because it has a defensive, rather than an offensive, purpose.[105] This stance is inconsistent with Russia's previous statements to the U.N., which rejected military activity in space altogether, regardless of whether it was defensive or offensive.[106] In practice, regardless of the label or name, Russia's, China's, and America's space forces all perform similar functions with the same overarching mission—achieving space superiority.

IV. ARMING THE STARS: MILITARIZATION AND WEAPONIZATION OF THE GALACTIC DOMAIN

The *OST*'s primary purpose was to halt the looming arms race in space and to ensure that outer space was used for peaceful purposes.[107] Fifty-eight years ago, this was a world-changing multilateral treaty. Today, though, it carries little weight. In-

99 *See* SECURE WORLD FOUND., *supra* note 2, at 02-39; *see also* U.S. DEP'T OF DEF., SPACE POLICY REVIEW AND STRATEGY ON PROTECTION OF SATELLITES 3 (2023) ("The Russian Federation (Russia) reorganized its military in 2015 to create a separate space force because Russia sees achieving supremacy in space as a decisive factor in winning conflicts.").

100 Matthew Bodner, *Russian Military Mergers Air Force and Space Command*, MOSCOW TIMES (Aug. 3, 2015), https://www.themoscowtimes.com/2015/08/03/russian-military-merges-air-force-and-space-command-a48710 [https://perma.cc/PD3V-M8ZE].

101 *See* GEN. STAFF OF THE ARMED FORCES OF THE RUSSIAN FED'N, THE MILITARY DOCTRINE OF THE RUSSIAN FEDERATION art. 32(f) (2014), https://rusmilsec.blog/wp-content/uploads/2021/08/mildoc_rf_2014_eng.pdf [https://perma.cc/K57M-C4R3].

102 Rempfer, *supra* note 96.

103 *Id.*

104 *Id.*; *see also* ALEXIS A. BLANC ET AL., RAND, CHINESE AND RUSSIAN PERCEPTIONS OF AND RESPONSES TO U.S. MILITARY ACTIVITIES IN THE SPACE DOMAIN 2 (2022) (noting that the Kremlin has publicly denounced the militarization of space as a violation of international law).

105 Rempfer, *supra* note 96.

106 U.N. Secretary-General, *supra* note 79, at 79.

107 *See supra* Part II.

deed, the arms race was halted, but only for a specific class of arms, nuclear weapons, and "any other kinds of weapons of mass destruction."[108] Modern technology allows space to be weaponized in ways the drafters of the *OST* could not have anticipated, leaving most forms of weaponization unrestricted. Likewise, outer space being reserved for peaceful purposes inherently requires that space not be militarized either. Today, neither is true.[109]

A. Militarization

In the context of the *OST*, militarization refers broadly to any military use of space.[110] Militarization is not a concept of fiction; it is a well-established reality and includes activities such as early warning systems, navigation and GPS, surveillance and reconnaissance, and military communications.[111] Now, within the last decade, the militarization of space includes America's, Russia's, and China's space forces.[112]

Although article IV of the *OST* allows military personnel to be used for "scientific research or for any other peaceful purposes," the current interpretation of "peaceful" is boundless.[113] Today, the U.S., Russia, and China interpret peaceful purposes to encompass almost any activity tied to national security.[114] Under this interpretation, militarization is deemed problematic only when it is purely aggressive.

1. Military Support Functions: The Backbone of Space Superiority

Space was militarized well before the *OST* entered into force. The U.S. Missile Defense Alarm System (MIDAS) began in the early 1960s and was designed to detect Soviet missile launches.[115] The USSR followed suit and created the "Oko" program in the 1970s, its version of MIDAS.[116]

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108 OST, *supra* note 6, art. IV.

109 *See supra* Sections III.A–B.

110 *See* Carl Q. Christol, *Missile Launches, Militarization, Weaponization: Security in Space*, 52 PROCS. INT'L INST. SPACE L. 99, 106 (2009).

111 U.S. SPACE FORCE, *supra* note 71, at 13.

112 *See supra* Sections III.A–C.

113 OST, *supra* note 6, art. IV.

114 *See supra* Part II.

115 *Satellite Systems – Infrared Early Warning Systems*, U.S. SPACE FORCE, https://www.losangeles.spaceforce.mil/Portals/16/documents/AFD-150806-079.pdf [https://perma.cc/4U6T-5WX3] (last visited Apr. 26, 2025).

116 Pavel Podvig, *History and the Current Status of the Russian Early-Warning System*, 10 SCI. & GLOB. SEC. 21, 23–26, 35 (2002).

Oko famously triggered a false nuclear alarm in 1983 when sunlight reflected off clouds was misinterpreted as a nuclear missile launch, nearly prompting the USSR to launch its entire arsenal (40,000+) of nuclear weapons.[117] Fortunately, a USSR military officer recognized that the U.S. would launch hundreds of nuclear missiles, rather than the five detected by Oko, and did not pass the warning on to his superiors.[118] These mishaps exemplify the worries surrounding militarized use of space. Nevertheless, six decades later, military reliance on space assets has only intensified.

Today, thousands of satellites orbit Earth,[119] and each has a specific mission: remote sensing, communications, position/navigation, scientific and technology development, and others.[120] Military remote sensing satellites track and monitor hostile installations and troop movement, and civilian remote sensing satellites are used to monitor the weather and crops.[121] Military navigation and position satellites transmit information for land, air, and sea navigation, and precision weapons guidance systems.[122] Civilian navigation and position satellites play a crucial role in everyday life, supporting "civilian transportation; precision farming; autonomous vehicle guidance; time synchronization for electrical power grids and banking transactions; communications across wireless Internet and emergency medical, fire, and police services."[123] Communication satellites, as the name implies, allow data to be transmitted by terrestrial communications (e.g., cellphones and the internet) even in remote areas.[124]

Only a small percentage of satellites in orbit are purely military, though. Of the thousands of satellites owned by the U.S.,[125]

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117 *See id.* at 35, 40.

118 James Osborne, *The Soviet Soldier Who Saved the World: How Did Stanislav Petrov Prevent Nuclear Armageddon?*, HISTORYEXTRA (Sep. 26, 2024, at 13:11 PT), https://www.historyextra.com/period/cold-war/stanislav-petrov-soviet-soldier-saved-the-world/ [https://perma.cc/S4K8-CBMV]. It should be noted that America's early-warning systems have had similar false alarms. *False Warnings of Soviet Missile Attacks Put U.S. Forces on Alert in 1979–1980*, NAT'L SEC. ARCHIVE (Mar. 16, 2020), https://nsarchive.gwu.edu/briefing-book/nuclear-vault/2020-03-16/false-warnings-soviet-missile-attacks-during-1979-80-led-alert-actions-us-strategic-forces [https://perma.cc/B7F8-WN9G].

119 UNOOSA, *supra* note 26.

120 COMPETING IN SPACE, *supra* note 4, at 6.

121 CHALLENGES IN SPACE, *supra* note 92, at 2.

122 *Id.*

123 *Id.*

124 *Id.*

125 COMPETING IN SPACE, *supra* note 4, at 6.

only 247 are distinctly military;[126] of China's 647 satellites in orbit,[127] only 157 are military.[128] More significant is the prevalence of dual-use satellites, which support both civilian and military functions.[129] Because the U.S., China, and Russia all interpret peaceful purposes to include national security, any dual-use satellite could be permanently disabled or destroyed for that reason.[130] Russia has already made such a threat. During its ongoing invasion of Ukraine, the Ukrainian military relied heavily on Starlink satellites, prompting a Russian representative to warn that these commercial satellites "may become a legitimate target for retaliation."[131] This dual-use vulnerability poses risks not only to militaries but also to millions of civilians who depend on satellites for communications, navigation, financial transactions, and emergency services.[132]

Conversely, if a non-destructive space weapon was used, the satellite would likely only be temporarily disabled.[133] While the civilian population would still be inconvenienced, it would only be temporary.[134] The duality of these satellites is one of the primary reasons debris-generating space weapons should be banned.

B. Weaponization

In the context of space, weaponization has not been precisely defined, but a general consensus is that the weaponization of space occurs when a space object with destructive capabilities is

126 Conor Brighton, *Countries by Number of Military Satellites*, WORLDATLAS (Sep. 26, 2024), https://www.worldatlas.com/space/countries-by-number-of-military-satellites.html [https://perma.cc/6GJM-G7QB].

127 COMPETING IN SPACE, *supra* note 4, at 6.

128 Brighton, *supra* note 126.

129 Jennifer A. Cannon, *Targeting Dual-Use Satellites: Lessons Learned from Terrestrial Warfare*, 2 AIR & SPACE OPERATIONS REV. 37, 38 (2023).

130 *See supra* Part II.

131 Kari A. Bingen, Kaitlyn Johnson & Zhanna Malekos Smith, *Russia Threatens to Target Commercial Satellites*, CTR. FOR STRATEGIC & INT'L STUD. (Nov. 10, 2022), https://www.csis.org/analysis/russia-threatens-target-commercial-satellites [https://perma.cc/H64C-WGV2] ("[C]ommercial 'dual-use' satellites are being used for both civilian and military purposes. During armed conflict, military force can be lawfully applied against 'military objectives' . . . .").

132 *See* COMPETING IN SPACE, *supra* note 4, at 2.

133 *See infra* Section IV.B.2 (explaining that while in theory a non-destructive space weapon can permanently disable a space object, in practice the effects are generally temporary).

134 *See infra* Section IV.B.2.

placed in orbit.[135] Weaponization is always a form of militarization, but militarization is not always a form of weaponization.[136]

The flaw in the *OST* is that it only prohibits nuclear weapons and weapons of mass destruction from being placed in space.[137] This means that the weaponization of space is not illegal under the *OST* per se; rather, only two classes of weapons are illegal. This gap underscores the urgency of banning debris-generating space weapons while permitting reversible space weapons that minimize collateral damage.

This proposal is bolstered further by the following reasons:

First, a regrettable truth is that these three military superpowers rely on mutually assured destruction as a deterrent. The problem with space-based destructive weapons is that some satellites are dual-use and can be designed to crash into other space objects or explode.[138] Consequently, if a country disguised these weapons as ordinary satellites and Earth-to-space weapons were banned, the offending country would gain an immediate, decisive advantage, and the deterrent of mutually assured destruction would disappear.

Second, non-destructive space weapons can potentially reduce collateral damage and casualties in conflict. For example, by spoofing an adversary's signal, the adversary could be directed to an area free of civilians or to an area that would reduce the overall damage from military action.[139] Indeed, non-destructive space weapons can achieve the same purpose—denying the adversary's use of space—but without the permanent effects of destructive weapons.

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135 *See* KIRAN NAIR, U.N. INST. FOR DISARMAMENT RSCH., CELEBRATING THE SPACE AGE: 50 YEARS OF SPACE TECHNOLOGY, 40 YEARS OF THE OUTER SPACE TREATY, at 102, UNIDIR/2007/4, U.N. Sales No. GV.07.0.8 (2007). The Merriam-Webster Dictionary reflects this consensus, defining weaponize as "to adapt for use as a weapon of war." *Weaponize*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/weaponize [https://perma.cc/2W8M-V5C4] (last visited Apr. 17, 2025). This means that America, China, and Russia could avoid being criticized for weaponizing space if the weapon was launched from Earth.

136 Christol, *supra* note 110 ("[N]on-peaceful or aggressive activities resulting from military activities in the space environment . . . would constitute an unlawful weaponization.").

137 *See* OST, *supra* note 6, art. IV.

138 *See* MICHAEL P. GLEASON & PETER L. HAYS, GETTING THE MOST DETERRENT VALUE FROM U.S. SPACE FORCES 2–3 (2020).

139 *See* CLAYTON SWOPE ET AL., SPACE THREAT ASSESSMENT 2024, at 4 (2024) ("Spoofing is a form of electronic attack where an attacker tricks a receiver into believing a fake signal produced by the attacker is the real signal it is trying to receive.").

1. Destructive Space Weapons

Destructive weapons are the primary concern in today's world due to the debris they generate once they strike their intended target (space object). While destructive space weapons can be considered Earth-to-space, space-to-space, and space-to-Earth, the primary focus of this Note is the most prevalent destructive space weapon: a direct-ascent anti-satellite weapon (ASAT).

A direct-ascent ASAT is launched from Earth to kinetically destroy satellites through force of impact.[140] Direct-ascent ASATs have been tested repeatedly throughout history, with the U.S. conducting the first test in 1962.[141] But it was China's ASAT test in 2007 that demonstrated their true destructiveness.

When China launched a direct-ascent ASAT at one of its own satellites, it resulted in over 35,000 pieces of debris, with at least 2,087 pieces that were capable of being tracked by the U.S. Space Surveillance Network (US SSN).[142] Since the US SSN only tracks space objects in low Earth orbits "larger than a softball" and "basketball-sized objects, or larger, in higher, geosynchronous orbits," China's test resulted in thousands of *at least* softball-sized debris.[143] Although this test resulted in significant destruction, it is a stark reminder of what mutually assured destruction could look like in a space context.

2. Non-Destructive Space Weapons

Non-destructive space weapons are used by the U.S., Russia, and China nearly every day.[144] The most prevalently used non-destructive space weapons are electronic warfare and directed-energy systems.

Electronic warfare is defined by the Department of Defense as "[m]ilitary action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to at-

140 SECURE WORLD FOUND., *supra* note 2, at xxxviii.

141 *See id.* at 01-15 tbl. 1-3.

142 T.S. KELSO, ANALYSIS OF THE 2007 CHINESE ASAT TEST AND THE IMPACT OF ITS DEBRIS ON THE SPACE ENVIRONMENT 321 (2007).

143 *Space Debris 101*, AEROSPACE, https://aerospace.org/article/space-debris-101 [https://perma.cc/8DNK-37B3] (last visited Apr. 14, 2025).

144 Josh Rogin, *A Shadow War in Space Is Heating up Fast*, WASH. POST (Nov. 30, 2021), https://www.washingtonpost.com/opinions/2021/11/30/space-race-china-david-thompson/ [https://perma.cc/BAJ6-XTNN].

tack the enemy."[145] Electronic warfare includes the use of jamming and spoofing to control and/or limit the adversary's use of the electromagnetic spectrum.[146] Electronic warfare is generally considered a type of reversible space weapon, meaning that once the jammer is deactivated, the interference disappears and service is restored.[147]

Jamming can target a satellite directly (uplink jamming), which disrupts service for all users in its coverage area, or it can target the recipient of the signal (downlink jamming), which affects only users within the jammer's range.[148] Because it interrupts service for *all* users, uplink jamming poses the greater risk to the civilian population. Spoofing, by contrast, alters the information of a signal to deceive the intended recipient.[149]

Directed energy weapons "harness concentrated beams of electromagnetic waves or subatomic particles."[150] The most prevalent directed energy weapon is referred to as "laser dazzling."[151] Dazzling involves using a low-power laser to temporarily or permanently (depending on the strength of the laser) blind the satellite's optical sensors, disabling the satellite's ability to capture images.[152] The effects of dazzling are predominantly reversible, unless the power of the laser is intensified to damage a satellite's optical sensors permanently.[153] Dazzling can have both offensive

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145 *Electronic Warfare*, DOD DICTIONARY OF MILITARY AND ASSOCIATED TERMS 78 (2017) [hereinafter DOD DICTIONARY], https://apps.dtic.mil/sti/pdfs/AD1029823.pdf [https://perma.cc/27HR-MLQC]. While the Department of Defense groups electronic warfare with directed energy weapons, that categorization is not universally recognized. *See* SECURE WORLD FOUND., *supra* note 2, at xxxviii.

146 CHALLENGES IN SPACE, *supra* note 92, at 44.

147 *See* SWOPE ET AL., *supra* note 139, at 6 tbl. 1.

148 SECURE WORLD FOUND., *supra* note 2, at 01-19. Uplink jamming is considered an Earth-to-space weapon, whereas downlink jamming is considered a space-to-Earth weapon because the signal originates from a space object. *See* GLEASON & HAYS, *supra* note 138, at 2.

149 SECURE WORLD FOUND., *supra* note 2, at 01-19.

150 *Id.* at 01-24. For a recent test of the U.S. HELIOS laser, a type of directed energy weapon currently in development by the U.S., see Riley Ceder, *US Navy Hits Drone with HELIOS Laser in Successful Test*, NAVY TIMES (Feb. 4, 2025), https://www.navytimes.com/news/your-navy/2025/02/04/us-navy-hits-drone-with-helios-laser-in-successful-test/ [https://perma.cc/JJ86-PSAC].

151 SECURE WORLD FOUND., *supra* note 2, at 01-24 to -25.

152 *See id.* at 01-25 to -26; *see also* CHALLENGES IN SPACE, *supra* note 92, at 45 (describing space and counterspace concepts in the context of threats to U.S. space capabilities).

For a practical example on how even a commercially used laser can damage optical sensors, see *Do Lasers Damage Video or Photo Cameras?*, LASERWORLD, https://www.laserworld.com/en/laser-safety-faq/1045-do-lasers-damage-video-or-photo-cameras.html [https://perma.cc/Z65P-RHXE] (last visited Sep. 5, 2025).

153 *See* SECURE WORLD FOUND., *supra* note 2, at 01-25 to -26.

and defensive capabilities. Offensively, it could prevent a satellite from tracking the movement of troops.[154] Defensively, it could be placed near a ground facility to prevent it from being imaged.[155]

Electronic warfare has consistently been used in conflicts since the early 1990s,[156] but the war in Ukraine has showcased what electronic warfare looks like against two modern militaries. Russia's 2022 invasion was described as "its largest combat deployment of EW capabilities to date."[157] However, Russia is not alone in using electronic warfare; Ukraine is also employing significant electronic warfare measures defensively against Russian drones and missiles.[158] Ukraine has also been using electronic warfare offensively, by jamming Russia's communications and tracking targets by hijacking the electromagnetic spectrum.[159] Russia eventually scaled back its use of electronic warfare when it began disrupting its own systems, but both sides demonstrated the decisive role of non-destructive space weapons.[160]

Russia's invasion of Ukraine showcased how non-destructive space weapons are used in open conflict, but their reach extends well beyond active battlefields. Even America's space assets have fallen victim to electronic warfare recently.[161] The Space Force has publicly acknowledged that China and Russia are attacking U.S. satellites "every single day" with "non-kinetic means, including lasers, radio frequency jammers and cyber attacks."[162] Significantly, the Space Force affirmed that the attacks resulted in reversible damage but would not comment on whether any of the attacks resulted in non-reversible damage.[163] Granted, the U.S. likely engages in similar activity through the Counter Commu-

154 *See id.* at 01-25.

155 *Id.*

156 *See* David Vergun, *Space Domain Critical to Combat Operations Since Desert Storm*, U.S. DEP'T OF DEF. (Mar. 19, 2021), https://www.defense.gov/News/NewsStories/Article/Article/2543941 [https://perma.cc/ZG9U-7RLA].

157 Duncan McCrory, *Electronic Warfare in Ukraine: Preliminary Lessons for NATO Air Power Capability Development*, 36 J. JOINT AIR POWER COMPETENCE CTR. 69, 70 (2023).

158 *See* Chris Gordon, *'More EW Than We Have Ever Seen Before' in Ukraine, Space Force Official Says*, AIR & SPACE FORCES MAG. (Apr. 24, 2024), https://www.airandspaceforces.com/ew-ukraine-space-force-training-electronic-warfare-leader-says/ [https://perma.cc/MTX7-K8D2].

159 *See* McCrory, *supra* note 157, at 70.

160 *Id.*

161 *See* Rogin, *supra* note 144.

162 *Id.*

163 *Id.*

nications System (CCS), a classified program that is used primarily for satellite jamming.[164]

Each military superpower has used these weapons and has fallen victim to the effects of these weapons as well. An important lesson from Russia's invasion of Ukraine is that unintentional disruptions caused by electronic warfare can be undone by simply disabling the jammer.[165] But if a destructive space weapon were used, the effects would be irreversible and a heavy price would be paid in both the civilian and military domains.[166] Allowing non-destructive space weapons to be used while banning debris-generating ones would significantly reduce the risk of collateral damage to civilian populations while preserving deterrence.[167]

V. FROM SPUTNIK TO STARLINK: COLD WAR ORIGINS, MODERN NEEDS

The consequences of using a destructive space weapon highlight the deficiencies in the *OST*, which prohibits only two classes of weapons: nuclear weapons and WMDs.[168] The Department of Defense defines WMDs as "[c]hemical, biological, radiological, or nuclear weapons capable of a high order of destruction or causing mass casualties."[169] Similarly, the U.N. defines WMDs as "atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons and any weapons developed in the future which might have characteristics comparable in destructive effect to those of the atomic bomb."[170] While the use of such weapons plainly contradicts the *OST*'s intended purpose of using outer space for peaceful purposes, it does not bar their use so long as they are not placed in orbit around a celestial body or stationed in outer space.[171]

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164 *See* 1 U.S. A.F., U.S. DEP'T OF DEF., FISCAL YEAR (FY) 2026 BUDGET ESTIMATES 1-7 (2025) ("The Counter Communications System (CCS) Pre-planned Product Improvement (P3I) program provides expeditionary, deployable, reversible offensive space control (OSC) effects applicable across the full spectrum of conflict. It prevents adversary satellite communications (SATCOM) in the Area of Responsibility (AOR) including Command and Control (C2), Early Warning, and Propaganda; and hosts Rapid Reaction Capabilities in response to Urgent Needs.").

165 *See* McCrory, *supra* note 157, at 70.

166 *See* COMPETING IN SPACE, *supra* note 4, at 1, 14–15.

167 *See* GLEASON & HAYS, *supra* note 138, at 2–3, 5.

168 *See* OST, *supra* note 6, art. IV.

169 DOD DICTIONARY, *supra* note 145, at 252.

170 G.A. Res. 32/84, ¶ B(3) (Dec. 12, 1977).

171 *See* OST, *supra* note 6, art. IV.

Recognizing this gap in the legal regime, Russia and China spearheaded negotiations for a new treaty, the *PPWT*. The 2008 draft *PPWT* called upon States "not to place in orbit around the Earth any objects carrying any kinds of weapons, not to install such weapons on celestial bodies, and not to station such weapons in outer space in any other manner."[172] The draft's language essentially mirrored the *OST*'s language but extended the prohibition to cover all types of space weapons, rather than just nuclear weapons and WMDs.

The U.S. strongly opposed the *PPWT*, raising several fundamental objections.[173] First, the *PPWT* did not prohibit the research, development, production, or storage of space-based weapons, and it imposed no restrictions on Earth-based space weapons, leaving States free to build up "breakout capability."[174] Second, it failed to prohibit tests against a State's own space objects, meaning China's 2007 destructive ASAT test would have been in compliance.[175] Even more troubling, States could conduct "fly-by" (i.e., non-contact) tests of Earth-based ASATs against the space objects of other States.[176] Finally, the *PPWT* contained no verification or monitoring obligations. But this omission reflected the reality at the time, with the U.S. itself conceding that "it is not possible to develop an effectively verifiable agreement."[177] That said, substantively, the 2008 draft *PPWT* provided no further protection than the *OST*, since Earth-based space weapons are fully capable of damaging and/or destroying space assets just as effectively as space-based weapons.[178]

When the 2008 draft *PPWT* failed to gain traction, a revised draft of the *PPWT* was introduced in 2014.[179] The second draft left most U.S. concerns unaddressed: it omitted prohibitions on Earth-based space weapons, failed to establish a verification regime, and maintained the same limited restrictions on space-based weapons.[180]

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172 2008 PPWT Draft, *supra* note 9, art. II.

173 *See generally* 2008 PPWT U.S. Analysis, *supra* note 10 (detailing U.S. opposition to the 2008 draft *PPWT* and outlining its substantive and procedural concerns).

174 *Id.* ¶ 25.

175 *Id.* ¶ 12.

176 *Id.* ¶ 13.

177 *Id.* ¶¶ 18, 24.

178 *See id.* ¶¶ 7–10; OST, *supra* note 6, art. IV.

179 2014 PPWT Draft, *supra* note 9, at 1.

180 *See* 2014 PPWT U.S. Analysis, *supra* note 10, ¶ 1.

Underlying both the 2008 and 2014 drafts is a central U.S. concern—the absence of prohibitions on Earth-based direct-ascent ASATs.[181] These weapons are especially destructive, and all three countries have tested them repeatedly: thirty-three times by the U.S., eleven by Russia, and thirteen by China.[182] Such tests, while destabilizing, are presumably intended as demonstrations of capability and as deterrents to aggression. This deterrence rationale may also explain why the *PPWT* would have permitted "fly-by" tests.[183]

Ultimately, the feasibility of any legal instrument to prevent an arms race in outer space depends on the willingness of the major military superpowers to acknowledge their own conflicting positions. For example, at a 2021 U.N. General Assembly meeting, China emphasized that ASATs threaten the peaceful use of outer space and accused the U.S. of creating the most debris through destructive ASAT tests.[184] This is a striking accusation by China, given that the U.S. has not tested a direct-ascent ASAT since 2008 while China has carried out eleven since then,[185] and China's 2007 test remains the "worst debris-generating event on record."[186]

In the same meeting, Russia adopted a similar stance, urging Member States "[n]ot to construct, test or deploy space weapons, regardless of where they are based."[187] This position directly contradicts Russia's previous position in the *PPWT* negotiations, where the lack of prohibitions on direct-ascent ASATs was America's chief objection with both drafts.[188] Since 2014, Russia itself has conducted eleven direct-ascent ASAT tests, further highlighting the inconsistency of its position.[189]

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181 *See id.* ¶ 14 ("The PPWT does not address the most pressing, existing threat to outer space systems: terrestrially-based anti-satellite weapon systems.").

182 *See* SECURE WORLD FOUND., *supra* note 2, at 01-15 to -16 tbl. 1-3, 02-19 tbl. 2-4, 03-15 to -16 tbl. 3-2.

183 *See* CHING WEI SOOI, SECURE WORLD FOUND., DIRECT-ASCENT ANTI-SATELLITE MISSILE TESTS: STATE POSITIONS ON THE MORATORIUM, UNGA RESOLUTION, AND LESSONS FOR THE FUTURE 25 (Oct. 2023). The data in this report was gathered by interviews with high-level representatives from these governments, but no official designations or positions were provided. *Id.* at 4.

184 *See* U.N. Secretary-General, *supra* note 79, at 30.

185 SECURE WORLD FOUND., *supra* note 2, at 03-15.

186 KELSO, *supra* note 142, at 330.

187 U.N. Secretary-General, *supra* note 79, at 81.

188 *See* 2008 PPWT U.S. Analysis, *supra* note 10, ¶ 9; *see also* 2014 PPWT U.S. Analysis, *supra* note 10, ¶ 1(c) (noting that terrestrially-based anti-satellite weapon systems are not addressed).

189 *See* SECURE WORLD FOUND., *supra* note 2, at 02-19 tbl. 2-4.

Although China and Russia have taken contradictory and, at times, self-serving positions, the fact that both States are engaged in U.N. discussions signals at least some willingness to work toward a new agreement.

VI. LEGAL PATHWAYS FOR PEACEFUL GOVERNANCE IN THE NEXT FRONTIER

A. Hard Law Proposals

In international law, there are two types of law: "hard law" and "soft law."[190] Hard law refers to binding instruments, such as the *OST*, while soft law refers to non-binding instruments, such as a U.N. General Assembly resolution.[191] For an instrument to qualify as hard law, three conditions must be met: "the existence of an obligation, precision in presenting the content of the obligation[,] and the existence of a body in order to hold the state which does not fulfill its obligations accountable."[192]

With respect to ensuring space is used for peaceful purposes, the *OST* stands alone.[193] Historically, further hard law proposals governing activities in space have met significant resistance. The *PPWT* illustrates the fundamental divergence in expectations. As reflected in the 2008 and 2014 drafts, China and Russia advocated for a total ban on space-based weapons but wanted the freedom to construct, test, and store Earth-based space weapons.[194] The U.S., by contrast, sought not only a ban on the weaponization of space but also prohibitions on the development and testing of such weapons.[195]

1. START Treaty Framework

Nuclear arms control during the Cold War suggests a potential middle ground between these two conflicting positions.

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190 Felicia Maxim, Hard Law *Versus* Soft Law *in International Law*, 8 CONFERINTA INTERNATIONALA DE DREPT 113, 121 (2020).

191 *See id.* at 115.

192 *Id.*

193 *See generally* OST, *supra* note 6 (stating that outer space is an interest shared by all mankind and therefore should be explored peacefully to the benefit of all countries).

The *Moon Agreement* also requires space to be used for peaceful purposes but only has 17 signatories. FRIEDL, *supra* note 13, at 36 tbl. 1.5.

194 2008 PPWT U.S. Analysis, *supra* note 10, ¶¶ 8–9; 2014 PPWT U.S. Analysis, *supra* note 10, ¶¶ 9, 14.

195 *See* 2008 PPWT U.S. Analysis, *supra* note 10, ¶¶ 25–26; 2014 PPWT U.S. Analysis, *supra* note 10, ¶ 1(b)–(c).

The nuclear arms race between the U.S. and the USSR was fueled by a policy of mutually assured destruction, and today's space competition is driven by the shared belief among the U.S., China, and Russia that space superiority will be decisive in future conflicts.[196] These shared views indicate that a call for complete disarmament in space, as advanced by the U.S., is unrealistic. Besides the bilateral treaty between the U.S. and the USSR, the *Intermediate-Range Nuclear Forces Treaty* (*INF*),[197] no treaty among these powers has ever mandated total disarmament. A more pragmatic path forward may be modeled after the *Strategic Arms Reduction Treaty I* (*START I*), which sought reductions rather than complete disarmament.[198]

During the Cold War, the U.S. and the USSR collectively amassed more than 50,000 nuclear warheads, each seeking to deter the other from launching a first strike.[199] Recognizing the unsustainability of this buildup, the two sides began negotiations for an arms control agreement that would cap their nuclear arsenals.[200] After a tumultuous ten years, President George H.W. Bush and Soviet President Gorbachev signed *START I* on July 31, 1991.[201] *START I*, limited to fifteen years, required each country to reduce its nuclear stockpile to 6,000 "accountable" warheads, with sublimits of 4,900 deployed on ICBMs, 1,100 on mobile ICBMs, and 1,600 on ICBMs in strategic locations.[202] Compliance was structured in three phases over seven years, supported by an unprecedented verification regime that allowed

196 *See* Lisa M. Schenck & Robert A. Youmans, *From Start to Finish: A Historical Review of Nuclear Arms Control Treaties and Starting Over with the New Start*, 20 CARDOZO J. INT'L & COMPAR. L. 399, 404 (2012); 1996 SPACE POLICY, *supra* note 58, ¶ 6(g)–(h); *see also* DEFENSE SPACE STRATEGY, *supra* note 3, at 7 (reflecting U.S. efforts to achieve space superiority).

197 The *INF* called only for disarmament of short and intermediate range ballistic missiles, cruise missiles, and other missile launchers, and did not apply to air- or sea-launched missiles. *See* Treaty on the Elimination of Their Intermediate-Range and Shorter-Range Missiles, U.S.–U.S.S.R., Dec. 8, 1987, 1657 U.N.T.S. 2.

198 Daryl Kimball, *Start I at a Glance*, ARMS CONTROL ASS'N (July 2022), https://www.armscontrol.org/factsheets/start-i-glance [https://perma.cc/9VV5-KAP4].

199 *See* OFF. OF THE DEPUTY ASSISTANT SEC'Y OF DEF. FOR NUCLEAR MATTERS, U.S. DEP'T OF DEF., NUCLEAR MATTERS HANDBOOK 2020 [REVISED] 3 (2024); *Russia*, NUCLEAR THREAT INITIATIVE (May 27, 2025), https://www.nti.org/countries/russia/ [https://perma.cc/ZQ8N-42XK].

200 *Strategic Arms Reduction Treaty (START I)*, CTR. FOR ARMS CONTROL & NON-PROLIFERATION (Nov. 16, 2022), https://armscontrolcenter.org/wp-content/uploads/2022/11/START-I-Fact-Sheet.pdf [https://perma.cc/Z2AR-W2PK].

201 Kimball, *supra* note 198.

202 Treaty on the Reduction and Limitation of Strategic Offensive Arms, U.S.–U.S.S.R., arts. II, ¶ 1, XVII, ¶ 2, July 31, 1991, S. TREATY DOC. No. 102-20.

extensive inspections and monitoring.[203] *START I* is "considered one of the most successful arms control agreements" because it reduced the number of nuclear warheads by approximately 80%.[204]

An unforeseen event soon placed the validity of *START I* in question—the collapse of the USSR.[205] When the USSR dissolved into fifteen sovereign countries, its immense stockpile of roughly 30,000 nuclear warheads was distributed among four of them: Russia, Ukraine, Belarus, and Kazakhstan.[206] This was extremely concerning for the West because, under article 34 of the *Vienna Convention on the Law of Treaties*, "[A] treaty does not create either obligations or rights for a third State without its consent."[207] "[T]hird State" refers to a state that is not a party to the treaty.[208] These concerns were resolved in 1992 through the *Lisbon Protocol*, in which Russia, Ukraine, Belarus, and Kazakhstan agreed to assume the former USSR's obligations under *START I*.[209] Under the Protocol, Ukraine, Belarus, and Kazakhstan agreed to transfer their arsenal of nuclear weapons to Russia for disposal[210] and later joined the *Nuclear Non-Proliferation Treaty*, which prevented them from becoming nuclear States again.[211] Although the *Lisbon Protocol* was signed relatively soon after the collapse of the USSR, *START I* did not formally enter into force until December 5, 1994.[212] As a result, the treaty's duration was extended to 2009, with a compliance deadline of 2001.[213]

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203 *Id.* arts. II, ¶¶ 2–3, XI.

204 *Strategic Arms Reduction Treaty (START I)*, *supra* note 200.

205 *See generally* Protocol to the Treaty on the Reduction and Limitation of Strategic Offensive Arms, U.S.–U.S.S.R., May 23, 1992, S. TREATY DOC. No. 102-32 [hereinafter Lisbon Protocol] (establishing protocol in response to "the altered political situation resulting from the replacement of the former Union of Soviet Socialist Republics with a number of independent states").

206 Mariana Budjeryn, *Inheriting the Bomb: The Collapse of the USSR and the Nuclear Disarmament of Ukraine*, HARV. KENNEDY SCH. BELFER CTR. FOR SCI. AND INT'L AFFS. (Dec. 27, 2022), https://www.belfercenter.org/publication/inheriting-bomb-collapse-ussr-and-nuclear-disarmament-ukraine [https://perma.cc/GKC7-WPH9].

207 Vienna Convention, *supra* note 45, art. 34.

208 *Id.* art. 2, ¶ 1(h).

209 Lisbon Protocol, *supra* note 205, art. I.

210 *See id.* arts. IV–VI.

211 Treaty on the Non-Proliferation of Nuclear Weapons art. II, *opened for signature* July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161.

212 *See* Kimball, *supra* note 198.

213 *See id.*

Years before its expiration, the U.S., and Russia signaled their continued commitment to further reductions with the *Treaty Between the United States of America and the Russian Federation on Strategic Offensive Reductions* (*SORT*), also known as the *Treaty of Moscow*.[214] *SORT* required each country to reduce its deployed nuclear warheads to between 1,700 and 2,200 by December 31, 2012, a reduction of up to 3,800 nuclear warheads.[215] Importantly, *SORT* did not supersede *START I*, leaving all of *START I*'s provisions in force.[216]

START I ran its full fifteen-year term, expiring on December 5, 2009, while *SORT* remained in force until *New START* entered into force in 2011.[217] Building on *START I*, *New START* required the U.S. and Russia to reduce their nuclear stockpile to an amount not to exceed 1,550 within seven years.[218] *New START* had an initial ten-year duration with an option to extend it in five-year increments, and in February 2021, each country agreed to an extension, extending its duration until February 2026.[219]

New START also created an inspection regime providing each country numerous on-site inspections to verify compliance.[220] These inspection obligations have been essentially ignored by Russia since 2022, with the U.S. responding in kind.[221] Then, in February 2023, Russia informed the U.S. that it was suspending *New START*, but would still comply with the nuclear warhead limits.[222] Moreover, President Trump's recent call to resume nuclear testing by the U.S. underscores the idea that we are drifting away from disarmament and toward accumulation.[223] Giv-

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214 Treaty on Strategic Offensive Reductions, at V, U.S.–Russ., May 24, 2002, S. TREATY DOC. No. 107-8 (2002).

215 *See id.* art. I.

216 *Id.* art. II.

217 *See* Kimball, *supra* note 198; Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms, at 3, U.S.–Russ., Apr. 8, 2010, S. TREATY DOC. No. 111-5 [hereinafter New START].

218 *See* New START, *supra* note 217, art. II.

219 *New START Treaty*, U.S. DEP'T OF STATE (June 1, 2023), https://www.state.gov/new-start-treaty [https://perma.cc/95UC-XPHY].

220 *See* Protocol to the Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms pt. 5, U.S.–Russ., Apr. 8, 2010, S. TREATY DOC. No. 111-5.

221 *See* BUREAU OF ARMS CONTROL, DETERRENCE & STABILITY, U.S. DEP'T OF STATE, NEW START TREATY ANNUAL IMPLEMENTATION REPORT 4–5 (2025).

222 *See id.* at 6.

223 William J. Broad, *The Forgotten Nuclear Weapon Tests That Trump May Seek to Revive*, N.Y. TIMES (Nov. 24, 2025), https://www.nytimes.com/2025/11/24/science/hydro-nuclear-testing-trump.html [https://perma.cc/9NQS-T7TX].

en this pattern of noncompliance, *New START* will likely expire after February 2026.

Nevertheless, four years of uncertainty should not overshadow nearly three decades of compliance and success under the START framework. These treaties provide both guidance and precedent for designing future framework to prevent an arms race in outer space. They also highlight the impracticality of America's position, which seeks a complete ban on *all* space weapons, including their storage. Just twenty-eight years ago, it took a decade of negotiations to come to an agreement merely capping nuclear arsenals at 6,000 warheads.[224] The same dynamics apply in space: just as nuclear weapons became indispensable for deterrence during the Cold War, space weapons are increasingly viewed in the same light for deterrence against adversaries in today's world.[225] This reality suggests that neither Russia nor China will ever agree to complete disarmament in outer space.

Instead, the U.S. should look to the START treaties as guidance. All three States recognize that preventing an arms race in outer space is a pressing issue in today's world, but they approach the problem from opposite sides of the spectrum. A compromise could be achieved by meeting in the middle: permitting non-destructive space weapons with reversible effects, while prohibiting destructive space weapons. Such an approach would preserve deterrence, while reducing the risk of catastrophic collateral damage.

This could be accomplished by a "negative limiting treaty," modeled on the START framework, that specifies what States may not do rather than what they must do. A proposed draft could limit the number of destructive space weapons each State may possess and prevent further production. Over time, as compliance is demonstrated, further limitations could be negotiated in subsequent treaties, like *New START*. As exemplified by the START treaties, an arms race cannot be stopped instantaneously and will happen over decades of negotiations and further limita-

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224 *See* Kimball, *supra* note 198.

225 *See* SECURE WORLD FOUND., *supra* note 2, at 03-01 ("Much has been written about how reliant the United States is on space capabilities to project global military power, and thus being able to counter US space capabilities is a key element of China's ability to assure its freedom of action and deter potential US military operations in its sphere of influence."); *id.* at 02-01 ("Russia also has renewed political will to obtain counterspace capabilities for much the same reason as China: to bolster its regional power and limit the ability of the United States to impede on Russia's freedom of action.").

tions. These phased concessions by both sides would allow each State to retain sufficient deterrent capabilities while building confidence toward further arms control agreements.

Still, the greatest obstacle remains—a verification and compliance regime. Both drafts of the *PPWT* lacked a verification regime, a flaw emphasized by the U.S. repeatedly.[226] Even though the 2014 draft recognized the need for effective verification measures to be negotiated later, it garnered no support from the U.S.[227] Notably, the U.S., Russia, and China all agreed that the technology to verify space-based weapons effectively did not exist at the time.[228] A group of governmental experts organized pursuant to a U.N. General Assembly Resolution later agreed that verification of space-based weapons involves challenges but acknowledged verification measures are indeed possible and "would take time and require engagement by technical, military and legal experts."[229]

Verification measures to ensure compliance are essential, but when the technology does not exist, the demand is unrealistic. The first step should not be to insist on perfect verification measures. Instead, the U.S. should tackle one problem at a time—getting pen to paper, building trust, and, as technology becomes available, negotiating and implementing adequate verification measures.

Now is an opportune moment for such a proposal. After Russia's invasion of Ukraine in February 2022, President Biden had no further interactions with President Putin.[230] By contrast, under President Trump's current administration, President Putin recently set foot on American soil for the first time since 2015.[231] Although the purpose of the meeting was to discuss ending the war in Ukraine, the fact that it occurred at all demonstrates Russia's willingness to engage with American proposals.

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226 2008 PPWT Draft, *supra* note 9, arts. V, VI.

227 *See* 2014 PPWT U.S. Analysis, *supra* note 10, ¶ 1(a).

228 *Id.* ¶¶ 1(a), 5.

229 U.N. Expert Report, *supra* note 7, ¶ 42.

230 *See* Dasha Litvinova, *A Look at the Past Meetings Between Putin and American Presidents*, PBS NEWS (Sep. 1, 2025, at 16:35 ET), https://www.pbs.org/newshour/world/at-look-at-the-past-meetings-between-putin-and-american-presidents [https://perma.cc/RRX6-7U39].

231 *See* Andrew Osborn, *A Look at Putin's Past Trips to the US Ahead of Planned Alaska Summit*, REUTERS (Aug. 11, 2025, at 09:33 PT), https://www.reuters.com/world/europe/recent-history-russian-presidential-visits-us-2025-08-11 [https://perma.cc/2ZFQ-YM47].

2. Amending the *OST*

The most straightforward way to avoid an arms race in outer space would be by simply amending the *OST* pursuant to article XV to fill in the gaps that have emerged over the years. Article XV of the *OST* states:

> Any State Party to the Treaty may propose amendments to this Treaty. Amendments shall enter into force for each State Party to the Treaty accepting the amendments upon their acceptance by a majority of the States Parties to the Treaty and thereafter for each remaining State Party to the Treaty on the date of acceptance by it.[232]

Amending the *OST* is much easier said than done, though. While any State may propose an amendment, in practice only a handful of States (the U.S., China, and Russia) would be interested in doing so.[233] Even then, an amendment would require majority approval, and would only apply to the States that explicitly accept it.[234] This could lead to even more uncertainty in the space law regime: some States would remain governed by the original *OST*, while others would be bound by the amended version. Still, the fact that only three military superpowers have demonstrated extensive counterspace capabilities may limit the scale of this problem. Because the actors most capable of deploying space weapons are the same ones most likely to negotiate and ratify amendments, the risk of fragmentation, which is highly likely, would not be insurmountable.

That said, the only article that needs immediate attention is article IV. Multiple shortcomings have been recognized in this article and the difficulties in reaching a universally supported proposal have been clearly identified.[235] The main problem is that drafting an amendment to include all possible space weapons, as the U.S. has advocated, is nearly impossible due to the varying definitions and technologies. For example, the 2014 draft *PPWT* called for States to "not place any weapons in outer space," which would not apply to any Earth-based space weapons.[236]

Equally problematic was its narrow definition of "use of force," limited to only actions that "inflict damage to outer space

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232 OST, *supra* note 6, art. XV.

233 Besides these three States, India is the only one that has "some" destructive ASAT capability, so it is presumed that other States would not be interested in putting forth such amendment. *See* SECURE WORLD FOUND., *supra* note 2, at xvi.

234 OST, *supra* note 6, art. XV.

235 *See* U.N. Expert Report, *supra* note 7, ¶¶ 25, 42.

236 2014 PPWT Draft, *supra* note 9, art. II.

object[s]."[237] By that standard, Earth-to-space electronic warfare and directed energy weapons would not be included due to their reversible effects.[238] This definition reveals China's and Russia's unwillingness to relinquish their capability to deploy and use reversible space weapons, whether Earth-based or space-based.[239] This is exactly what the U.S. should pursue—precluding only the use of debris-generating weapons, not complete disarmament. All three military superpowers rely heavily on the space domain, and none will agree to completely eliminate their deterrence measures.

Regardless, even if these concerns were properly addressed, the amendment would only apply to the States that accept it. Given that the *OST* has neither been amended nor faced a proposed amendment, this approach is impracticable.

3. U.N. Security Council Resolution

Another hard-law approach that the U.S. could pursue is through a U.N. Security Council resolution. Unlike U.N. General Assembly resolutions, which are not legally binding,[240] U.N. Security Council resolutions are legally binding on all Member States under article 25 of the U.N. Charter.[241] Article 25 provides that "[T]he Members of the United Nations agree to accept and carry out the decisions of the Security Council," which is comprised of fifteen States, with five permanent Members, the U.S., the United Kingdom, Russia, China, and France, and ten elected Members on rotation.[242] For a Security Council resolution to pass, nine affirmative votes are required for procedural matters.[243] For all other matters, nine affirmative votes are also required, but these must include the concurring votes of all five permanent Members.[244] Abstentions do not count as votes. Consequently, if any permanent Member votes in the negative through a veto, the Security Council resolution is defeated.

In theory, a Security Council resolution would likely be the quickest way to bridge the gap between the *OST*'s outdated lan-

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237 *Id.* art. I.

238 *See* discussion *supra* Section IV.B.2.

239 *See* 2014 Draft PPWT, *supra* note 9, art. II.

240 *See* Maxim, *supra* note 190, at 121.

241 *Id.*

242 U.N. Charter art. 25; *The UN Security Council*, COUNCIL ON FOREIGN RELS. (Aug. 27, 2025, at 12:45 ET), https://www.cfr.org/backgrounder/UN-Security-Council [https://perma.cc/8FPF-JG2C].

243 U.N. Charter art. 27, ¶ 2.

244 *Id.* ¶ 3.

guage and today's technology. Unlike an amendment to the *OST*, which would bind only consenting States, a Security Council resolution would become immediately binding on all U.N. Members.[245] In practice, however, the same roadblock exists, the competing interests of the U.S., China, and Russia, each of which holds veto power. Russia's recent veto of a Security Council resolution affirming the *OST* exemplifies that roadblock.[246]

That resolution was prompted by U.S. reports of Russia developing a nuclear co-orbital ASAT.[247] U.S. intelligence described it as a "destabilizing foreign military capability" and confirmed that it would violate the *OST* if deployed.[248] Although the U.S. did not publicly confirm whether it was a nuclear ASAT, the limited scope of prohibited weapons under the *OST* suggests that it likely is. Publicly, Russia deemed the rumor a "malicious fabrication," and President Putin affirmed Russia's position as "categorically against" the placement of nuclear weapons in space.[249]

The Security Council debated the proposed resolution in April, just two months after the U.S. reports.[250] Thirteen Members voted in favor, China abstained, and Russia exercised its veto.[251] Vasily Nebenzia, Russia's representative to the U.N., reasoned that the *OST* already prohibits nuclear weapons in orbit and denounced the resolution as a "rogue show," a "cynical forgery," and "absolutely absurd."[252]

At the same time, Nebenzia insisted that the only way to prevent an arms race and ensure space is used for peaceful purposes is to "exclude outer space from the sphere of an arms race."[253] This position is difficult to reconcile with Russia's earlier actions where in a U.N. General Assembly meeting, Russia called for Members to reaffirm their commitment to the *OST* and to preserve the use of space for strictly peaceful purposes.[254] Yet when presented with the opportunity to make that commitment,

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245 *Id.* art. 25.

246 *See* U.N. SCOR, 79th Sess., 9616th mtg. at 5, U.N. Doc. S/PV.9616 (Apr. 24, 2024) [hereinafter S.C. mtg. 9616].

247 *See* MARC BERKOWITZ & CHRIS WILLIAMS, RUSSIA'S SPACE-BASED, NUCLEAR-ARMED ANTI-SATELLITE WEAPON: IMPLICATIONS AND RESPONSE OPTIONS 1 (2024).

248 *Id.*

249 *Id.* at 2.

250 *See* S.C. mtg. 9616, *supra* note 246, at 1.

251 *See id.* at 5.

252 *Id.* at 3.

253 *Id.*

254 *See* U.N. Secretary-General, *supra* note 79, at 79.

Russia vetoed it, contradicting its statements from just a few years earlier.

These contradictions signal that the arms race in outer space will not be resolved instantaneously by a Security Council resolution. Even if a resolution garners near-unanimous support, the veto power of the very States whose conduct it seeks to regulate remains.

B. Soft Law Proposals

1. Customary International Law[255]

Customary international law may be another potential avenue for preventing the use of destructive debris-generating space weapons, shown by an advisory opinion of the International Court of Justice (ICJ).

During the negotiations of the *OST*, the U.S. proposed a provision that would have required any dispute to be referred to the ICJ, but the proposal never came to fruition.[256] Instead, article III provides that the activities in space shall be carried out "in accordance with international law, including the Charter of the United Nations."[257] The U.N. Charter, in turn, requires that international disputes be settled by "peaceful means," and if those fail, authorizes the Security Council to require States to settle their dispute through other options such as negotiation or arbitration.[258] The issue with this approach is that any decision by the ICJ would require the U.S., Russia, and China to submit to the ICJ's jurisdiction,[259] which is unlikely.

Alternatively, if they did not submit to the ICJ's jurisdiction, the Security Council can request an advisory opinion from the ICJ on the legality of destructive space weapons.[260] Even though advisory opinions are not legally binding, they carry significant legal weight, and could compel the U.S., Russia, and China to align their practices with the ICJ's opinion to promote interna-

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255 It is worth noting that no definition of customary international law has been universally accepted. RESTATEMENT (THIRD) OF FOREIGN RELS. L. § 102 reps. note 2 (A.L.I. 1987).

256 Karl-Heinz Böckstiegel, *Settlement of Disputes Regarding Space Activities*, 21 J. SPACE L. 1, 4 (1993).

257 OST, *supra* note 6, art. III.

258 U.N. Charter art. 2, ¶ 3; *id.* art. 33, ¶ 1.

259 *See Declarations Recognizing the Jurisdiction of the Court as Compulsory*, INT'L CT. OF JUST., https://www.icj-cij.org/declarations [https://perma.cc/Z368-N3NG] (last visited Apr. 16, 2025).

260 U.N. Charter art. 96, ¶ 1.

tional peace.[261] To determine if debris-generating space weapons were illegal, the ICJ would have to conclude that there was "international custom, as evidence of a general practice accepted as law."[262] Accordingly, for customary international law to arise, both an objective element (general and consistent practice) and a subjective element (legal obligation) must be present.

For the objective element, there is no definitive rule as to what constitutes "general and consistent" State practice, but the *Restatement (Third) of Foreign Relations Law* provides helpful guidance.[263] It explains that general practice does not require universal adherence; rather, broad acceptance among States engaged in the relevant activity is required.[264] The flexibility of this rule was expressed by the ICJ in *Nicaragua v. United States*:

> It is not to be expected that in the practice of States the application of the rules in question should have been perfect . . . . The Court does not consider that, for a rule to be established as customary, the corresponding practice must be in absolutely rigorous conformity with the rule. In order to deduce the existence of customary rules, the Court deems it sufficient that the conduct of States should, in general, be consistent with such rules, and that instances of State conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule.[265]

Evidently, customary international law does not include a temporal requirement, only a general and consistent practice.[266] As the ICJ affirmed in the North Sea Continental Shelf Cases, consistent State practice over even a relatively short period is sufficient provided that the conduct was "extensive and virtually uniform" in that time period.[267]

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261 *Advisory Jurisdiction*, INT'L CT. OF JUST., https://www.icj-cij.org/advisory-jurisdiction [https://perma.cc/YK7J-9T3Z] (last visited Oct. 24, 2025) ("[A]dvisory opinions also contribute to the clarification and development of international law and thereby to the strengthening of peaceful relations between States.").

262 Statute of the International Court of Justice art. 38, ¶ 1(b).

263 *See* RESTATEMENT (THIRD) OF FOREIGN RELS. L. § 102 cmt. b (A.L.I. 1987).

264 *Id.*

265 Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), Judgment, 1986 I.C.J. 14, ¶ 186 (June 27).

266 North Sea Continental Shelf (Ger./Den.; Ger./Neth.), Judgment, 1969 I.C.J. 3, ¶ 74 (Feb. 20) ("[T]he passage of only a short period of time is not necessarily, or of itself, a bar to the formulation of a new rule of customary international law . . . [but] an indispensable requirement would be that within the period in question, short though it might be, State practice, including that of States whose interests are specially affected, should have been both extensive and virtually uniform in the sense of the provision invoked . . . .").

267 *Id.* ¶ 74.

Applied here, it must be shown that the U.S., Russia, and China have exhibited a general, consistent, extensive, and uniform pattern of objecting to the use of destructive space weapons.[268] To ascertain this, the ICJ would examine States' words (oral or written), actions and inactions, diplomatic communications, and all other political statements.[269] The most recent destructive ASAT tests of the three military superpowers that resulted in debris were Russia in 2021, the U.S. in 2008, and China in 2007.[270] Prior to China's 2007 test, there had been no destructive ASAT tests since 1994.[271] This decades-long abstention weighs in favor of a general and consistent practice among these three space-faring countries across nearly four decades.

Even so, it is likely insufficient to conclusively establish a customary norm, because the boundaries of this rule are not quite clear enough to definitively conclude that a rule is established. For instance, while China has not destroyed an orbital target with a destructive ASAT since its 2007 test; in 2010 and 2013, it destroyed two suborbital objects.[272] In total, since 2010, China has conducted nine suborbital ASAT tests, including one medium Earth orbit test.[273] Russia has also conducted twelve ASAT tests with unknown apogees, but since these tests were from the same system used for its 2021 test, the "NUDOL," it can be presumed they reached low Earth orbit.[274] These actions are contrary to Russia's and China's statements calling for a complete ban on the weaponization of space, and the ICJ will attach greater weight to their conduct than to their rhetoric.[275]

Historically, China's statements to the U.N. indicate that it wants only space-based weapons proscribed, but not Earth-based

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268 It is important to emphasize that if customary international law was created, it would only apply to these three countries. *See* Nicar. v. U.S., 1986 I.C.J. at ¶ 269 ("[I]n international law there are no rules, other than such rules as may be accepted by the State concerned, by treaty or otherwise, whereby the level of armaments of a sovereign State can be limited, and this principle is valid for all States without exception.").

269 *See* Andrew T. Guzman, *Saving International Law*, 27 MICH. J. INT'L L. 115, 125 (2005).

270 *See* SECURE WORLD FOUND., *supra* note 2, at 05-01 tbl. 5-1.

271 *See id.*

272 *See id.* at 03-15 tbl. 3-2, 03-16 tbl. 3-2.

273 *See id.*

274 *See id.* at 02-19 tbl. 2-4.

275 *See* Michael Byers, Note, *Custom, Power, and the Power of Rules*, 17 MICH. J. INT'L L. 109, 143–44 (1995).

weapons.[276] Russia has adopted a similar position, calling on States "[n]ot to destroy, damage, disrupt or alter the trajectory of the space objects of other States" as well as "[n]ot to use space objects as weapons against any targets on Earth, in the air or in outer space."[277] These statements suggest that both China's and Russia's "general and consistent practice" is that these weapons can be tested freely if used in a non-hostile manner, which differs from the U.S. The *PPWT* supports this interpretation, as it prohibited destructive ASATs from being used against other countries but allowed testing against their own space objects.[278]

Furthermore, this general practice appears primarily motivated by deterrence—meaning China and Russia may view destructive ASATs as last-resort or self-defense measures.[279] This view was explicitly recognized by a representative for China when they voted against a U.N. General Assembly resolution banning direct-ascent ASATs.[280] A Russian representative also implicitly recognized this view, reasoning that the resolution prevents other countries from developing their own deterrence measures.[281] Similarly, America's national defense space strategy embraces the same logic: deterrence first, and if that fails, deny the adversary's use of space.[282] Together, it appears that all three powers view destructive ASATs as deterrence measures only.

The timing of the U.S. 2008 ASAT test further reinforces this dynamic. Following China's 2007 ASAT test (the most destructive in history),[283] the U.S. shot down one of its own reconnaissance satellites with a direct-ascent ASAT just a year later, its

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276 U.N. Secretary-General, *supra* note 79, at 32 ("All countries should support prevention of the placement of weapons in outer space and the threat or use of force anywhere against outer space objects through legally binding measures.").

277 *Id.* at 80.

278 2014 PPWT Draft, *supra* note 9, art. II ("States Parties to this Treaty shall . . . not resort to the threat or use of force against outer space objects of States Parties . . . .").

279 *See* Le Tian, *Outer Space Experiment 'No Threat,'* CHINA DAILY (Jan. 24, 2007, at 07:24 PT), https://www.chinadaily.com.cn/china/2007-01/24/content_790806.htm [https://perma.cc/69MF-WXJL] ("China has never participated, and will never participate in, any arms race in outer space."); Jaganath Sankaran, *Russia's Anti-Satellite Weapons: A Hedging and Offsetting Strategy to Deter Western Aerospace Forces*, 43 CONTEMP. SEC. POL'Y 436, 436–37 (2022) ("Russia's Defense Minister, Sergey Shoigu, described the [ASAT] test as a routine operation of a 'cutting-edge future weapon system' intended to strengthen Russia's deterrent and defense against America's attempts to attain 'comprehensive military advantage' in space." (citation omitted)).

280 *See* CHING WEI SOOI, *supra* note 183, at 25.

281 *See id.* at 26.

282 *See* DEFENSE SPACE STRATEGY, *supra* note 3, at 6–8.

283 *See* KELSO, *supra* note 142, at 330.

first since 1986.[284] The U.S. denounced it as a test, and insisted that it was "an emergency response to prevent the possible loss of life. . . . [and] not part of an anti-satellite development and testing program."[285] Nevertheless, the international community disputed this explanation, given the extremely low probability that it could result in death,[286] and some suspected that the true reason was to "remind the Chinese that the United States maintains [ASAT] capability."[287] Thus, while there may be evidence of a general and consistent practice of refraining from the use of ASATs, what weapons are prohibited is unclear, which implicitly suggests that there is no custom.

Additionally, the recent statements by Russia and China further complicate matters and suggest that they may be deemed "persistent objectors" and would not be bound by a prohibition of all debris-generating space weapons.[288] The "persistent objector rule provides that, if a State objects to the establishment of a norm while it is becoming law and persistently objects up to the present, it is exempt from that norm."[289] This rule protects sovereign States by ensuring they are bound only by the rules and laws they consent to.[290] Within the last year, both Russia and China have stated that only weapons in outer space should be banned, while the U.S. advocates for a complete ban on all space weapons regardless of the location.[291] These countervailing positions undermine the possibility of any custom on a specific type of space weapon being prohibited by customary international law.

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284 *See* Nicholas L. Johnson, *Operation Burnt Frost: A View from Inside*, 56 SPACE POL'Y 1, 1 (2021); SECURE WORLD FOUND., *supra* note 2, at 05-01 tbl. 5-1.

285 Permanent Rep. of the United States to the Conference on Disarmament, Letter dated Feb. 15, 2008 from the Permanent Rep. of the United States to the Conference on Disarmament addressed to the President of the Conference on Disarmament (Feb. 15, 2008) (explaining the satellite was filled with highly-toxic hydrazine gas and likely to survive reentry, which would endanger human life on Earth).

286 *See* GEOFFREY FORDEN, A PRELIMINARY ANALYSIS OF THE PROPOSED USA-193 SHOOT-DOWN 2–3 (Mar. 12, 2008), https://web.mit.edu/stgs/pdfs/Forden_Preliminary_analysis_USA_193_Shoot_down.pdf [https://perma.cc/ALV2-D5XZ] (estimating the risk of casualty to be between 0.5% and 3%).

287 Jim Cooper, *From the Space Age to the Anti-Satellite Age*, CTR. FOR STRATEGIC & INT'L STUD. (Oct. 31, 2024), https://www.csis.org/analysis/space-age-anti-satellite-age [https://perma.cc/7336-K8U2].

288 *See* S.C. mtg. 9616, *supra* note 246, at 3–4.

289 Jonathan I. Charney, *Universal International Law*, 87 AM. J. INT'L L. 529, 538 (1993).

290 *See* Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), Judgment, 1986 I.C.J. 14, ¶ 269 (June 27).

291 *See generally* 2014 PPWT U.S. Analysis, *supra* note 10 (discussing the U.S.'s stance); S.C. mtg. 9616, *supra* note 246, at 3–6 (discussing Russia's and China's viewpoints).

Even if the ICJ determined there was a general and consistent practice, the subjective element, *opinio juris*, is not present. To satisfy a finding of *opinio juris*, States must feel a "legal obligation" to refrain from a specific action (the use of debris-generating weapons).[292] This would require the U.S., Russia, and China to believe that the use of these weapons is already illegal. The U.N. General Assembly's recent resolution proposing a ban on destructive ASATs conclusively indicates otherwise.

The resolution called for States to refrain from conducting destructive ASAT tests and was adopted with overwhelming support.[293] In total, there were 154 votes in favor, 10 abstentions, and 8 against.[294] This is direct evidence that the U.S. believed there was no legal obligation and submitted this resolution as a way to build toward international custom. The ICJ expressed in a previous advisory opinion regarding the legality of the use or threat of nuclear weapons that if a U.N. General Assembly resolution were adopted, it would indicate that there is no international custom present.[295] Specifically, the ICJ noted that "if such a rule had existed, the General Assembly could simply have referred to it" rather than adopting a resolution prohibiting the use.[296]

The ICJ also refused to infer *opinio juris* from the fact that nuclear weapons had not been used since 1945.[297] Its reasoning was that these countries were not refraining from using nuclear weapons out of a sense of legal obligation, but simply because circumstances justifying their use had not arisen.[298] A similar argument could be made with respect to the use of these debris-generating ASATs. Their development and testing have been justified primarily as deterrence, and deterrence does not support a finding of *opinio juris*.[299] Since the development and tests of debris-generating ASATs have been primarily for deterrence purposes, it refutes any possibility of *opinio juris* being present.

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292 North Sea Continental Shelf (Ger./Den.; Ger./Neth.), Judgment, 1969 I.C.J. 3, ¶ 77 (Feb. 20).

293 G.A. Res. A/C.1/77/L.62, ¶¶ 1–2 (Oct. 13, 2022).

294 Rep. of the G.A., at 2–3, U.N. Doc. A/77/383 (Nov. 14, 2022).

295 *See* Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶ 72 (July 8).

296 *Id.*

297 *Id.* ¶¶ 66–67.

298 *Id.*

299 *See id.* ¶ 67; Sankaran, *supra* note 279, at 436–37.

VII. RESTORING ORDER AMONG THE STARS: A U.S.-LED TREATY

The U.S. should propose a treaty that bans all debris-generating space weapons, regardless of location, with terms modeled on the START framework. History demonstrates that complete disarmament is not achieved overnight but through incremental reductions over several years, as exemplified by *START I*.[300] *START I* called for disarmament over seven years, and since the verification capabilities do not currently exist, a similar treaty would allow the development of these capabilities over the years. To strengthen compliance, the treaty could also require States to accept the jurisdiction of the ICJ.

A prohibition on debris-generating space weapons would encompass all destructive space weapons and eliminate any possible ambiguities.[301] Such a treaty would still allow China and Russia to retain deterrent measures, while opening a path toward eventual disarmament. It would also help establish international norms, foster confidence-building, and reinforce the peaceful use of space. The U.S., which first demonstrated how important space is for modern warfare,[302] cannot expect China and Russia to abandon their military capabilities in space entirely. Rather than demanding the impossible, the U.S. must address the most urgent threat in space—debris-generating space weapons.

The consequences of using destructive space weapons would extend far beyond disabling an adversary's military assets.[303] Their use would likely destroy critical civilian infrastructure and cause significant loss of life, not mere temporary inconveniences such as loss of internet access on your smartphone.[304] Destroying a navigation or communication satellite, for example, could cripple GPS networks that underpin aviation safety, shipping routes, financial transactions, and even emergency services. Attacks on weather satellites would hinder storm prediction and disaster re-

300 *See* discussion *supra* Section VI.A.1.

301 *See* U.N. Expert Report, *supra* note 7, ¶¶ 35–37.

302 *See* Vergun, *supra* note 156.

303 *See* COMPETING IN SPACE, *supra* note 4, at 1 ("This publication identifies those capabilities, trends, and dangers that constitute the present and future of our space-integrated lives.").

304 *See id.* ("Major disruptions to satellite services would cause significant, perhaps irreparable, damage to 21st century life.").

sponse, exposing millions of civilians across the globe to floods, hurricanes, and other natural hazards without warning.[305]

Not only would these effects be felt immediately, but their devastation would also be felt for generations to come.[306] Debris-generating space weapons would impair the ability to place any space object in orbit, due to the debris generated from the destruction.[307] China's 2007 destructive ASAT test is a perfect example of the long-term effects as the worst debris-generating event in history.[308] This satellite's destruction resulted in thousands of softball-sized and basketball-sized debris, and increased the total amount in Earth orbit by 20%.[309] Significantly, 79% of the debris is predicted to be in orbit 100 years after the event.[310] This is from *one space object* being destroyed.

By contrast, non-destructive weapons such as electronic warfare do not produce debris and their effects are reversible.[311] The effects would even be centralized to specific targets if electronic warfare were used. If downlink jamming were used, only the targeted recipient would be affected,[312] while if destructive means were used, the harm would go far beyond just the target.[313] Electronic warfare has its downsides, but its benefits significantly outweigh debris-generating space weapons. America is significantly ahead in space capabilities, and to expect China and Russia not to feel threatened by this is naïve. The pragmatic course of action is to accept the lesser of two evils by proposing a treaty that bans debris-generating weapons, caps their numbers, and permits the use of non-destructive space weapons.

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305 *See Weather Satellite Technology*, L3HARRIS, https://www.l3harris.com/all-capabilities/weather-satellite-technology [https://perma.cc/8BQT-QLHP] (last visited Nov. 17, 2025) ("Forecasters rely on detailed satellite data to keep people out of harm's way during extreme weather events, like wildfires, tornadoes, hurricanes and floods.").

306 *See Space Debris 101*, *supra* note 143.

307 See *id.*

308 KELSO, *supra* note 142, at 330.

309 *Id.* at 321; *Space Debris 101*, *supra* note 143 (explaining that the US SSN only tracks objects that are larger than a softball in low Earth orbit, and basketball sized objects in higher orbits).

310 KELSO, *supra* note 142, at 329.

311 *See* discussion *supra* Section IV.B.2.

312 *See* discussion *supra* Section IV.B.2.

313 *See* GLEASON & HAYS, *supra* note 138, at 4 ("[T]he use of destructive, non-reversible kinetic Earth-to-space or space-to-space weapons would likely leave a persistent cloud of debris and pose a long-term (potentially decades or much longer) hazard to all satellites, including commercial and scientific satellites as well as satellites from non-adversary nations. Using weapons with non-kinetic, non-permanent affects would mitigate this risk.").

VIII. CONCLUSION

Preventing space from becoming a battlefield may be unrealistic today, but there is still time to prevent it from becoming a minefield. The *OST* neither addresses nor constrains the most pressing threats, and its interpretation by the U.S., Russia, and China has allowed militarization and weaponization of space to go unchecked. The U.S. should lead the charge on developing a new treaty that preserves the use of space for future generations. The Russian-Chinese *PPWT* shows they are willing to engage in proposals short of total disarmament. The U.S. must recognize this reality and work toward an agreement that bridges the divide by prohibiting the most urgent threat, while building the foundation for further disarmament.