The United States Is Enabling an Outer Space Arms Race: An Overview of Current Security Threats and Recommendations for Abating an Outer Space Arms Race

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* I dedicate this publication to my parents, Grigoriy and Lyudmila Shmigol, for their unwavering support; to my fiancé, Forrest Eagle, for always fostering my curiosity; and most importantly, to my best friend, Doreen Fadaeiforghan, for sharing her passion and igniting my interest in Space Law.

"The normative and legal framework governing outer space is not sufficiently developed to prevent . . . [an] arms race, or to protect against their undesirable consequences."[1]

INTRODUCTION

"Outer space is seen as becoming a new frontier of competition among major military powers."[2] The United States leads the world in space capabilities and spending.[3] Geo-political adversaries, such as Russia, China, Iran, and North Korea, however, are also building up and investing in their space capabilities.[4] Although the 1967 Outer Space

1. U.N. Secretary-General, *Reducing Space Threats Through Norms, Rules and Principles of Responsible Behaviours*, ¶ 47, U.N. Doc. A/76/77 (July 13, 2021) [hereinafter *Reducing Space Threats*].

2. *Id.* ¶ 5.

3. *See* John Koetsier, *Space Inc.: 10,000 Companies, $4T Value . . . And 52% American,* FORBES (May 22, 2021), https://www.forbes.com/sites/johnkoetsier/2021/05/22/space-inc-10000-companies-4t-value—and-52-american/?sh=66fab49f55ac [https://perma.cc/K9J4-N3WG]. Space capabilities, although not officially defined, can be explained as technologies and advancements that are used to achieve space-oriented challenges. *See USSF Capabilities*, U.S. SPACE FORCE (July 4, 2022), https://www.spaceforce.mil/About-Us/About-Space-Force/Space-Capabilities/ [https://perma.cc/9835-UHPC]. Examples of U.S. Space Force space capabilities include services and facilities for space launches, satellite operations, space surveillance, and ballistic missile monitoring systems. *Id.*

4. *See* TODD HARRISON, KAITLYN JOHNSON, MAKENA YOUNG & JOE MOYE, CTR. FOR STRATEGIC & INT'L STUD., SPACE THREATS ASSESSMENT 2021, at 8–22, https://www.csis.org/analysis/space-threat-assessment-2021 [https://perma.cc/U3QB-6WT3] [hereinafter SPACE THREATS ASSESSMENT 2021].

Treaty emphasized scientific investigations and exploration,[5] global powers are creating and testing counterspace weapons,[6] indicating outer space is now a new arena for military conflict. Future armed outer space conflict may be in reach as a result of this growing military dependence.[7] Part I of this Note provides an overview of current space security threats, focusing on China, Russia, Iran, and North Korea's capabilities.

Part II provides a primer on international agreements governing outer space. The 1967 Outer Space Treaty serves as the current legal framework for outer space activities; however, it is woefully inadequate in addressing current escalating tensions. There has been no significant progress towards ratifying a legally binding international agreement regarding the military use of space. The closest progress made was the 2017 reaffirmance by the United Nations (UN) and its Member States to developing voluntary "[t]ransparency and [c]onfidence-building measures."[8]

Finally, Part III advocates for the United States to revise its position, which seeks voluntary "transparency and confidence building measures." Especially, and most immediately, the United States must introduce a resolution to the UN General Assembly for a total ban on developing and testing anti-satellite weapons, otherwise known as ASAT weapons.[9] More temporarily, the United States must propose an amendment to the 1967 Outer Space Treaty to redefine space weapons. More permanently, the UN and North Atlantic Treaty Organization (NATO) should commission a joint committee to draft legally binding and concrete space policies.

I. SPACE SECURITY THREATS

The United States has recognized "[s]pace is an increasingly important enabler of economic and military power."[10] Threats to space operations thus pose serious risks to the prosperity and security of space use.[11] Four broad groups define counterspace weapons: "kinetic physical, non-kinetic physical, electronic, and cyber."[12] Kinetic physical counterspace weapons "attempt to strike directly or detonate a warhead

5. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205. *See* discussion *infra* Section II.2.

6. *See* SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 3.; *see also* discussion *infra* Part I.

7. *Reducing Space Threats*, *supra* note 1, ¶ 7.

8. *See* CHRISTOPHER JOHNSON, SECURE WORLD FOUND., THE UN GROUP OF GOVERNMENTAL EXPERTS ON SPACE TCBMS (2014), https://swfound.org/media/109311/swf_gge_on_space_tcbms_fact_sheet_april_2014.pdf [https://perma.cc/8MPX-2S44].

9. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 1.

10. *Id.* at 3.

11. *Id.*

12. *Id.*

near a satellite or ground station."[13] These take form as "ASAT weapons, co-orbital ASAT weapons, and ground station attacks."[14] Non-kinetic physical counterspace weapons "have physical effects on satellites or ground systems without making physical contact."[15] These weapons can blind satellite sensors or cause components of satellites to overheat.[16] Electronic weapons target the "electromagnetic spectrum through which space systems transmit and receive data."[17] This effect is achieved by jamming—creating noise disrupting radio frequency band—or spoofing—tricking a receiver into believing a fake signal.[18] Finally, cyberattacks "target the data itself and the systems that use, transmit, and control the flow of data."[19] These attacks can "target ground stations, end-user equipment, or the satellites themselves."[20]

The United States' control of and assured access to space is threatened by competitors such as China, Russia, Iran, and North Korea. These countries seek to threaten United States space systems to deter the United States' participation in regional conflicts.[21] China's efforts have targeted early warning satellites.[22] It considers the destruction of space systems as "a good way to 'blind and deafen' its enemies."[23] China has also begun to invest in offensive counterspace systems such as ground-based lasers inhibiting orbital sensors and anti-satellite missiles.[24] Russia has similarly emphasized its space military operation by investing in kinetic physical weapons such as "satellites to conduct co-orbital weapons tests," and non-kinetic physical weapons such as "ground-based mobile anti-satellite missile systems" and satellite blinding lasers.[25] Iran and

13. *Id.* at 4.

14. *Id.* ASAT weapons are anti-satellite weapons. *See id.* at 1.

15. *Id.* at 4.

16. *Id.*

17. *Id.* at 5.

18. *Id.*

19. *Id.*

20. *Id.*

21. *Threats to the U.S. in Space*, U.S. SENATE REPUBLICAN POL'Y COMM. (Aug. 2, 2021), https://www.rpc.senate.gov/policy-papers/threats-to-the-us-in-space [https://perma.cc/7DMA-YMNU] [hereinafter *Threats to the U.S. in Space*]. Space systems such as the Global Positioning System (GPS), communications, weather monitoring, and reconnaissance assist in ground-based military activities. BEN SKINNER, SPACE SEC. INDEX MILITARY USES OF OUTER SPACE (2022), https://spacesecurityindex.org/2020/11/military-uses-of-outer-space/ [https://perma.cc/AK43-XZ7B].

22. Early warning satellites can detect and warn of missile attacks through infrared sensors to "provide accurate, reliable data in the face of evolving missile threats." *Defense Support Program Satellites*, U.S. AIR FORCE (2015), https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104611/defense-support-program-satellites/ [https://perma.cc/J8BQ-KXNW].

23. *Threats to the U.S. in Space*, *supra* note 21.

24. *Id.*

25. *Id.*

North Korea are also joining the counter-space efforts with the intent to weaken the U.S. position in any potential conflict.[26] The forthcoming sections will examine each state's space capabilities in more detail and the concern each poses to the United States.

A. China

China's goal of building itself "into a space power in all respects" and growing space program place it second to the United States in its number of operational satellites.[27] However, it is unclear how many space assets China's military force, China's People's Liberation Army (PLA), maintains.[28] China's Strategic Support Force (SSF) functions as the core of China's warfare forces and supports the PLA—integrating cyberspace, space, and electronic capabilities into joint military operations.[29] The PLA believes counterspace weapons are necessary to "deter and counter a possible U.S. intervention during a regional military conflict."[30]

China has a robust direct-ascent ASAT program and electronic and cyber counterspace capabilities.[31] China continues to test its direct-ascent ASAT system; however, it is clear its system threatens low-Earth-orbit (LEO) U.S. satellites and likely threatens medium-Earth-orbit (MEO) and geosynchronous-equatorial-orbit (GEO) satellites as well.[32] China has also developed a robot intended to clear space debris, which could be used to grab satellites.[33] This multi-functionality evidences the increased use and development of dual-purpose technology in space. Recent reports claim that China is conducting kinetic physical ASAT tests at one military base location and is rumored to have a laser weapon system.[34] This laser weapon system is intended "to disrupt, degrade, or damage satellites and their sensors," and it may already possess limited capabilities.[35]

China's progress in military space technologies has garnered attention from U.S. officials. Air Force Secretary Frank Kendall delivered a speech on September 20, 2021, suggesting China could use space to conduct global strikes and to deliver weapons, "modeled after the Soviet-

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26. *Id.*

27. DEF. INTEL. AGENCY, CHALLENGES TO SECURITY IN SPACE 13 (2019), https://www.dia.mil/Portals/110/Images/News/Military_Powers_Publications/Space_Threat_V14_020119_sm.pdf [https://perma.cc/V6BC-RU4Z] [hereinafter CHALLENGES TO SECURITY IN SPACE].

28. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 9.

29. CHALLENGES TO SECURITY IN SPACE, *supra* note 27, at 14.

30. *Id.*

31. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 8.

32. *Id.* at 10.

33. *Id.*

34. *Id.* at 11.

35. CHALLENGES TO SECURITY IN SPACE, *supra* note 27, at 20.

era 'fractional orbital bombardment system.'"[36] China's advancements in military capabilities included "long-range precision-guided munitions, hypersonic missiles, space and cyber weapons."[37] The United States Office of National Security additionally noted China's threat includes its fielding destructive and nondestructive ASAT weapons, intended to destroy satellites in LEO, and intended to "blind or damage sensitive space-based optical sensors."[38] In response to China's emerging threats, Secretary Kendall noted the United States should "respond with a sense of urgency but we also have to take the time necessary to make smart choices about our future and our investments."[39]

B. Russia

Russia's military doctrine expresses its view of space as a warfighting domain; achieving space supremacy will be vital to winning future conflicts.[40] Due to its perception of the United States' dependence on space, it aims to build its counterspace systems to neutralize U.S. military capabilities and neutralize the perceived U.S. military advantage.[41] In 1992, the Russian Aerospace Forces (RAF) was created to encompass military and space capabilities.[42] In 2020, President Vladimir Putin approved a document empowering him to use space-based weapons in response to a military attack, signifying Russia's view that space weapons are both a threat and an asset.[43]

Russia began developing kinetic physical counterspace capabilities in the 1960s and has continued to test direct-assent ASAT systems in 2020.[44] Although it has not impacted anything in LEO, the U.S. Space Command responded, noting the persistent testing "demonstrates threats to U.S. and allied space systems are rapidly advancing."[45] Russia has tested co-orbital ASATs by launching a "nesting satellite" containing a

36. Sandra Erwin, *Kendall: If China Can't Beat the U.S. in the Air It Will Try in Space*, SPACENEWS (Sept. 20, 2021), https://spacenews.com/kendall-if-china-cant-beat-the-u-s-in-the-air-it-will-try-in-space/ [https://perma.cc/E7RS-S2NX].

37. *Id.*

38. OFF. OF THE DIR. OF NAT'L INTEL., ANNUAL THREAT ASSESSMENT OF THE US INTELLIGENCE COMMUNITY 8 (2021) [hereinafter ANNUAL THREAT ASSESSMENT].

39. Erwin, *supra* note 36.

40. *See* CHALLENGES TO SECURITY IN SPACE, *supra* note 27, at 23.

41. *Id.* at 24–24.

42. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 12.

43. *Id.* at 13.

44. *Id.* at 13.

45. *Id.* (quoting Sandra Erwin, *Space Force Official: Russian Missile Tests Expose Vulnerability of Low-Orbiting Satellites*, SPACENEWS (Dec. 17, 2020), https://spacenews.com/space-force-official-russian-missile-tests-expose-vulnerability-of-low-orbiting-satellites/ [https://perma.cc/E7RS-S2NX]).

smaller satellite, which could fire small projectiles.[46] Russia continues to develop air and missile defense systems, creating a surface-to-air missile system, which could reach LEO and is proclaimed by the head of the Air and Space Forces to be capable of destroying weapons and satellites near space as a counterspace weapon.[47] Russia maintains two airborne laser systems with non-kinetic physical capabilities, which are intended to counter "air-based and space-based reconnaissance assets."[48] Russia is growing its electronic counterspace capabilities and focusing on mobile ground-based systems intended to disrupt foreign satellites.[49] Additionally, Russia fields a large range of electronic warfare systems aimed to "counter GPS, tactical communications, satellite communications and radars."[50] It aims to develop a full spectrum of electronic warfare capabilities to counter Western space systems.[51] Finally, Russia has developed powerful cyber counterspace capabilities, through which it conducted a 2020 cyberattack known as the SolarWinds.[52] The SolarWinds impacted 250 U.S. federal agencies and businesses.[53]

Currently, security experts say Russia is raising more concerns of threats in space than China due to Russia's recent "aggressive anti-satellite behavior."[54] The United States Office of National Security noted Russia remains a "key space competitor."[55] Russia's development and progression of counterspace capabilities, including the 2020 test of ASAT weapons, prompted the U.S. Space Command to state that "Russia has made space a warfighting domain."[56] Additionally, its deployment of two sub-satellites at high velocity "suggests at least some of their rendezvous and proximity operations in low Earth Orbit are of a weapons nature."[57]

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46. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 14.

47. *Id.* at 15.

48. *Id.* at 15–16 (quoting Bart Hendrickx, *Peresvet: A Russian Mobile Laser System to Dazzle Enemy Satellites*, SPACE REV. (June 15, 2020), https://www.thespacereview.com/article/3967/1 [https://perma.cc/2ZMG-JMVC]).

49. *Id.* at 16.

50. CHALLENGES TO SECURITY IN SPACE, *supra* note 27, at 28.

51. *Id.* at 28–29.

52. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 16.

53. *Id.*

54. Chelsea Gohd, *New Reports Detail Ongoing Space Threats, and Russia is Raising Concerns*, SPACE (Apr. 2, 2021), https://www.space.com/new-report-russia-china-anti-satellite-space-threat [https://perma.cc/93WU-M924].

55. ANNUAL THREAT ASSESSMENT, *supra* note 38, at 11.

56. Gohd, *supra* note 54.

57. *Id.*

C. Iran

Although Iran has not developed comprehensive counterspace weapons, it has successfully developed electronic and cyber counterspace weapons, which it has used to jam and hack foreign governments and civilian capabilities.[58] In 2020, Iran revealed its Space Command with the goal of encompassing all space and counterspace related forces and missions.[59] Iran has not developed direct-ascent nor co-orbital ASAT weapons; however, successful military satellite launches in 2020 and 2021 indicate it is closer to developing these capabilities.[60] In addition, advancements in developing intercontinental ballistic missile technologies could be developed into a basic ground-based ASAT missile.[61] Iran has exercised its electronic counterspace weapons and is focusing on offensive and counter warfare.[62] In particular, its spoofing capabilities are unlike others because it creates "various erroneous positions forming odd ring-like patterns around a central location.[63] Finally, the frequency and sophistication of Iran's cyber capabilities, used recently against Israel, indicate these weapons may be its preferred method (considering the deficiency in other counter-space weapons).[64] To the concern of the United States, Iran and Russia signed an information security agreement in 2021 that signals Iran may benefit from Russia's systems to further its own.[65]

D. North Korea

North Korea's focus on cybersecurity makes it an interesting nation to assess for counterspace capabilities. The UN Security Council labeled North Korea's space program as a particular threat to international peace.[66] In response, North Korea asserts peaceful intentions in space.[67] Recent claims report North Korea and Iran have "resumed cooperation on missile and launch vehicle technology [that] could suggest that advancement by one nation may eventually be transferable to the other."[68] North Korea currently has not developed kinetic physical capabilities, nor any non-kinetic physical capabilities, but has demonstrated electronic capabilities

58. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 17.
59. *Id.* at 18.
60. *Id.* at 19.
61. CHALLENGES TO SECURITY IN SPACE, *supra* note 27, at 31.
62. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 19.
63. *Id.* at 20.
64. *Id.*
65. *Id.*
66. *Id.* at 21.
67. *Id.*
68. *Id.*

through jamming and cyberattacks.[69] Although not yet aimed at space systems, North Korea's advancement of technology poses a continuing threat to U.S. space systems.[70] North Korea created an "elite cyber warfare unit, the Cyber Warfare Guidance Unit" with members operating in other countries such as China and Russia.[71] Former United States Secretary of State, Mike Pompeo, reported North Korea posed a greater cybersecurity threat to the United States than Russia did.[72]

II. INTERNATIONAL EFFORTS TO ABATE SPACE SECURITY THREATS

It is necessary to examine the current regulatory and legal framework that governs space security threats to better understand why these states' military and space capabilities threaten an outer space arms race.

A. 1967 Outer Space Treaty

Following interests and galvanized efforts for space travel in the 1950s, the UN commissioned the Committee on the Peaceful Uses of Outer Space, which reported its work in 1966 and launched discussions of the Outer Space Treaty of 1967.[73] It broadly encompassed the effort for outer space exploration, "freedom of scientific investigation . . . [where] States shall facilitate and encourage international co-operation."[74] Notably, in Article IV, signatories pledged "not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction," and maintaining that celestial bodies would be used for peaceful purposes.[75]

B. Proposed Prevention of an Arms Race in Outer Space Treaty

Eight years after the ratification of the Outer Space Treaty, the Conference on Disarmament established a committee to examine issues relevant to the Prevention of an Arms Race in Outer Space (PAROS) treaty.[76] The PAROS treaty would complement the Outer Space Treaty by preventing "any nation from gaining a military advantage in outer

69. *Id.; see supra* Part I on discussion of cyberattacks.

70. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 21.

71. *Id.* at 23.

72. *Id.*

73. Treaty on Principles Governing the Activities of State in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *supra* note 5.

74. *Id.* at art. I.

75. *Id.* at art. IV.

76. Louis de Gouyon Matignon, *Treaty on the Prevention of the Placement of Weapons in Outer Space*, SPACE LEGAL ISSUES (May 8, 2019), https://www.spacelegalissues.com/treaty-on-the-prevention-of-the-placement-of-weapons-in-outer-space-the-threat-or-use-of-force-against-outer-space-objects/ [https://perma.cc/YCZ3-SUAC].

space."[77] Earlier efforts and the Outer Space Treaty of 1967 were criticized for only banning mass destruction weapons in space and not encompassing other forms of weapons.[78] However, the committee was unable to make meaningful progress due to the United States' resolute opposition.[79] The PAROS Treaty continued (and continues) to be raised as a topic of discussion in the Conference for Disarmament.[80]

C. Proposed Treaty on the Prevention of the Placement of Weapons in Outer Space

Seeing no progress on the PAROS Treaty, Russia and China proposed the first Treaty on the Prevention of the Placement of Weapons in Outer Space and the Threat or Use of Force against Outer Space Objects (the Proposed Treaty) in an effort to continue progress.[81] The Proposed Treaty notes the Outer Space Treaty is "unable to effectively prevent the placement of weapons in outer space."[82] The proposed provisions include prohibiting placement of any weapons in space and using force against other states' outer space objects.[83] Additionally, it attempts to create a framework for resolving conflicts under this treaty. If there is an alleged violation, Article VII instructs states to receive inquiries, conduct consultations, and refer the dispute if the violation remains unresolved.[84] The Executive Organization, enabled and established by Article VIII, is to convene a meeting to review the dispute, agree on a decision, and "[t]ake steps to put an end to the violations of this Treaty by any State Party."[85] Although this proposed treaty is a more tangible effort to address possible space threats and conflicts, the States have not adopted it.

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77. *Proposed Prevention of an Arms Race in Space (PAROS) Treaty*, NUCLEAR THREAT INITIATIVE (Apr. 5, 2021), https://www.nti.org/learn/treaties-and-regimes/proposed-prevention-arms-race-space-paros-treaty/ [https://perma.cc/B9AW-QCNQ] [hereinafter *PAROS*].

78. Matignon, *supra* note 76.

79. *Id.*

80. *PAROS*, *supra* note 77.

81. Matignon, *supra* note 76.

82. The Russian Federation & China, *Letter Dated 12 February 2008 From the Permanent Representative of the Russian Federation and the Permanent Representative 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 (PPWT)" Introduced by the Russian Federation and China*, 2, U.N. Doc. CD/1839 (Feb. 29, 2008) [hereinafter *Draft PPWT*].

83. *PAROS*, *supra* note 77.

84. *Id.*

85. *Draft PPWT*, *supra* note 83, at 4.

D. UN General Assembly Resolution 65/68

Following no progress in ratifying any new treaties after the Outer Space Treaty, the UN General Assembly[86] Resolution 65/68 was adopted in December 2010, which reaffirmed the aim to prevent an outer space arms race and noted its intent to examine further measures and agreements to reduce an arms race and reduce the weaponization of space.[87] Furthermore, it references member state proposals on "international outer space transparency and confidence-building measures" and requested the Secretary-General establish a group of governmental experts to study these measures and deliver a report on the findings.[88]

In 2011, the UN established the Group of Governmental Experts (GGE) on Transparency and Confidence-Building Measures (TCBMs), which aimed to improve international collaboration and "reduce the risks of misunderstanding, mistrust, and miscalculations in outer space activities."[89] The GGE consisted of fifteen international experts, represented by countries such as China, Russia, and the United States.[90] It examined existing international space law, including the 1967 Outer Space Treaty, and examined recommendations for TCBMs.[91]

In 2013, the report was delivered and outlined its recommendations on TCBMs, which would support stability in space, explaining that TCBMs are a tool for governments to create trust, "thereby helping both to prevent military confrontation and to foster regional and global stability."[92] The General Assembly believes transparency and confidence-building measures are "a means to prevent an arms race in outer space."[93] The 2013 report noted two types of TCBMs: applying to capabilities and

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86. The United Nations General Assembly is comprised of all 193 Members of the United Nations, each possessing one vote to adopt a resolution such as this. *About the General Assembly*, UNITED NATIONS, https://www.un.org/en/ga/about/background.shtml [https://perma.cc/U6YK-CK8F].

87. G.A. Res. 65/68 (Jan. 13, 2011).

88. *Id.*

89. JOHNSON, *supra* note 8, at 1.

90. *Id.*

91. *Id.*

92. *Id.* at 2. TCBMs recommended by the GGE, in part, include: exchanging information on space policies, goals, and military outer space expenditure; exchanging information and notifications on "orbital parameters of outer space objects and potential orbital conjunctions," forecast natural hazards, and planned spacecraft launches; risk reduction notifications on scheduled maneuvers, high-risk re-entry events, emergency situations, and intentional orbital break-ups; and familiarization and expert visits to space launch sites and facilities, including demonstrations of technologies. Rep. of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities, U.N. Doc. A/68/189 at 2 (2013).

93. U.N. Secretary-General, *Transparency and Confidence-Building Measures in Outer Space Activities*, ¶ 9, U.N. Doc. A/72/65 (Feb. 16, 2017).

applying to behaviors.[94] The TCBMs are aimed at: "enhancing the availability of information about . . . operational space-based systems"; "information exchange about development programmes"; "articulation of a State's principles and goals"; and "international cooperation measures in outer space activities."[95] However, the TCBMs were voluntary and varied in nature, and compliance with these recommendations was minimal.[96]

E. UN General Assembly Resolution 72/250

Although the States reaffirmed the need for further agreements in 2010 and the number and types of space threats that continued to develop, the UN's progress in developing international agreements stalled. In December 2017, the UN General Assembly recommitted to the search for "agreements to prevent an arms race in outer space" in Resolution 72/250.[97] Interestingly, it noted its own stalemate at this work, "express[ing] its deep regret over the years of stalemate . . . and looks forward to the Conference again fulfilling its mandate."[98] It urged the Conference of Disarmament to agree and implement a "balanced and comprehensive" plan to work that would start "negotiations on an international legally binding instrument on the prevention of an arms race in outer space."[99] Although the GGE met again to examine a "legally binding instrument on PAROS," the meeting was unproductive and no consensus was reached.[100]

F. UN General Assembly Resolution 75/36

Finally, progress began after the UN adopted General Assembly Resolution 75/36 in December 2020. This resolution accomplishes the following: (1) asks each country what they consider a threat; (2) sidesteps legally binding agreements; (3) allows the international community to structure the conversation; and (4) allows for potential conversations with the UN to ensue.[101]

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94. Rep. of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities, *supra* note 92, at 12.

95. *Id.*

96. *See* JOHNSON, *supra* note 8; Victoria Samson, *Insight—UN Resolution 75/36: How Changing the Question May Change the Results*, SECURE WORLD FOUND. (May 5, 2021), https://swfound.org/news/all-news/2021/05/insight-un-resolution-7536-how-changing-the-question-may-change-the-results [https://perma.cc/GW7V-VE3W].

97. G.A. Res. 72/250 (Jan. 12, 2018).

98. *Id.*

99. *Id.*

100. Samson, *supra* note 96.

101. *Id.*

Resolution 75/36 noted the "rapid advances of technologies in space systems" and recognized efforts to prevent an arms race include efforts "on Earth or in outer space."[102] In part, Resolution 75/36 encouraged Member States to study space security threats, characterize threatening actions, and share ideas on "implementation of norms, rules and principles of responsible behaviours."[103] Additionally, it requested the Secretary-General to submit a substantive report based on Member State views.[104]

The General-Secretary's report is the most current picture of the States' views on space security threats. States have raised concerns about "deliberate acts intended to interfere with, deny, disrupt, degrade, damage or destroy space systems."[105] States also regard military policies for weaponizing space as threatening.[106] The development and use of anti-satellite weapons pose a "possible threat to international peace and security."[107] Irresponsible behaviors by States, which may be deemed as threatening, were listed to include: testing anti-satellite weapons, using anti-satellite capabilities, developing counter-space capabilities, placing weapons in space, threatening or interfering with civil and military space systems, jamming and spoofing, and many others.[108]

States have recommended approaches, including: "developing and implementing norms, rules and principles of responsible behaviours and reduction of the risks of misunderstanding and miscalculations"; developing an approach based on behaviors supported by monitoring; negotiating a legally binding instrument on the "prevention of an arms race in outer space"; and developing a capabilities-based approach.[109] Although a seemingly straightforward summary of international ideals, each individual States' recommendations varied greatly. Summaries of key player States' responses are provided below.

1. United States

In its submission in response to Resolution 75/36, the United States affirmed its "shared interest . . . to act responsibly in space to ensure the safety, stability, security . . . of outer space activities."[110] It additionally

102. G.A. Res. 75/36, at 2–3 (Dec. 16, 2020).
103. *Id.* at 3.
104. *Id.*
105. *Reducing Space Threats*, *supra* note 1, ¶ 11.
106. *Id.* ¶ 14.
107. *Id.*
108. *Id.* ¶ 19.
109. *Id.* ¶ 20–28.
110. National Submission Reply from Member State U.S. on UN General Assembly Resolution 75/36 Reducing Space Threats Through Norms, Rules and Principles of Responsible Behaviours to United Nations Sec'y Gen., at 1 (2021), https://front.un-arm.org/wpcontent/uploads/2021/05/

"affirms that the United States will lead in promoting shared norms and forge new agreements on outer space."[111] In discussing threats, the United States recognized other States "are developing, operationalizing, and stockpiling a variety of ASAT weapons" noting their potential to be used to confront national space security capabilities.[112] It noted a particular difficulty is discerning between the multiple uses of space systems and the operators' intent poses a challenge in determining if a space system is a threat.[113]

The United States proposed the States continue to comply with international laws foundational to the international space legal framework, including the Treaty of 1967,[114] Agreement of 1968,[115] Convention of 1972,[116] and Convention of 1975.[117] It also suggests developing TCBMs and improving communications between satellite operators.[118] Although it did not provide specific recommendations, it suggested further discussions regarding interference with security-related space systems and weapons testing, which might "cause misperceptions and misunderstandings . . . increas[ing] tensions or lead[ing] to conflict between States."[119] Most notably, the U.S. advocates for "[v]oluntary, *non-legally binding* norms, rules, and principles," stating advantages such as quick adaptations to developments in technologies, which allows for novel uses of space and "civil and commercial operators to have more of a voice in their development."[120]

In a June 2021 statement on the Conference on Disarmament, Ambassador Wood, U.S. Permanent Representative to the Conference on Disarmament, relayed the United States' view on the topic of the PAROS treaty, stating: "we will consider proposals for space arms control if they

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04292021-US-National-Submission-for-UNGA-Resolution-75.36.pdf [https://perma.cc/M9Q8-JP86] [hereinafter National Submission].

111. *Id.*

112. *Id.* at 2.

113. *Id.* at 5. The United States provides an example to this challenge. *See id.*

> If the pattern of life of a satellite, for example, is consistent with that of its stated intent, then there will likely be less concern about its operations. However, even if a system is operated in ways consistent with the typical pattern of life for its stated mission, operating in a relatively transparent manner, or limiting its proximity operations to those requesting support, then such a system might still be perceived as a threat.

Id.

114. *Id.* (the Charter of the United Nations, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies).

115. *Id.* (the Agreement on the Rescue of Astronauts, the Return of Astronauts, and Return of Objects Launched into Outer Space).

116. *Id.* (the Convention on International Liability for Damage Caused by Space Objects).

117. *Id.* (the Convention on Registration of Objects Launched into Outer Space).

118. *Id.* at 6.

119. *Id.* at 7.

120. *Id.* (emphasis added).

are equitable, effectively verifiable, and enhance the national security of the United States and our allies. While no proposals meeting such criteria have been introduced into this body thus far, we nevertheless remain open to their consideration."[121] He noted the issue with the proposed PAROS treaty was "a lack of clear definitions and effective verification mechanisms . . . which are significant challenges for any space arms control proposal."[122] Additionally he noted "any negotiations on a legally binding instrument would be protracted and outpaced by technological advances" while reiterating developing norms of responsible behaviors would be a more effective approach.[123]

The U.S. Space Force's position, reflecting language from the UN General Assembly Resolution, states: "military space forces should make every effort to promote responsible norms of behavior that perpetuate space as a safe and open environment in accordance with the Laws of Armed Conflict, the Outer Space Treaty, and international law, as well as U.S. government and Department of Defense policy."[124] Across all publicly-facing fronts, the United States appears to welcome forging new agreements.[125] Undermining the United States' diplomatically correct press statements are: its reluctance to offer any concrete proposals or actions;[126] its emphasis on *non-legally binding* measures;[127] and its opposition to adopt any measures that threatens to limit its domain in space.[128]

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121. *Remarks by Ambassador Wood for the Session on the Prevention of an Arms Race in Outer Space*, U.S. MISSION TO INT'L ORG. IN GENEVA (June 1, 2021), https://geneva.usmission.gov/2021/06/01/remarks-by-ambassador-wood-for-the-session-on-the-prevention-of-an-arms-race-in-outer-space/ [https://perma.cc/MM38-24YR] [hereinafter *Remarks by Ambassador Wood*].

122. *Id.*

123. *Id.*

124. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 3 (quoting U.S. SPACE FORCE, SPACEPOWER: DOCTRINE FOR SPACE FORCES 43 (2020)).

125. *See* National Submission, *supra* note 110, at 1; *see also Remarks by Ambassador Wood*, *supra* note 121.

126. *See* National Submission, *supra* note 110, at 5.

127. *Id.* (emphasis added).

128. *See supra* Section II.B. The United States' resolute opposition to the proposed PAROS Treaty has stalled efforts on adopting a new treaty. Matignon, *supra* note 76. Additionally, On November 6, 2021, the First Committee of the UN General Assembly passed five resolutions for outer space security: "'Prevention of an arms race in outer space,' 'Further practical measures for the prevention of an arms race in outer space,' 'No first placement of weapons in outer space,' 'Transparency and confidence-building measures in outer space activities,' and 'Reducing space threats through norms, rules and principles of responsible behaviours.'"*PAROS*, *supra* note 77. The United States, however, voted against four of the resolutions and only adopted the resolution reducing space threats. *Id.*

2. Russia

In its opening response, Russia notes the "risks that outer space may be transformed into a springboard for aggression and war have lately become increasingly real."[129] Russia predicts "the most negative effect on international peace and security . . . result[ing] in dramatic destabilization and an arms race in outer space" will come from other States creating ASAT weapons and taking steps to use outer space for defensive and offensive military operations.[130]

Russia calls for reaffirming compliance with already existing international treaties and agreements, but is "consistently pursuing a policy aimed at launching negotiations on the elaboration of an international legally binding instrument to prevent an arms race in outer space."[131] Russia's first recommendation is to negotiate the Proposed Treaty it and China drafted.[132] It also recommends an international initiative "not to be the first to place weapons in outer space (NFP)," which has been signed onto by thirty States.[133] Finally, although Russia is seemingly in support for "appropriate, reliably verifiable, legally binding multilateral agreements[,]" it takes the position that preventing an arms race in outer space is outside the purview of the Committee on the Peaceful Uses of Outer Space and rather falls under the authority of the UN Disarmament Committee.[134]

3. China

Similar to preceding recommendations, China acknowledges "the weaponization of and an arms race in outer space becomes more prominent and pressing."[135] However, China blames the root cause on a "certain country [that] sticks to the Cold-War mentality, pursues unilateral military and strategic superiority in space, and increase[s] its attempts, plans and actions to seek dominance in space."[136] China is referring to the United States; specifically, the U.S. establishment of the Space Force and Space

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129. Reply from Member State Russia on Document of the Russian Federation Pursuant to UN GA Resolution 75/36 of 7 December 2020 to United Nations Sec'y Gen., at 1 (2021), https://front.un-arm.org/wp-content/uploads/2021/04/russian-rederation-eng.pdf [https://perma.cc/6UWC-56G8] (unofficial translation).

130. *Id.* at 2.

131. *Id.* at 3, 6.

132. *Id.* at 6.

133. *Id.*

134. *Id.* at 8.

135. Reply from Member State China on Document of the People's Republic of China Pursuant to UNGA Resolution 75/36 (2020) to United Nations Sec'y Gen., at 4 https://front.un-arm.org/wp-content/uploads/2021/05/Chinas-Position-on-Outer-Space-SecurityEnglish.pdf [https://perma.cc/DT7F-X3QD] [hereinafter Reply from Member State China] (English translation).

136. *Id.*

Command, testing of ASAT weapons, and use of language indicating "strategy, expressions like competition, adversaries and threat[s]."[137] China's response to the Secretary General's report also takes an unequivocal stance.

China's response to Resolution 75/36, the Document of the People's Republic of China pursuant to UNGA Resolution 75/36, points to the insufficiency of existing international legal instruments "to deal with the new challenges."[138] Contrary to the preceding recommendations, China takes a strong stance that it "is imperative to conclude an international legally-binding instrument at an early date" and although TCBMs should be discussed, they should not replace enacting legally-binding agreements.[139] Although it does not explicitly outline any legally binding measures that should be taken, China supports establishing another group (similar to GGE) on PAROS to negotiate such a treaty.[140] It notes "[w]hether a country has the political will to participate in such a negotiation is the touchstone for its sincerity of behaving responsibly."[141]

China's recommendations also contrast with other States' responses in that it raises the equal rights and interests of all countries, including developing countries and "emerging space-faring countries."[142] China demands major States to "abandon the mindset of unilateralism, the pursuit for absolute superiority . . . and the approaches that stress[] the security of one single country . . . by undermining the security interests of other countries or even common security of the international community."[143] Unlike the preceding recommendations, China acknowledges a disparity in individual countries' space capabilities.[144] In short, the most influential states, with the greatest space-faring capabilities, can set the course for all other countries to follow.

4. Iran

Iran conveys its recommendations more bluntly. It calls out the reality of the disparity in power, noting that creating new norms will impede emerging space powers.[145] Iran calls the making of new rules and

137. *Id.* at 4–5.
138. *Id.* at 1.
139. *Id.* at 2–3.
140. *Id.* at 7.
141. *Id.* at 9.
142. *Id.* at 8.
143. *Id.* at 6.
144. *Id.*
145. Permanent Mission of the Islamic Republic of Iran on Views and Analysis of the Islamic Republic of Iran on the Resolution "Reducing Space Threats Through Norms, Rules, and Principles of Responsible Behavior" Proposed by United Kingdom of Great Britain and Northern Ireland in the First Committee of the UN (A/C.1/75/L.45/Rev.1) 11/6/2020 to United Nations Sec'y Gen., at 2

norms "[i]ll-timed, inefficient, unworkable and unreasonable" and "doomed to fail," but calls for establishing a committee to "negotiate a long awaited legally binding treaty."[146] Although the reason Iran wants legally binding measures is not unequivocally conveyed, it may be in response to its view that irresponsible behavior, if neglected, "threaten[s] [the] heritage for other States."[147]

5. North Korea

As of the publishing of this Note, North Korea has not submitted a response to the UN General Assembly Resolution 75/36.[148]

III. RECOMMENDATIONS

The UN General Assembly's current recommendations will not effectively stop or stall an outer space arms race. The TCBMs are inadequate and ineffective. Legally binding measures are necessary to make meaningful progress.

A. Current Measures Are Inadequate and Ineffective: It Is Too Late for TCBMs

The TCBMs are idealistic, naïve, and ineffective. Concerns of an amounting space arms race have not been assuaged in the years since the publication of the GGE report. Russia's war with Ukraine and escalating tensions with Europe are "the biggest threat[s] to peace and security in Europe since the end of the Cold War."[149] Additionally, in November 2021, Russia tested an anti-satellite device to destroy its own satellite deliberately.[150] The destruction caused over 1,500 pieces of debris that threatened the safety of the seven crew members on the international space station.[151]

(2021), https://front.un-arm.org/wp-content/uploads/2021/04/attachment-of-Iran-views-on-res-75-36.pdf [https://perma.cc/LRM6-ENKM].

146. *Id.* at 2–3.

147. *Id.* at 2.

148. *Report of the Secretary-General on Reducing Space Threats Through Norms, Rules and Principles of Responsible Behaviors*, UNITED NATIONS OFF. FOR DISARMAMENT AFFS. (https://www.un.org/disarmament/topics/outerspace-sg-report-outer-space-2021/) [https://perma.com/E7WE-9VFZ] (links to list of replies by Member States and other entities).

149. JEFFREY MANKOFF, CTR. FOR STRATEGIC & INT'L STUD., RUSSIA'S WAR IN UKRAINE: IDENTITY, HISTORY, AND CONFLICT 1 (2022), https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/220422_Mankoff_RussiaWar_Ukraine.pdf?tGhbfT.eyo9DdEsYZPaTWbTZUtGz9o2_ [https://perma.cc/FRW5-CFNR].

150. Jeff Foust, *Russia Destroys Satellite in ASAT Test*, SPACE NEWS (Nov. 15, 2021), https://spacenews.com/russia-destroys-satellite-in-asat-test/ [https://perma.cc/NNU3-8VMX].

151. *Id.*

More significantly, this action indicates Russia's posturing in militarizing outer space and its readiness to act. State Department spokesman, Ned Price, commented this action "clearly demonstrates that Russia's claims of opposing the weaponization of space are disingenuous and hypocritical."[152] He continued to state, "Russia's test of direct-ascent anti-satellite weapons clearly demonstrate that Russia continues to pursue counterspace weapon systems that undermine strategic stability and pose a threat to all nations."[153] These actions were unilateral and threatening.

Russia's actions also went against the TCBMs. While global political tensions worsen on Earth, it is conceivable that Russia could take the conflict to outer space. The Director of Staff of the U.S. Space Force, Lieutenant General Nina Armagno, said, "if they can destroy a Russian satellite, you can bet that they can destroy an American satellite, a military or commercial satellite."[154] Russia's actions have supported that TCBMs are inadequate and ineffective. TCBMs did not deter Russia's aggressive actions, nor can Russia be held accountable for its violations of the TCBMs.

B. Legally Binding Measures Are Essential

The current legal framework is outdated and unusable. The legal framework for maintaining the peaceful use of space and for preventing an arms race in outer space is derived from agreements made over forty years ago. In 2022, the first and most prominent agreement, the Outer Space Treaty of 1967, reached its fifty-fifth year since it entered into force.[155] As of 2021, there are over 10,000 private space-related companies, at a combined value of over $4 trillion.[156] Towards the end of 2021, there were seven astronauts in the International Space Station[157] and 7,500 active satellites in space.[158] Space-related technologies and capabilities used today were not conceivable in the 1950s.

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152. *Id.*

153. *Id.*

154. Sandra Erwin, *U.S. Officials: Anti-Satellite Test Another Sign of Russia's Aggressive Intentions in Space*, SPACE NEWS (Nov. 17, 2021), https://spacenews.com/u-s-officials-anti-satellite-test-another-sign-of-russias-aggressive-intentions-in-space/ [https://perma.cc/89XG-A3Y5].

155. *The Outer Space Treaty at a Glance*, ARMS CONTROL ASS'N (Oct. 2020), https://www.armscontrol.org/factsheets/outerspace [https://perma.cc/8XT9-DLZK]. For context, 1969 was the year the first man walked on the moon. *July 20, 1969: One Giant Leap for Mankind,* NASA (July 20, 2019), https://www.nasa.gov/mission_pages/apollo/apollo11.html [https://perma.cc/LY7F-ME8Y].

156. Koetsier, *supra* note 3.

157. *International Space Station,* NASA (Jan. 6, 2022), https://www.nasa.gov/mission_pages/station/expeditions/expedition66/index.html [https://perma.cc/C2DP-XKYD].

158. Harry Baker, *How Many Satellites Orbit Earth?,* LIVE SCI. (Nov. 14, 2021), https://www.livescience.com/how-many-satellites-orbit-earth [https://perma.cc/F3J5-MZP4].

The 1967 Treaty's language is inadequate to address the threats at large in today's age. Article IV of the Treaty uses language such as "objects carrying nuclear weapons," "weapons of mass destruction," and "conduct of military manoeuvres [sic]."[159] However, space threats are not just nuclear weapons and weapons of mass destruction. As described above, they take many different forms, such as "kinetic physical, non-kinetic physical, electronic, and cyber."[160] For example, China's laser weapon, which can damage and disrupt satellites, poses a threat to space system security. Yet this form of space threat does not fall under the definition of a nuclear weapon or weapon of mass destruction.[161]

In addition, the 1967 Treaty's language is outdated because these newly formed technologies do not need to be placed in orbit to pose a threat to space systems and space security. Many of these technologies, especially within cyber and electronic forms, operate on land. Finally, as the United States noted in its response to Resolution 75/36, many systems and technologies being used could serve dual purposes—the multiple uses of space systems and the operators' intent pose a challenge in determining if a space system is a threat.[162] Russia's ability to create a "nesting satellite" containing a smaller satellite, which is able to fire small projectiles, is an example of this quandary.[163] A satellite sent to orbit, for seemingly valid research or data collecting purposes, may harbor more sinister capabilities that pose a threat.

These examples represent only the technology that is currently and publicly known but can be extrapolated to the new technologies being developed by States who are emboldened to pursue outer space as a military front. The 1967 Treaty's language does not encompass the threats seen today. These threats come in various forms with multiple uses; thus, the 1967 Treaty will not suffice to prohibit future use of space technologies that threatens space security.

C. The U.S. Should Lead Efforts to Develop Legally Binding Proposals

The United States must change its position and not only support but lead the effort to develop legally binding measures to prevent space security threats. The moral imperative arises because: (1) the United States is a key player in the current conflict; (2) the United States has the most to

159. Treaty on Principles Governing the Activities of State in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *supra* note 5.

160. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 3.

161. CHALLENGES TO SECURITY IN SPACE, *supra* note 27, at 20.

162. G.A. Res. 48/305 (Oct. 15, 1993).

163. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 14.

lose; and (3) the United States carries considerable influence with the UN and NATO.

First, the United States is a key player in this mounting outer space arms race. The space race has begun and continued to be a "one-up" competition. In 1955, the United States announced its intent to launch the first satellite into space; the USSR responded with its own satellite.[164] In 1957, the USSR launched a dog into space; in 1961, the United States launched a chimpanzee into space.[165] In 1961, USSR's Yuri Gagarin was the first man to reach space; the U.S.'s Alan Shepard reached space less than a month later.[166] This space race never *truly* ended and continues to this day. Although other space-faring nations are catching up, Russia and the United States continue to lead the race.

Second, the United States has the most to lose. The United States has the largest space program with a budget of almost $41 billion.[167] The budget accounts for about a third of active spacecraft in orbit in 2015.[168] Of the private space technology companies, fifty-two percent (52%) are American.[169] When (not *if*) a major military conflict happens in outer space, the United States will economically and fiscally suffer significantly more than other space-faring nations.

Third, the United States has considerable influence with the UN and NATO. To the UN, the United States is one of five permanent members of the Security Council and is the largest contributor to both the UN budget and the UN peacekeeping budget.[170] To NATO, the United States is the largest contributor of troops, resources, and finances, and it sets the NATO agenda more often than other nations.[171] The United States' influence is an important factor to consider when looking at the political stances NATO takes.

Because of its role in the arms race, its fiscal investments, and its political influence, the United States holds a vital role in determining the future of the outer space arms race. The United States must change its position on UN Resolution 75/36. It must act to legally bind the space-faring nations (and soon-to-be-space-faring nations) from proceeding in

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164. *Space Race Timeline*, ROYAL MUSEUMS GREENWICH, https://www.rmg.co.uk/stories/topics/space-race-timeline [https://perma.cc/Y48S-JKH9].

165. *Id.*

166. *Id.*

167. Koetsier, *supra* note 3.

168. *The 10 Countries Most Active in Space*, AEROSPACE TECH. (Dec. 21, 2015), https://www.aerospace-technology.com/features/featurethe-10-countries-most-active-in-space-4744018/ [https://perma.cc/4NTA-M9TG].

169. Koetsier, *supra* note 3.

170. *The USA's International Influence*, BBC, https://www.bbc.co.uk/bitesize/guides/z6frqp3/revision/3 [https://perma.cc/9R96-C3JH].

171. *Id.*

the direction of an outer space arms race. The United States must immediately introduce a resolution to the UN General Assembly for a total ban on developing and testing ASAT Weapons. More temporarily, the United States must propose the 1967 Outer Space Treaty be amended to redefine space weapons. More permanently, the UN and NATO should commission a joint committee to draft legally binding and concrete space policies.

1. The U.S. Should Propose a Total Ban on Developing and Testing ASAT Weapons

Many versions of ASAT bans have been proposed over the last couple of decades. In 2008, the proposed Treaty on Prevention of the Placement of Weapons in Outer Space proposed not placing any weapons in space and not using force against other States' outer space objects.[172] It only banned space-based ASAT weapons, however, allowing land-based ASAT weapons to be developed and used.[173] In 2020, Ms. Blatt suggested "a limited test ban treaty: an agreement to stop testing debris-producing ASATs."[174] Immediately, it would reduce debris accumulation; long term, it would reduce state confidence and reliance on these weapons.[175] In 2022, the Center for Strategic & International Studies (CSIS) published an article proposing an (initially voluntary) moratorium to only kinetic energy tests aimed at orbital objects.[176] This proposal aims to mitigate "the most detrimental outcome of such testing, not to constrain any nation's right to defend itself."[177]

The States' posturing with ASAT weapons to oppose "space threats" is a self-constructed dilemma. The CSIS authors accurately point out this is "The Prisoner's Dilemma," "a situation in which two perfectly rational actors, ignorant of the decisions of the other, will wisely pursue their own self-interest, but ultimately suffer a worse fate than if they had cooperated."[178] Although the authors specify the United States, China, India, and Russia, all states participating in developing ASAT weapons

172. *Id.*

173. Talia M. Blatt, *Anti-Satellite Weapons and the Emerging Space Arms Race,* HARV. INT'L. REV. (May 26, 2020), https://hir.harvard.edu/anti-satellite-weapons-and-the-emerging-space-arms-race/ [https://perma.cc/9WC3-2C37].

174. *Id.*

175. *Id.*

176. Douglas Loverro, Brian G. Chow, Brandon W. Kelley, Brian Weeden & Robert Cardillo, *The ASAT Prisoner's Dilemma: Making the Case for U.S. Leadership and a Unilateral Moratorium on Kinetic-Energy Anti-Satellite Testing,* AEROSPACE SEC. (Jan. 11, 2022), https://aerospace.csis.org/the-asat-prisoners-dilemma/ [https://perma.cc/A64N-3Y9S].

177. *Id.*

178. *Id.*

are prisoners to their self-constructed dilemma.[179] Each state's justification in developing their respective space programs is pointing the fingers at another state's threatening conduct in space.[180] This self-constructed dilemma is evident when examining the rhetoric around the U.S. development of the ASAT Program. The ASAT Program was part of President Reagan's desire to strengthen national security while "the Soviets . . . have the world's only operational ASAT and . . . the Soviet space threat is growing more serious."[181] If the Soviet Union had not developed an operational ASAT system a decade prior to the United States' ASAT program,[182] it is unclear whether the United States have taken such a position.

Anything less than a total ban will allow countries to continue serving their self-interests by finding ways to reclassify their ASAT weapons as whatever category remains permissible. If states ban creating and testing ASAT weapons, they will no longer have a reason to develop them.

In April 2020, the United States became the first nation to commit "not to conduct destructive direct-ascent anti-satellite missile testing."[183] Although it made a plea to other member States,[184] the United States should go further to introduce a resolution to the General Assembly, imposing a *total ban* on creating, developing, using, testing, and deploying land and space-based ASAT weapons.[185] This resolution will act as a continuation of the conversation surrounding the 2008 proposed Treaty on the Prevention of the Placement of Weapons in Outer Space; however, it will not provide for exceptions to permissible uses of ASAT weapons.[186] Importantly, it will also become legally binding on the member states

179. *Id.*

180. *See* Reply from Member State China, *supra* note 135, at 4.

181. Statement by Assistant to the President for Press Relations Fitzwater on the United States Antisatellite Program, 1 PUB. PAPERS 500 (May 12, 1987).

182. *Id.*

183. *Agenda Item 5: General Exchange of Views—U.S. National Statement*, U.S. MISSION TO INT'L ORG. IN VIENNA (June 3, 2023), https://vienna.usmission.gov/u-s-national-statement-at-copuos-2022/ [https://perma.cc/HKJ8-U9HY]; *see also* W.J. Hennigan, *To Slow an Anti-Satellite Arms Race, White House Bans U.S. Tests of Space Weapons*, TIME (April 18, 2022), https://time.com/6168148/space-weapons-ban-harris/ [https://perma.cc/5MK5-BHQL].

184. Hennigan, *supra* note 183.

185. Indeed, at the May 2022 UN Open Ended Working Group (OEWG) on Reducing Space Threats, diplomats reported that the discussions proved positive and set the stage for a US led proposal "against destructive direct-ascent anti-satellite missile testing." Theresa Hitchens, *UN Talks on Space Norms Surprisingly Collegial, but Fireworks to Come: Sources*, BREAKING DEF. (May 31, 2022), https://breakingdefense.com/2022/05/un-talks-on-space-norms-surprisingly-collegial-but-fireworks-to-come-sources/ [https://perma.cc/VA2K-JVD5].

186. Matignon, *supra* note 76.

without necessitating a signature or ratification.[187] This will be the most effective and efficient way to make progress after years of stalling. The resolution will serve as a vital first step that immediately stays the escalating outer space arms race, while (idealistically) more productive negotiations continue to ratify, accept, and approve a comprehensive treaty.

2. The U.S. Should Propose to Amend the 1967 Outer Space Treaty

Realistically, in the current geopolitical environment, the states will not readily agree to a new treaty prohibiting current and future attempts at militarizing outer space. No state will want to be the first to lay aside its military capabilities. However, the states have already ratified, accepted, and approved the 1967 Outer Space Treaty. Thus, a more practical and less controversial approach would be to amend the existing treaty.

As noted above, the Outer Space Treaty is inadequate to address the current concerns permitting the rise of the outer space arms race. Although by no means comprehensive or adequate for long-term use, if updated, the Outer Space Treaty can continue to provide the basic legal framework for how the states may approach their interactions with outer space.

Updating the Outer Space Treaty would start with expanding on Article IV.[188] In the current version, States pledged "not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction" maintaining that celestial bodies would be used for peaceful purposes.[189] The language "nuclear weapons" and "weapons of mass destruction" needs to be revised with broader language that not only includes conventional weapons of mass destruction, but also includes weapons that possess "kinetic physical, non-kinetic physical, electronic, and cyber" capabilities.[190] The definition must include both land-based and space-based capabilities and a provision prohibiting dual-use satellites also maintaining ASAT capabilities. The language must be broad enough to encompass new technologies that are being created and developed.

187. *International Agreements*, SCIENCE SAFETY SEC. (Feb. 15, 2018), https://www.phe.gov/s3/law/Pages/International.aspx [https://perma.cc/X4HE-GMK4].

188. Treaty on Principles Governing the Activities of State in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *supra* note 5.

189. *Id.*

190. SPACE THREATS ASSESSMENT 2021, *supra* note 4, at 3.

3. The States Should Create a Joint NATO and UN Commission and Expand NATO to Include Concrete Outer Space Policies

The security of outer space has garnered the attention of NATO as well.[191] Regarding space security, NATO's recommendations are "to develop international norms of behaviour that are elaborated jointly and are concrete and immediately applicable."[192] NATO uses language that is strikingly similar language to the recommendation of the General Secretary.

The UN and NATO both have an interest in preventing an outer space arms race. NATO's interest and "increased engagement" is for defensive purposes—"looking into ways to protect against attacks or reduce their negative effects . . . on allied forces."[193] The UN Committee on the Peaceful Uses of Outer Space's interest is in maintaining outer space for "the exploration and use of space for the benefit of all humanity: for peace, security and development."[194] Neither can occur effectively if member states are posturing their military capabilities through an outer space arms race.

The UN and NATO should create a joint committee addressing these concerns. This committee should aim to draft concrete proposals and policies that abate an outer space arms race, provide for international defense, and encourage the peaceful exploration of space. The benefits of a joint committee are three-fold. First, this joint cooperation, ideally leading to an adopted treaty or joint resolution, will hold member states accountable by two international entities promoting adherence. Second, NATO's cooperation in setting outer space policies and drafting a possible resolution or treaty provides much needed legitimacy to this issue. The UN Committee has made no progress since 1967 in abating the threats we see today. Neither the UN nor member states have taken a possible outer space arms race seriously. Now, because this far-fetched idea has come to fruition, we need a powerful body, like NATO, to step in. Third, this joint cooperation will set the tone for decades of future space interactions. Unlike the Outer Space Treaty, adopted when many member states could not fathom creating space agencies, this joint resolution allows newer space-faring nations to participate. We now have more language and more cognizance to enumerate a more comprehensive framework to lead us into the next generations of space explorations.

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191. KARL-HEINZ BRUNNER, NATO PARLIAMENTARY ASSEMBLY, SPACE AND SECURITY—NATO'S ROLE ¶ 1 (2021).

192. *Id.* ¶ 81.

193. *Id.* ¶ 63.

194. *Committee on the Peaceful Uses of Outer Space*, UNITED NATIONS OFF. FOR OUTER SPACE AFFS., https://www.unoosa.org/oosa/en/ourwork/copuos/index.html [https://perma.cc/WPM9-3FDE].

CONCLUSION

Unsurprisingly, the United States is recommending voluntary and non-legally binding measures.[195] Negotiating and imposing legally binding measures would greatly inhibit the United States' unchecked command in outer space. As threats from other States continue to grow, however, legally binding measures need to be implemented to protect the interests of all space-faring and space-developing nations. The United States must take the initiative in abating the outer space arms race. First, the United States must introduce a resolution to the General Assembly, proposing a total ban on creating, developing, testing, and using ASAT weapons. This initial action will put a temporary stay on the escalating tensions already forming in outer space. Second, the United States must propose the UN adopt an amendment to the 1967 Outer Space Treaty, including a broader and more current definition of prohibited weapons in outer space. Finally, the UN and NATO should commission a joint committee to set concrete, legally binding space policies with international security and peaceful exploration of space in consideration. Without these efforts and a more comprehensive framework to guide states' future interactions with space, the states will lead Earth further into an arms race in a new domain, this time, with the possibility of deadlier consequences.

195. NATIONAL SUBMISSION, *supra* note 110, at 7.