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The Weaponization of Outer Space: Preventing an Extraterrestrial Arms Race

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The Weaponization of Outer Space: Preventing an Extraterrestrial Arms Race

BLAIR STEPHENSON KUPLIC†

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I. Introduction

Wars in outer space have long been the subject of science fiction books and movies, but recent advances in technology have now transformed what was once reserved for fiction into a grave reality. The possibility of an arms race in outer space is now something that all countries must consider. In December 2012, the United Nations reported that the Disarmament and International Security Committee was hearing statements from member countries suggesting:

[A]chieving space security and defusing the need for countries to weaponize outer space were issues of urgent priority, as an ever increasing number of space actors had made that environment vulnerable, and progress to fill in the gaps in space law was fragmented and only a prelude to what was needed . . .

The successful launch by North Korea of a long-range missile on December 12, 2012—reportedly to place a satellite into outer space—further underscored this need to halt the arms race in outer space. There is ambiguity in current international law regarding the weaponization of outer space. Although the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) expressly prohibits weapons of mass destruction (WMD) in outer space, it does not contain such explicit language regarding other weapons in outer space. In fact, many have interpreted this to mean that non-WMD armaments in space do not violate international law. This view has been supported by the tepid international response to the recent weaponization of outer space. However, a closer look at the Outer Space Treaty, in addition to customary international law, suggests the permissibility of non-WMD armaments in outer space is not indisputable. Even if non-WMD weapons are currently permissible in outer space, a rule of customary international law may be developing that would render them illegal. Regardless, the ambiguity in current international law regarding weapons in outer space calls for global cooperation to ensure a halt to an arms race in outer space.

Part I of this Comment examines current international law regarding weapons in outer space, and Part II outlines the recent militarization of outer space in terms of new technologies and new governments in the outer space arena. Next, Part III takes a closer look at the Outer Space Treaty; Part IV discusses the legality of non-WMD weapons in outer space, and Part V discusses measures taken thus far to prevent an arms race in outer space. Finally, Part VI sets forth this Comment’s recommendations for preventing an
II. The International Law of Weapons in Outer Space

The Soviet launch of Sputnik on October 4, 1957, served as a wake-up call to the international community. In addition to prompting countries—the United States, in particular—to power up their own space programs, Sputnik also gave notice to the international community that there was a dire need for a legal framework for countries beginning to explore outer space.

A. The Development of International Law of Outer Space

Brian Wessel, an intern at the International Law Practice Group of the National Aeronautics and Space Administration’s Office of General Counsel in 2010, explains that there are three distinct periods in the history of the law of outer space. These three periods are distinguished by their use of primarily binding or nonbinding agreements on outer space.

During the first period, from the 1960s to the 1970s, binding space treaties were used to establish the law of outer space. This period gave birth not only to the Outer Space Treaty, but also to three additional treaties through the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS): The 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, the 1972 Convention on International Liability for Damage Caused by Space Objects, and the 1975 Convention on Registration of

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8 Id. at 25-26.
10 Id. at 292-94.
11 Id. at 292.
12 Outer Space Treaty, supra note 3.
13 Wessel, supra note 9, at 292.
15 Convention on International Liability for Damage Caused by Space Objects,
Objects Launched into Outer Space. These treaties elaborated upon specific provisions of the Outer Space Treaty.

The second period of outer space law took place during the 1980s and 1990s, and consisted primarily of nonbinding agreements. During this period, a collection of nonbinding agreements called the United Nations Principles on Outer Space developed areas of law relating to outer space, specifically, the use of artificial earth satellites for international direct television broadcasting, the remote sensing of Earth from outer space, the use of nuclear power sources in outer space, and the idea of the "province of mankind" principle in Article I of the Outer Space Treaty.

Nonbinding agreements also characterize the third period of outer space law in the 2000s, but Wessel distinguishes this period as focused more on the technical areas of outer space law. So far in this period, the General Assembly has reinterpreted specific provisions of previous treaties and approved technical guidelines on orbital debris and nuclear power sources. Additionally, Wessel notes the weakening of these nonbinding agreements through the use of self-judging exceptions in the technical guidelines, where parties are allowed to deviate from the rules of the agreement if they themselves determine that they meet the

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17 Wessel, supra note 9, at 294.

18 Id.


23 Wessel, supra note 9, at 294.

24 Id. at 294-95.
"relatively vague criteria" for the exceptions. This weakens further the power of nonbinding agreements by allowing parties to determine when they can deviate from the rules. The implications of binding versus nonbinding legal instruments are further discussed in Section D below.

B. The Outer Space Treaty

A direct result of the Soviet launch of Sputnik was the establishment of the UN COPUOS in 1959. Now, with 71 member states, the Committee serves:

[T]o review the scope of international cooperation in peaceful uses of outer space, to devise program[s] in this field to be undertaken under United Nations auspices, to encourage continued research and the dissemination of information on outer space matters, and to study legal problems arising from the exploration of outer space.

Since its creation, UN COPUOS has functioned as the vehicle for negotiating most multilateral agreements on outer space, which are then adopted by the General Assembly and implemented for the United Nations Office for Outer Space Affairs (UNOOSA). The most important of these agreements is undoubtedly the Outer Space Treaty, which has served as the basic framework of outer space law. The Outer Space Treaty has been referred to as the "constitution" and the "magna carta" of outer space.

The Outer Space Treaty was designed not only to halt the space race initiated by the launch of Sputnik, but also to protect

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25 Id. at 296.
28 Wessel, supra note 9, at 291.
29 Outer Space Treaty, supra note 3.
existing United States and Soviet technology in space. At the
time of the signing of the Outer Space Treaty, the tensions of the
Cold War were high, and both the United States and Russia
worried that the other would develop new space technology with
nuclear missiles. Additionally, the United States feared Soviet
interference with its intelligence satellites, which were then still
safe from Soviet air-defenses. Specific provisions of the Outer
Space Treaty will be discussed further in Part III of this paper.

C. Other Principles of International Law

In addition to treaties, other principles of international law
likely apply to outer space. There is, however, some debate over
this issue. Some scholars argue that provisions of international
law—those related to the use of force in self-defense, in
particular—do not apply to outer space because the Outer Space
Treaty does not enumerate which principles of international law
apply to outer space. However, Article III of the Outer Space
Treaty requires parties to “carry on activities in the exploration
and use of outer space, including the moon and other celestial
bodies, in accordance with international law, including the Charter
of the United Nations, in the interest of maintaining international
peace and security and promoting international cooperation and
understanding.” Article III makes it difficult to argue that the
text of the Outer Space Treaty does not require that general
principles of international law apply in outer space as well.
Accordingly, most scholars, including Professors Ivan A. Vlassic
and Manfred Lachs, as well as Major Christopher M. Petras, agree
that relevant principles of international law apply to outer space.
Although Article III renders relevant principles of international
law—including customary international law and parts of the
United Nations Charter—applicable to outer space, it does not

32 Id.
34 Id.
36 Outer Space Treaty, supra note 3, art. III.
37 See Maogoto & Freeland, supra note 35, at 1098.
automatically include every provision of international law, as certain rules of international law are impossible to apply to outer space. Customary international law and the application of the United Nations Charter are further explained below.

D. Customary International Law

As a result of Article III of the Outer Space Treaty, customary international law also regulates the weaponization of outer space. The gaps in written international law are filled with the unwritten customary international law because there is no central global legislation, and because the written laws of treaties "cannot serve as a basis for a coherent legal order." Customary international law is recognized by the Restatement (Third) of Foreign Relations Law of the United States as a source of international law. Customary international law is also applied by the International Court of Justice when deciding compliance with international law.

Although unwritten, customary international law is a form of law with as much weight as treaties. The Restatement (Third) for Foreign Relations Law of the United States pronounces that "customary international law results from a general and consistent practice of states followed by them from a sense of legal obligation." David Koplow further explains that in order to create a binding rule of customary international law, objective and subjective criteria must be met.

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43 RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES § 102(2) (1987).

44 Koplow, supra note 42, at 1223.
There must be a "widespread, longstanding pattern of concordant state practice," which is the "objective" criterion. In determining the objective criterion, a court will weigh the actions of states that are most active or most affected by a particular field more than those that are not as affected, although widespread state participation does bolster the objective element. The behavior of a state to be considered in determining whether the objective criterion is met not only includes unilateral or joint words and actions, but also inaction or silence. Additionally, the International Court of Justice has stated that it deems "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." Finally, if a particular action or consensus among states is "truly widespread and deep," a shorter duration may suffice, rather than the traditional requirement that it be "longstanding." This demonstrates the "sliding scale" approach, which some scholars argue means that the strength of one element of customary international law can compensate for the weakness of the other. This is especially important in the context of outer space where technology and corresponding policies develop at a very quick pace.

The subjective element of customary international law requires that there also be evidence suggesting that that pattern of state practice is attributable to a "'sense of obligation,' rather than merely to habit, courtesy, indifference, or political expediency." This element is more difficult to determine as states are not always open about the motivations behind actions or inactions. Additionally, if a state is already acting out of a sense of legal

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45 Id.
46 Id. at 1224.
47 Id. at 1225.
48 Id. at 1224 (quoting Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. 14 (June 27)).
49 Id. at 1224.
50 See Petersen, supra note 39, at 283 n.32 (citing Frederic L. Kirgis, Jr., John Tasioulas, and Anhea E. Roberts as scholars who advocate the sliding scale approach).
51 Koplow, supra note 42, at 1223.
52 See id. at 1224.
obligation, it likely believes that the customary international law already exists. However, Koplow suggests a continuum between voluntary and compulsory, during which states think it is improper not to follow the course of action and then, eventually, the conformity reaches such a level that states agree it is illegal to not follow the practice.

Today, some scholars argue that customary international law is shifting more toward an emphasis on strong statements regarding the legal obligations behind certain actions and away from the emphasis on state practices over a long period of time. This new type of customary international law is referred to as “instant” customary international law or “instant custom.” According to this theory, a rule of customary international law “arises out of (1) an articulation of the putative law and (2) an act in support of it or acquiescence demonstrating acceptance of it.” This way, customary international law can be formed much more quickly and by action on the part of fewer countries, although it still requires international acceptance. Some scholars, however, argue that this more rapid pace of instant customary international law, as opposed to actions over a longer period of time by a broader range of states, does not constitute custom. Outer space is a prime example of an arena in which technology advances at a rate incompatible with traditional ideas about customary international law. In these cases, instant customary law may serve an important role in ensuring that the law can keep pace with

53 See id. at 1225-26.
54 Id. at 1226.
55 Wessel, supra note 9, at 299 (citing Anthea E. Roberts, Traditional and Modern Approaches to Customary International Law: A Reconciliation, 95 Am. J. Int’l L. 757, 758-60 (2001)).
58 Id. at 691.
59 Id.
60 See generally Harper, supra note 56 (noting that “in areas of law where technology and politics change rapidly, the traditional deliberative process is too slow”).
the technology.

Customary international law is generally less definite than treaties as it is dynamic and not as easy to ascertain as the simple reading of a treaty’s text.\textsuperscript{61} However, customary international law can sometimes be more powerful than treaties in that it binds even those countries that were not aware of the law as it developed.\textsuperscript{62} Unlike treaties, where a country may decide not to sign or may simply not be involved, the only countries left out of customary international law are those that were “persistent objectors” to the norm as it developed, “publicly and consistently” repudiating it.\textsuperscript{63}

E. Analogies: Antarctica, Airspace, and the High Seas

Jacob Harper, author of Technology, Politics, and the New Space Race, suggests an interesting alternative to instant customary international law when determining the law of outer space. Harper suggests that certain systems of law for geographical areas on Earth can be analogized to space in order to determine the customary international law of outer space.\textsuperscript{64} Harper points out that the origins of the system of law for outer space come from looking at systems of law for other unclaimed territories like Antarctica, the high seas, and airspace.\textsuperscript{65}

Antarctica is an example of an unclaimed territory that was intended to be kept free of military activities and claims of sovereignty.\textsuperscript{66} Unlike space, however, Antarctica has actually been kept free of these activities.\textsuperscript{67} Because some military technologies were already stationed in outer space at the time of the Outer Space Treaty, and most military activities in outer space have continued largely without objection, it would be difficult to conclude that the legal regime for Antarctica can be analogized to

\begin{footnotes}
\footnotetext[61]{Koplow, supra note 42, at 1223.}
\footnotetext[62]{Id. at 1229.}
\footnotetext[63]{Id.}
\footnotetext[64]{Harper, supra note 56, at 692.}
\footnotetext[65]{Id. (citing Nina Tannenwald, Law Versus Power on the High Frontier: The Case for a Rule-Based Regime for Outer Space, 29 YALE J. INT’L L. 363, 372 (2004)).}
\footnotetext[66]{Cynthia B. Zhang, Do As I Say, Not As I Do—Is Star Wars Inevitable? Exploring the Future of International Space Regime In the Context of the 2006 U.S. National Space Policy, 34 RUTGERS COMPUTER & TECH. L.J. 422, 423 (2008).}
\footnotetext[67]{Id. at 423.}
\end{footnotes}
outer space for customary international law purposes. On the other hand, Harper points out that the legal regime of airspace is less focused on peaceful purposes and based more on sovereignty, as states have exclusive domain over and the right to attack foreign aircraft above their territory. Analogizing airspace law to outer space would therefore give states the right to destroy a satellite if its orbit crossed through the area above its territory. This analogy would essentially legalize not only the placement of, but the use of anti-satellite weapons in outer space, which contradicts the use of space for "peaceful purposes," regardless of whether peaceful purposes is interpreted to mean non-military or non-aggressive. Therefore, this analogy is inconsistent not only with prior state practice, but the Outer Space Treaty itself.

Finally, Harper points to the fact that many legal scholars have analogized outer space to the high seas. Like outer space, the high seas are preserved as a common resource for all. If the law of the high seas were analogized to outer space, Harper argues countries would be allowed to use outer space without restriction, as long as that use did not interfere with another country's right to use outer space for their purposes as well. Harper posits that analogizing high seas law to outer space would be beneficial, not only because it would ensure all countries an equal opportunity to use outer space, but also because it would encourage countries not to develop space technologies solely for military purposes. This analogy however, although possibly a good fit to outer space, does not solve the issue of preventing an arms race in outer space.

F. Nonbinding vs. Binding Legal Instruments

As discussed above, since the 1980s, nonbinding agreements, sometimes referred to as "soft law," have been the instrument of

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68 See id. at 435.
69 Harper, supra note 56, at 693.
70 Id.
71 Id.
72 Id. (citing Nina Tannenwald, Law Versus Power on the High Frontier: The Case for a Rule-Based Regime for Outer Space, 29 Yale J. Int'l L. 363, 372 (2004)).
73 Id.
74 Id.
75 Harper, supra note 56, at 694.
choice to regulate outer space.76 Nonbinding agreements usually have some of the features of formal treaties, but do not meet all of the requirements to be considered one.77 Among the reasons why states may opt for nonbinding agreements is that the “bureaucratic transaction costs” for creating hard law are often higher than those for creating soft law.78 Additionally, states sometimes enter nonbinding agreements because binding law has greater costs (reputation, retaliation, or reciprocal noncompliance) if the state violates that law.79 Finally, some states prefer nonbinding agreements so that they are not subject to legal remedies.80

This shift toward nonbinding agreements in the realm of outer space law, however, may have some significant consequences. Stephen Hobe, professor at the University of Cologne in Germany, argues that this shift has had a negative impact on compliance with the rule of law, thereby damaging the “legitimacy and effectiveness of international space law.”81 On the other hand, many scholars posit that nonbinding agreements can become binding norms of customary international law.82 However, as long as states understand that the agreement is nonbinding, it is unlikely that they will follow the agreement out of a sense of legal obligation, which weakens the subjective prong of customary international law analysis.

G. Optional Rules for Arbitration of Disputes Relating to Outer Space Activities

For the first time, there is now a mechanism specifically intended to resolve international disputes relating to outer space. On December 6, 2011, the Permanent Court of Arbitration (PCA)
adopted the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities. This new legal instrument was designed to “address the ‘fundamental lacunae’ in the existing dispute resolution mechanisms of international space law. The [PCA] is an intergovernmental organization . . . which facilitates accord between states, state entities, intergovernmental organizations, and private parties.” The new rules provide:

- An option for the parties to submit an agreed document to the Tribunal summarizing and giving background to any scientific or technical issues that will enable the Tribunal to fully understand the matters in dispute (Article 27);
- Enhanced measures to protect the confidentiality of information provided by the parties in the course of arbitration;
- Additional discretionary powers of the Tribunal to continue arbitration notwithstanding the failure by one arbitrator to participate in the proceedings (Article 12(4));
- The establishment by the PCA of a list of experts in disputes relating to outer space activities or in relevant scientific or technical matters (Articles 10(4) and 29(7)).

The PCA, however, leaves the decision of what law to apply to the parties involved in the dispute, and does not specify what laws it will apply if the parties authorize it to decide the applicable

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83 The PCA is an intergovernmental organization established to “facilitate arbitration and other forms of dispute resolution between states.” About Us, PERMANENT COURT OF ARBITRATION, http://www.pca-cpa.org/showpage.asp?pag_id=1027 (last visited Apr. 5, 2014). The PCA provides resolution of disputes between states, state entities, intergovernmental organizations, and private parties. Id. One hundred fifteen states have acceded to one or both of the PCA’s founding conventions, including: France, Germany, Iran, Israel, the Russian Federation, and the United States. Id.


law.  

H. Deficiencies in the Current Law of Outer Space

At the time the Outer Space Treaty was signed, nuclear weapons were the only contemplated threat in outer space. Technology has greatly evolved since then, and the weapons discussed below in Part II pose equally significant threats to global security. The Outer Space Treaty, however, is not well-equipped to tackle these new technologies in its current, outdated state. In addition to the fact that the Outer Space Treaty was created when the weapons in existence today were not foreseeable, the Outer Space treaty contains textual ambiguities that do not easily lend themselves to one cohesive interpretation. Conflicting interpretations of crucial terms in the Outer Space Treaty have significantly weakened the treaty’s ability to limit the weaponization of outer space.

II. The Recent Militarization of Outer Space

A. Technologies in Outer Space

Space systems are important during peacetimes as well as war. During peace, they can be used as a deterrent; during war, space technologies can be used to “enhance combat effectiveness, reduce casualties, and minimize equipment loss.” Satellites are commonly used for “communications, reconnaissance, early warning of ballistic missile launches, weather data collection, and

86 Optional Rules for Arbitration of Disputes Relating to Outer Space Activities, Permanent Court of Arbitration, art. 35 (“In resolving the dispute, the arbitral tribunal shall apply the law or rules of law designated by the parties as applicable to the substance of the dispute. Failing such designation by the parties, the arbitral tribunal shall apply the national and/or international law and rules of law it determines to be appropriate.”).


88 See infra Part II.


90 Id. at 489.

91 Id.

92 Barnet, supra note 33, at 286.
arms control verification.\textsuperscript{93} However, satellites now also serve an essential role in military operations by providing services such as "secure and high-volume unsecured communications, targeting and navigation services, weather prediction, and battle assessment."\textsuperscript{94} Although there are currently no known offensive space weapons, technologies that can interfere with, disable, or destroy satellites, although technically "bloodless," could very well be considered weapons or means of warfare.\textsuperscript{95} Because the U.S. military relies heavily on space systems,\textsuperscript{96} disabling a U.S. satellite could cripple military operations during wartime. Additionally, destruction of even a non-military satellite could devastate a society that increasingly relies on satellites for daily functions critical to the civilian and economic well-being, which could in turn trigger a military retaliation. The United States' ever-increasing reliance on space systems means that it has a significant interest in developing a global legal framework for the development, installment, and use of technologies that make those systems vulnerable.

1. Kinetic Energy Anti-Satellites

Kinetic energy anti-satellite (ASAT) capabilities recently came into the public eye after China successfully tested an ASAT missile by launching it into space to destroy a Chinese weather satellite.\textsuperscript{97} Kinetic energy weapons have been the most common type of weapon in outer space.\textsuperscript{98} The kinetic energy ASAT is designed to destroy hostile satellites through the sheer use of high speeds and kinetic energy on impact.\textsuperscript{99}

\textsuperscript{94} Id.
\textsuperscript{95} Bamet, supra note 33, at 281.
\textsuperscript{96} Id. at 286.
\textsuperscript{97} Paul S. Oh, Assessing Chinese Intentions for the Military Use of the Space Domain, 64 Joint Force Q. 91, 95 (2012).
2. Co-Orbital ASATs

Co-orbital ASAT capabilities use a missile armed with explosives that detonate when in close proximity to a target in order to destroy it.\textsuperscript{100} "Space mines," although not yet developed, could use a similar technology to destroy a target either when it comes within range or when a triggering event occurs.\textsuperscript{101}

3. Directed Energy Technologies

Directed energy capabilities are non-kinetic, and include technologies such as "dazzlers, lasers, high-powered microwave, and high-powered radio frequency."\textsuperscript{102} These weapons destroy a target quickly by "shooting" it with energy at or near the speed of light, which is an important capability during time-sensitive situations.\textsuperscript{103}

4. "Soft Kill" Weapons

"Soft kill" weapons disable rather than destroy their targets.\textsuperscript{104} This could involve covering crucial parts of a satellite with paint in order to disable optics or disrupt the power supply, nudging a satellite out of orbit, or electronic jamming to shut down a satellite or disrupt its functioning.\textsuperscript{105} This type of "attack" carries with it the possibility of being covert, as the effects are often similar to routine failures in satellites, and would be difficult to detect.\textsuperscript{106}

5. Electromagnetic and Radiation Weapons

An electromagnetic weapon—such as a nuclear bomb—could be used in outer space without the same containment problems as would occur on earth since outer space acts as a vacuum.\textsuperscript{107} Therefore, the most significant impact of a nuclear blast in outer space would be the creation of a vacuum dome through which debris could travel.\textsuperscript{108}

\begin{thebibliography}{99}
\bibitem{101} Ramey, supra note 98, at 27.
\bibitem{102} Blake & Imburgia, supra note 100, at 177.
\bibitem{103} See Ramey, supra note 100, at 177.
\bibitem{104} Id. at 27.
\bibitem{105} Id.
\bibitem{106} Id.
\bibitem{107} See id.
\end{thebibliography}
space, if it were to occur near Earth’s atmosphere, would be the electromagnetic pulse. This electromagnetic pulse would last for only one millionth of a second but could disable electronics within a several-hundred mile radius of the blast. This type of explosion could be used in outer space to cause blackouts across a range of land on Earth, a significant advantage during wartime.

B. Countries in Outer Space

As a result of advances in technology and developments in military affairs, many countries are expanding their space capabilities and policies to support military operations, with national security being a key factor driving the use and development of space systems. The United States currently has the highest number of satellites being used for military purposes at 122, and the Department of Defense states that the U.S. National Space Policy "seeks to maintain and enhance the strategic national security advantages afforded to the United States by [the use of] outer space." Following the United States is Russia with 76 military satellites. The remaining 85 satellites with military capabilities belong to Australia, Chile, China, France, Germany, India, Israel, Italy, Pakistan, South Korea, Spain, Taiwan, the United Arab Emirates, and the United Kingdom. Although Russia and the United States currently dwarf the rest of the world in military spending in outer space, spending on military space programs is increasing around the world.

China has been rapidly increasing its status as a space power, and recently joined ranks with the United States and Russia when it successfully docked its manned Shenzhou-9 spacecraft with its

108 Id.
109 Ramey, supra note 98, at 19.
110 Id.
111 See SPACESECURITY, supra note 85, at 13.
114 See id.
115 See id.
116 SPACESECURITY, supra note 85, at 105.
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orbiting space lab, Tiangong-1.\textsuperscript{117} This was part one of the ambitious Chinese space program, which the \textit{New York Times} reports is "essentially military," stating that "[i]ts every function is designed to carry out a military objective or one that improves the welfare of the state."\textsuperscript{118} Additionally, on January 11, 2007, China successfully tested an ASAT missile by destroying a Chinese weather satellite orbiting at 500 miles altitude, which is the same altitude at which many U.S. spy satellites orbit.\textsuperscript{119}

China, however, is not the only country increasing its military actions in outer space. India has also become a growing power in outer space, announcing that it must "optimize space applications for military purposes," pointing out that "[t]he Chinese space program is expanding at an exponentially rapid pace in both offensive and defensive content."\textsuperscript{120} India launched its first satellite dedicated solely to military use in August 2013.\textsuperscript{121}

In 2008, Japan authorized military use of space, passing legislation that removed the ban on using Japanese space assets for military purposes.\textsuperscript{122} Iran launched its first satellite in 2005 with the support of a Russian launcher, and the head of Iran’s space program reported that the satellite is capable of spying on Israel.\textsuperscript{123} Possibly in response to Iran, Israel launched a reconnaissance satellite in 2008, which is considered "one of the world’s most advanced space reconnaissance systems" and is "reportedly used to spy on Iran."\textsuperscript{124}

Many European states share capabilities for outer space military support, particularly communications and imagery.\textsuperscript{125}

\begin{footnotes}
\item[117] \textit{Is China's Space Program a Threat to America's?}, \textit{WEEK} (June 25, 2012), http://theweek.com/article/index/229763/is-chinas-space-program-a-threat-to-americas.
\item[119] Oh, \textit{supra} note 97, at 22.
\item[122] Koplow, \textit{supra} note 42, at 1193.
\item[123] \textit{SPACESECURITY}, \textit{supra} note 85, at 121.
\item[124] \textit{Id.}
\item[125] \textit{Id.} at 122.
\end{footnotes}
Germany’s first military satellite system as well as Italy’s radar satellites will likely be integrated with the optical remote sensing satellites that belong to France, which has the “most advanced and diversified independent military space capabilities.”

The increased participation in outer space serves to level the playing field and balance Russia’s and the United States’ long-held domination in the arena as well as increases the number of countries with an interest in and awareness of the need to place guidelines and restrictions on the militarization of outer space. However, the ability to limit the increasing military expansion into outer space depends not only on intergovernmental cooperation, but also on a shared understanding of the legal framework which governs outer space.

C. Why the Militarization of Outer Space Matters

The militarization of outer space has the potential to destabilize current relations between states and result in a less safe world. More specifically, the United States has a significant interest in halting the weaponization of outer space as it relies heavily on outer space technology to promote national security. Satellites that currently serve important peace and wartime functions (including reconnaissance, surveillance, communications, early warning of missile launches, and data collection) could be threatened by a proliferation of ASAT weapons in outer space. Additionally, if countries currently capable of militarizing outer space, such as the United States and Russia, pursue unhindered military operations in outer space, other nations will likely follow, thereby bringing potentially unpredictable—or even dangerous—players into the mix. Finally, the ease with which ASAT weapons can destroy other more-expensive and technologically advanced space systems

126 Id.
127 See Koplow, supra note 42, at 1193; see also SPACESECURITY, supra note 85, at 122.
129 See GREGO, supra note 93, at 1.
130 See id.
131 Engelhart, supra note 87, at 137.
means that countries with weapons in outer space may be encouraged to use them in a surprise attack to avoid their destruction by ASAT weapons.\textsuperscript{132} It also means that relatively unsophisticated non-governmental groups—terrorist groups included—may eventually have ASAT capabilities that could be used to cripple a nation’s military operations as well as day-to-day societal functioning.\textsuperscript{133}

III. The Outer Space Treaty

As discussed above, the Outer Space Treaty serves as a sort of “constitution” for activities in outer space. With 101 parties—including the United States, the Russian Federation, China, India, Iran, and Israel—as of January 1, 2012,\textsuperscript{134} the treaty sets forth the basic principles to be upheld in outer space law. Those principles are as follows:

- [T]he exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind;
- [T]he outer space shall be free for exploration and use by all States;
- [T]he outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means;
- States shall not place nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies or station them in outer space in any other manner;
- [T]he Moon and other celestial bodies shall be used exclusively for peaceful purposes;
- [A]stronauts shall be regarded as the envoys of mankind;
- States shall be responsible for national space activities whether carried out by governmental agencies or non-governmental entities;
- States shall be liable for damage caused by their space objects; and

\textsuperscript{132} Id. at 138.
\textsuperscript{133} Id. at 139.
• States shall avoid harmful contamination of space and celestial bodies.135

A. What the Outer Space Treaty Does and Does Not Prohibit

In accordance with the above principles, the Outer Space Treaty prohibits and requires certain types of action in outer space. Specifically, the treaty requires that "[t]he exploration and use of outer space . . . shall be carried out for the benefit of all countries . . . and shall be the province of all mankind."136 Accordingly, the Treaty prohibits claims of sovereignty on the Moon and other celestial bodies,137 requires "international responsibility for national activities in outer space,"138 and mandates that all parties to the treaty assist astronauts of any country in need of help as they are considered "envoys of mankind."139 With regard to military operations in outer space, the Outer Space Treaty prohibits placing any weapons of mass destruction in orbit around earth, on celestial bodies, or stationed in outer space in any other manner.140 The treaty also prohibits "the establishment of military bases, installations and fortifications, the testing of any type of weapons, and the conduct of military maneuvers on celestial bodies."141

Notably, the Outer Space Treaty does not mention the presence of non-WMD armaments in orbit around Earth or elsewhere in outer space,142 nor does it prohibit establishing military bases in outer space if they are not stationed on a celestial body.143 However, one additional phrase in Article IV, discussed below, may serve to encompass some of the military actions that the


136 Id. art. I.
137 Id. art. II.
138 Id. art. VI.
139 Id. art. V.
140 Id. art. IV.
141 Outer Space Treaty, supra note 3, art. IV.
142 See id. (prohibiting "nuclear weapons or any other kinds of weapons of mass destruction").
143 See id. (prohibiting the establishment of military bases "on celestial bodies").
treaty does not appear to prohibit.

B. "Peaceful Purposes"

In addition to the more specific requirements and prohibitions against military action in outer space, the Outer Space Treaty states that "[t]he Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes."\(^\text{144}\) The interpretation of the term "peaceful purposes" is crucial to determining the legality of actions in outer space under the Outer Space Treaty. Although there is no clear definition of "peaceful purposes" in the Treaty itself, most scholars agree that the two possible interpretations of "peaceful purposes" are that it should be interpreted to mean "nonmilitary," while others understand it to mean "nonaggressive."  

The U.S. official interpretation of the phrase "peaceful purposes" is that it means "nonaggressive."\(^\text{146}\) The reason for this interpretation logically correlates with the fact that the United States already had military intelligence satellites in space at the time of the signing of the treaty,\(^\text{147}\) and therefore hoped to secure the legality of those satellites while also protecting them by prohibiting other military actions in space.\(^\text{148}\)

In contrast to the United States, the Soviet Union interpreted the phrase "peaceful purposes" to mean "nonmilitary," and has always maintained that their activities in outer space were "peaceful" and "scientific."\(^\text{149}\) The Soviet interpretation of the meaning of "peaceful purposes" combined with their argument that the actions they have taken in space have been "peaceful" and "scientific," even when they have positioned military satellites in outer space, may be more in line with the way countries have acted in accordance with the Treaty.\(^\text{150}\) By arguing that "peaceful"

\(^{144}\) See id. (emphasis added).


\(^{146}\) Morgan, supra note 31, at 304.

\(^{147}\) Barnet, supra note 33, at 280.

\(^{148}\) Petras, supra note 38, at 154.

\(^{149}\) Morgan, supra note 31, at 304.

\(^{150}\) See id. at 303-05.
means "non-aggressive" rather than "nonmilitary," the United States may open the door to many types of technology that are not considered "aggressive" but whose primary purpose may be hard to define as peaceful, especially in the case of military technologies. The United Nations defines aggression as "the use of armed force by a [s]tate against the sovereignty, territorial integrity or political independence of another [s]tate or in any other manner inconsistent with the Charter of the United Nations . . . ." If the Outer Space Treaty only prohibited aggressive acts, the testing of weapons and establishing military bases would likely not be prohibited. The prohibition of these acts in Article IV suggests that "peaceful purposes" may reach more broadly than nonaggression.

Additionally, Christopher Petras points to the origin of the phrase "peaceful purposes" in the 1959 Antarctic Treaty, which led to the demilitarization of the Antarctic, to support the argument that "peaceful purposes" means "non-military." However, Petras—along with most modern-day scholars—points out that there appears to be a consensus within the United Nations that "peaceful purposes" means "nonaggressive" rather than non-military and that the major actors in outer space have "tacitly agreed" that, unless specifically prohibited, all military actions in outer space are permissible.

C. The United Nations Charter and the Outer Space Treaty

A final consideration when interpreting the Outer Space Treaty is Article III, which states that all parties must "carry on activities

151 See id.
153 See Morgan, supra note 31, at 304 n.556.
154 Outer Space Treaty, supra note 3, art. IV.
156 Petras, supra note 38, at 168-69.
157 Id. at 171.
158 Morgan, supra note 31, at 303 (citing IVAN A. VLASIC, THE LEGAL ASPECTS OF PEACEFUL AND NONPEACEFUL USES OF OUTER SPACE, IN PEACEFUL AND NON-PEACEFUL USES OF SPACE, PROBLEMS OF DEFINITION FOR THE PREVENTION OF AN ARMS RACE 38 (Bhupendra Jasani ed., 1991)).
in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding. Therefore, a full understanding of the Outer Space Treaty also requires an examination of the United Nations Charter. This relationship will be further discussed in Part IV.

D. Is the Outer Space Treaty Invalid?

Some authors have suggested that the Outer Space Treaty may be invalid under the Vienna Convention on the Law of Treaties (Vienna Treaty Convention) because of a fundamental change in circumstances. The Vienna Treaty Convention states:

A fundamental change of circumstances which has occurred with regard to those existing at the time of the conclusion of a treaty, and which was not foreseen by the parties, may not be invoked as a ground for terminating or withdrawing from the treaty unless:

(a) the existence of those circumstances constituted an essential basis of the consent of the parties to be bound by the treaty; and
(b) the effect of the change is radically to transform the extent of obligations still to be performed under the treaty.

This article does not deal with the invalidation of the treaty, but only the ability of a party to terminate or withdraw from the treaty. Articles 46-52 of the Vienna Treaty Convention, on the other hand, deal with the invalidity of treaties. The only factors that result in the invalidity of a treaty are: a state or its representative’s competence to conclude a treaty, error,

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159 Outer Space Treaty, supra note 3, art. III.
162 See id.
163 See id.
164 Id. art. 46-47.
165 Id. art. 48.
The Outer Space Treaty is therefore not automatically invalid, as there is no evidence that there was incompetence, error, fraud, corruption, or coercion during the creation of the treaty. Additionally, Article XVI of the Outer Space Treaty provides that parties to the treaty may withdraw from the treaty by written notification, and the withdrawal will take effect one year after that notification. Therefore, countries are able to withdraw from the Outer Space Treaty even without arguing that there has been a fundamental change of circumstances, but the Outer Space Treaty is unlikely to be found invalid under the Vienna Treaty Convention.

IV. The Legality of Non-WMD Weapons in Outer Space

A. “Peaceful Purposes” in the Outer Space Treaty

Given the general consensus in the United Nations that the “peaceful purposes” phrase in the Outer Space Treaty prohibits only specifically prohibited military action in outer space, non-WMD weapons may be permissible in outer space unless another form of international law prohibits them.

B. Customary International Law

Customary international law may provide answers to questions about weapons in outer space that the ambiguous “peaceful purposes” phrase in the Outer Space Treaty cannot.

In order to determine whether the weapons listed in Part II.A (kinetic energy ASATs, co-orbital ASATs, directed energy technologies, “soft kill” weapons, and electromagnetic and radiation weapons) are permissible under customary international law, we must analyze the objective and subjective criteria—namely, has there been a “widespread, longstanding pattern” of states either approving or failing to object to the use of these weapons in outer space, and is that use attributable to a “sense of

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166 Vienna Convention, supra note 161, art. 49.
167 Id. art. 50.
168 Id. art. 52.
169 Outer Space Treaty, supra note 3, art. XVI.
170 See id.
171 See supra Part III.B.
[legal] obligation,' rather than merely to habit, courtesy, indifference, or political expediency.”172

1. Objective Element

In determining whether the objective element has been satisfied, courts would consider not only a state’s actions or words pertaining to weapons in outer space, but also its inaction or silence.173

Since 1985, the United States has conducted one kinetic energy ASAT test and one high-energy ASAT test.174 The only other tests have been conducted by China, who conducted four interceptor tests and two or three directed energy ASAT tests.175 Therefore, there is not a “widespread” pattern in this regard as only two countries have actually used these types of weapons in outer space.

The inaction of some states, however, should also be taken into consideration. The fact that no other states have used these types of weapons in outer space may suggest that they are prohibited under customary international law.176 Additionally, although the United States has tested weapons in outer space, there are instances where it could have used them to destroy a satellite in possible self-defense, but did not.177 This suggests that while the United States believes it is permissible to test weapons in outer space, it may believe that the actual use of such weapons against another state’s satellite is illegal.178 The determining factor is the reason why other states have not used weapons in outer space (the subjective aspect of customary international law), which is discussed below.

The viewpoints of states regarding weapons in outer space may also prove telling in determining whether these weapons are

172 See Koplow, supra note 42, at 1223.
173 Id. at 1225.
174 Id. at 1235.
175 Id.
176 See id.
177 Id. at 1236 (pointing to when the United States learned that foreign satellite data could be useful to opposition forces in Afghanistan, but did not use ASAT weapons to destroy the satellites).
178 See Koplow, supra note 42, at 1236.
permissible under customary international law. Although many countries expressed negative opinions about China’s ASAT test in 2007, only one country stated outright that the test violated international law. The Prime Minister of Japan, Shinzo Abe, stated that the Chinese test had violated the Outer Space Treaty. Additionally, India suggested that the test violated international norms on the peaceful purposes of outer space and called the Chinese test “unethical.” Other states, however, while condemning the Chinese ASAT test, did not suggest that it violated international law or norms. The United States called the test “regrettable,” “very troubling,” and “destabilizing.” Other states, including the United Kingdom, Australia, Canada, Taiwan, South Korea, and the European Union joined in with the United States’ condemnation of the Chinese ASAT test, but did not call it illegal. Russia also criticized the U.S. ASAT test and spoke negatively about the Chinese test, but has not mentioned the legality of either test.

Recently, at the October 23, 2012 meeting of the First Committee of the Sixty-Seventh United Nations General Assembly, numerous countries expressed their concern about testing weapons in outer space. The speaker for Brazil, for example, stated that weapons in outer space “deepen global insecurity,” emphasizing that an interruption of the estimated

179 Id. at 1237.
181 Koplow, supra note 42, at 1241.
183 Id. at 1237 (quoting Theresa Hitchens, U.S.-Sino Relations in Space: From “War of Words” to Cold War in Space?, 5 CHINA SECURITY 12, 25 (2007) (quoting U.S. Department of State Deputy Spokesperson, Tom Casey)).
185 Id. at 1239.
186 Id. at 1238.
187 Full-Spectrum Dominance, supra note 1.
3,000 satellites in outer space would cause a "major global collapse."\textsuperscript{188} For Japan, Mari Amano called on countries to refrain from any action that could cause space debris, such as ASAT tests.\textsuperscript{189} Kazakhstan announced that it does not intend to pursue the development of space weapons or to deploy them in outer space at any point in the future.\textsuperscript{190} Australia, labeling the development and testing of kinetic energy ASAT weapons as a pressing security challenge, declared its support for an international code of conduct for outer space activities.\textsuperscript{191} These statements, although demonstrating that many countries find weapons in outer space dangerous or inappropriate, did not go so far as to declare weapons in outer space illegal.

Finally, the European Union's Draft Code of Conduct for Outer Space Activities,\textsuperscript{192} for which many countries at the October 23, 2012 First Committee meeting expressed their support,\textsuperscript{193} requires subscribing states to commit to the following:

[T]o refrain from any action which intends to bring about, directly or indirectly, damage, or destruction, of outer space objects unless such action is conducted to reduce the creation of outer space debris and/or is justified by the inherent right of individual or collective self-defense in accordance with the United Nations Charter or imperative safety considerations.\textsuperscript{194}

Under this code of conduct, states would be prohibited from testing weapons such as ASATs in outer space.\textsuperscript{195} It may even be impermissible under this code to position such weapons in outer space.

\textsuperscript{188} Id.
\textsuperscript{189} Id.
\textsuperscript{190} Id.
\textsuperscript{191} Id.
\textsuperscript{193} Full-Spectrum Dominance, supra note 1 ("Japan's speaker said that his country considered the code to be a constructive and realistic multilateral measure. Australia's delegate also declared the need for such a code. While it would not be a 'silver bullet' to solve all issues relating to space security, it could make an important contribution to addressing issues, including the problem of space debris.").
\textsuperscript{194} Revised Draft Code, supra note 192, sec. 4.2.
\textsuperscript{195} See id. (showing that a majority of countries support legally binding regulations on weapons in outer space).
space, as that could be considered an “action which intends to bring about... indirectly... [the] destruction... of outer space objects.”196 However, the exception for use of these weapons in the case of self-defense suggests that the stationing of these weapons in outer space as a precautionary measure would be permissible.197

2. Subjective Element

The subjective element of customary international law is more difficult to establish as it looks to the intent behind a state’s behavior to determine whether it was motivated by a sense of legal obligation.198

Although we cannot know specifically why states other than China and the United States have not used weapons in outer space, at least one scholar points out the fact that many states possessed the technological and financial resources to develop and use these weapons, but have not.199 The great number of countries with space programs that have not used weapons in outer space may suggest that they refrain from doing so because they believe it is illegal under customary international law.200 Without further evidence, however, it is difficult for this fact alone to establish that weapons in outer space are prohibited under customary international law.

3. The Result

The failure of many states with ASAT capabilities to actually test these weapons in outer space, combined with the reactions to the Chinese and U.S. ASAT tests, the statements at the First Committee Meeting on October 23, 2012, and Section 4.2 of the European Union’s Draft Code of Conduct does not confirm that there is a fully-developed norm of customary international law that

196 Id.
197 See id.
198 See supra note 51 and accompanying text (asserting that “[t]he subjective element of customary international law requires that there also be evidence suggesting that that pattern of state practice is attributable to a ‘sense of obligation,’ rather than merely to habit, courtesy, indifference or political expediency.”).
199 Koplow, supra note 42, at 1235-36 (stating that many members of the European Union as well as Japan could have used ASAT interceptors).
200 See id.
weapons in outer space are impermissible. However, they surely demonstrate that there is also not a customary international law deeming the weapons permissible. Rather, the status of customary international law with regards to weapons in outer space appears to be nearing the compulsory side of Koplow’s continuum, but has not quite reached the final stage where states feel the weapons are illegal. The statements at the United Nations First Committee Meeting on October 23, 2012, demonstrate that many states recognize the dangers of the weaponization of outer space and are eager to establish a binding law against weapons in outer space; they also suggest that international norms are moving toward a view that weapons in outer space are impermissible, which means a rule of customary international law may be soon to follow.

C. The United Nations Charter

As stated above, Article III of the Outer Space Treaty requires all parties to “carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.” The major reason this provision was included in the Outer Space Treaty was to address widespread concern that outer space would become the next front for conflict between nations.

1. The Prohibition of the Use of Force

Article 2, paragraph 4 of the United Nations Charter states that “[a]ll Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political

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201 See supra Part IV.B.
202 See supra Part IV.
203 See supra note 54 and accompanying text.
204 See id.
205 See id.
206 Outer Space Treaty, supra note 3, art. III.
independence of any state, or in any other manner inconsistent with the Purposes of the United Nations. The majority interpretation of this paragraph is that it prohibits all use of force, except in self-defense. This means that acts of aggression are prohibited in outer space, as the United Nations General Assembly has suggested that any act of aggression would also violate Article 2, paragraph 4 of the United Nations Charter. Although the United Nations Charter does not define an act of aggression, Article 39 states that “[t]he Security Council shall determine the existence of any threat to the peace, breach of the peace, or act of aggression.”

Additionally, the General Assembly agreed on an official definition of aggression in Resolution 3314, which passed in 1974. This definition is still broad, stating that “[a]ggression is the use of armed force by a [s]tate against the sovereignty, territorial integrity or political independence of another [s]tate, or in any other manner inconsistent with the Charter of the United Nations, as set out in this Definition.” Although Article 3 enumerates acts that qualify as aggression, Article 4 states that the list is not exhaustive and reiterates that the Security Council has the power to determine what other acts could constitute aggression under the provisions of the United Nations Charter.

Article 3, paragraph (b) of Resolution 3314 clarifies that “the use of any weapons by a [s]tate against the territory of another [s]tate” qualifies as an act of aggression, regardless of a declaration of war. Therefore, whether or not the Security Council determines that the use of one of the technologies listed in

208 U.N. Charter art. 2, para. 4.
211 U.N. Charter art. 39.
212 Definition of Aggression, supra note 152.
213 Id. art. 1.
214 U.N. Charter art. 4.
215 Definition of Aggression, supra note 152, art. 3(b).
Part II supra could be aggression would depend on whether the technology was considered a "weapon."

i. What Constitutes a "Weapon"?

Currently no clear definition of the term "weapon" exists as it applies to use in outer space. However, in 1991, the United Nations Institute for Disarmament Research proposed a definition for a space weapon, which reads:

A space weapon is a device stationed in outer space (including the Moon and other celestial bodies) or in the earth environment designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in outer space, or a device stationed in outer space designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in the earth environment. Any other device with the inherent capability to be used as defined above will be considered as a space weapon.

All of the technologies described in Part II supra would likely be considered weapons under this definition as they are all designed to "destroy, damage or otherwise interfere with the normal functioning of an object or being in outer space." If this is the case, the use of kinetic energy ASATs, co-orbital ASATs, or directed energy technologies to damage or destroy another country's satellite in outer space, as well as the use of "soft kill," electromagnetic, or radiation weapons to disable satellites or other electronics, could likely be considered an act of aggression, thereby violating Article 2, paragraph 4 of the United Nations Charter and, consequently, the Outer Space Treaty as well.

2. The Right to Self-Defense

An exception to the Article 2, paragraph 4 prohibition on the use of force is the right to self-defense in Article 51, which states,
“[n]othing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations.”  This right to self-defense, however, is limited by the requirements of necessity and proportionality. Activities that constitute an “armed attack,” and therefore justify a response in self-defense, are narrower in scope than those that constitute a “threat or use of force” in Article 2, paragraph 4. Therefore, the use of the space technologies described above would likely be permitted if the use constituted a necessary and proportionate act of self-defense. However, the disruption or destruction of a satellite that serves not only military, but also civilian, purposes may have difficulty passing the proportionality requirement, since it could cripple important functions of civilian society as well.

V. Measures Taken to Prevent an Arms Race in Outer Space

A. U.S. Resistance

The United Nations General Assembly’s recent focus on preventing an arms race in outer space has garnered attention—so much so that this focus has earned a nickname, “PAROS” (Prevention of an Arms Race in Outer Space). The General Assembly has adopted a PAROS resolution every year since 1981. These resolutions generally hold that there is a “global interest in peacefully reconcile[ing] the competing uses of outer space and in avoiding any further compromise of the generally benign security environment.”

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220 U.N. Charter art. 51.
221 Maogoto & Freeland, supra note 207, at 180 (citing People v. McLeod, 1 Hill 377 (1841)).
222 See Blake & Imburgia, supra note 100, at 187 (asserting that “the effects of an ‘armed attack’ must be greater in scale or gravity than a ‘threat or use of force’ but that space and cyberspace attacks could reach such ‘scale and gravity’ by render[ing] a military force and its individual units relatively blind, deaf, mute, and lost (without access to satellites for position, navigation, and timing) without using anything traditionally regarded as military arms”).
223 See Maogoto & Freeland, supra note 207, at 184.
224 Id.
225 Koplow, supra note 42, at 1217.
226 Blake & Imburgia, supra note 100, at 192.
227 Koplow, supra note 42, at 1217.
The United States, however, has consistently resisted measures taken to prevent an arms race in outer space, abstaining from or even voting against numerous PAROS resolutions passed by the United Nations General Assembly. Additionally, the United States has resisted proposals to give the United Nations Conference on Disarmament a mandate to open formal negotiations on space weapons. When explaining its resistance to talks about preventing an arms race in outer space, the United States denies that there is either current or an imminent arms race in outer space.

The Bush administration’s 2006 U.S. National Space Policy, for example, stated that:

The United States will oppose the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space. Proposed 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.

The Obama administration’s 2010 National Space Policy, however, specifically renounced the unilateral position taken by the Bush administration, stating, “[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.” It remains to be seen how the United States would now vote on a United Nations PAROS resolution though, as the resolutions have been adopted without a

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230 Id. at 1218.


vote since 2008.233

VI. Recommendations on How to Prevent an Arms Race in Outer Space

Given the existing ambiguities and deficiencies in our current, but outdated system of international law for outer space, new developments in international law will be critical for preventing any further weaponization or militarization of outer space.

A. By Amending the Outer Space Treaty

An amendment to the Outer Space Treaty would help to fill the gaps in the written law regarding outer space and to address new technologies and issues that have arisen since the Outer Space Treaty was entered into force in 1967. More specifically, the treaty could be amended to prohibit ASAT, “soft kill,” and electromagnetic and radiation weapons.234 However, given the propensity of technology to develop at exponentially-increasing rates, general language prohibiting the use of technologies that damage, destroy, or disable another’s property in outer space may be more likely to withstand the test of time.235

B. Through a New Treaty

A new treaty may be even more effective in halting, or even reversing, the weaponization of outer space. In addition to prohibiting the destruction, damage, or interference with satellites in outer space, the new treaty could create rules related to the development and deployment of weapons capable of damage, destruction, or interference, and also establish an international body with the power to monitor member states’ space programs and enforce the treaty. The existence of an oversight body may help to reduce some states’ feelings that an arms race in outer


234 See Blake & Imburgia, supra note 100, at 202-03 (advocating for the regulation of such “soft kill” weapons if they are used for military or combat purposes).

235 See INSTITUTE FOR NATIONAL STRATEGIC STUDIES, supra note 216, at 182 (discussing the difficulties of creating an all-encompassing and lasting definition of space weapon).
space is necessary to protect national security interests. Additionally, a new treaty could clarify some of the ambiguities related to the meaning of important terms regarding outer space. Member parties could agree on specific definitions for "space weapon," determine what constitutes an act of aggression in outer space, and even clarify whether space should be nonmilitary or nonaggressive and what those terms mean.

C. Political Feasibility of a New Treaty or Amendment to the Outer Space Treaty

Comments made by representatives at the United Nations First Committee Meeting on October 23, 2012, suggest that countries realize the importance of developing more specific laws to prevent an arms race in outer space. Even so, the feasibility of a new treaty, or even an amendment to the Outer Space Treaty, will undoubtedly be the most difficult hurdle to overcome when attempting to develop a new, legally binding system of laws regarding outer space. The uneven footing among countries, which is a factor when considering conflict on land or at sea, is amplified many times when outer space is involved because the financial and technological resources necessary to gain power in outer space are even higher than in conventional warfare. States with no military technologies currently in outer space will be more open to imposing restrictions on the use of these technologies than countries who are already using outer space for military purposes. In order to create an amendment or a new treaty to which most states—especially those currently dominant in outer space—will agree, all states must feel that they will benefit from

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236 See Andrew T. Park, Incremental Steps for Achieving Space Security: The Need for a New Way of Thinking to Enhance the Legal Regime for Space, 28 Hous. J. Int’l L. 871, 908 (2006) ("Increasing transparency and monitoring the verification of compliance measures also provides the necessary confidence among parties to a legal regime that negotiated obligations are being fulfilled and, therefore, that real security benefits will be realized.").

237 See Maogoto & Freeland, supra note 207, at 195.

238 See id.

239 See generally Full-Spectrum Dominance, supra note 1 (showing that a majority of countries support legally binding regulations on weapons in outer space).

240 See Maogoto & Freeland, supra note 207, at 194.

241 See Barnet, supra note 33, at 288-89.
the treaty.242

The United States will likely prove the biggest obstacle in establishing a new treaty or amending the Outer Space Treaty. The United States has a history of resisting many international agreements, in part because the United States believes those agreements come with some deterioration of U.S. sovereignty.243 Additionally, the United States has a track record of resisting agreements specifically designed to prevent an arms race in outer space.244 However, with the era of the Bush Administration over, the United States may be more open to an agreement on outer space.245 Comments made by Frank A. Rose, the Deputy Assistant Secretary of the Bureau of Arms Control, Verification and Compliance of the U.S. Department of State, during a presentation at the Association of Southeast Asian Nations Regional Forum Space Security Workshop bolster the idea that the United States is now more open than during previous administrations to an agreement that would curtail the weaponization of outer space.246 Rose stated that an International Code of Conduct, such as the European Union’s, “would help prevent mishaps, misperceptions, and mistrust in space by establishing non-legally binding guidelines that reduce the hazards of accidental and purposeful debris-generating events.”247 This openness to the European Union’s International Code of Conduct signals that the United States’ position on weapons in outer space may be shifting toward a willingness to agree against the use of anti-satellite weapons in outer space, in accordance with the Code’s Section 4.2.248

A new agreement on outer space should, however, be legally

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242 See Quinn, supra note 89, at 497 n.195 (explaining that the international climate at the time of the Outer Space Treaty meant that it addressed fears borne by every nation).


244 See supra Part V.A.

245 See Barnet, supra note 33, at 288.


247 Id.

248 Revised Draft Code, supra note 192, sec. 4.2.
binding in order to effectively prevent the weaponization of outer space. Although the European Union’s International Code of Conduct is a good starting point, specific provisions prohibiting military actions in outer space would be more effective than the narrow, albeit specific, prohibition of the destruction of outer space objects. This provision would not prevent weapons such as the “soft kill” weapons or some uses of the electromagnetic and radiation weapons discussed above.

1. Should the United States Ratify a New Treaty or Amendment?

The United States would be well served by signing onto a new treaty limiting the weaponization of outer space. Although the United States is currently dominant in outer space, and while most other countries do not have the financial or technological resources to match the United States, the relative simplicity and affordability of some technologies—kinetic energy ASAT, in particular—means that space superiority does not necessarily equal invulnerability to an attack that could cripple military operations or even the daily life of civilian society. By agreeing to some limitations on the militarization of outer space, the United States could still keep most of its current space technologies, which are crucial for military and civilian operation, but would protect these technologies from damage, destruction or interference by other countries.

D. By Enhancing Customary International Law

Enhancing customary international law may be a more effective means of preventing an arms race in outer space. Even if a broadly supported treaty is unfeasible, customary international law could bind countries who did not explicitly agree to the law, as long as the country does not “publicly and consistently” repudiate that law or norm. In this way, a rule of customary international law may be not only easier than negotiating a treaty,

249 See Maogoto & Freeland, supra note 207, at 184-85.
250 See supra Part II.A.4-5.
251 See Barnet, supra note 33, at 286-87.
252 See id. at 291.
253 Koplow, supra note 42, at 1229.
but also farther-reaching.\textsuperscript{254} States opposing the use of weapons in outer space should refrain from using those weapons themselves, while also making public that they are refraining because they feel that it violates international norms relating to outer space.\textsuperscript{255} Additionally, those states should openly criticize any states using weapons in outer space.\textsuperscript{256} If these statements and actions are made by a broad range of countries, the idea that weapons in outer space are illegal will likely take hold, and these actions can eventually develop into a law prohibiting weapons in outer space under customary international law.\textsuperscript{257}

\section*{VII. Conclusion}

Weapons in outer space serve as an advantage to the few, which violates one of the most basic principles in the Outer Space Treaty: that outer space is the province of all mankind. Additionally, weapons in outer space create distrust and suspicion among states in a world that is increasingly in need of global security and cooperation.

It is in the interest of all countries—those with technologically advanced space programs and those with no space programs—to come to an agreement that prevents the weaponization of outer space. Even if it is difficult to get important parties to the negotiating table in order to develop written, legally binding law, the undercurrent of international opinion regarding weapons in outer space appears to recognize their danger, and norms seem to be shifting toward a rule in customary international law that prohibits weapons in outer space. With the rapidly advancing technologies of today and the dangers that may arise if these technologies go unregulated, this norm could develop quickly into a rule of customary international law. If this is the case, a written treaty agreeing to halt the militarization of outer space could follow, and outer space could remain the province of all mankind.

\textsuperscript{254} See id. at 1228-29.

\textsuperscript{255} See id. at 1223.

\textsuperscript{256} See id. at 1225 (noting that the subjective element of customary international law can be hard to establish because “[s]tates do not routinely announce their motivations”).

\textsuperscript{257} See id. at 1226 (describing how gradual espousal and promotion of a certain practice by a number of states can crystallize a pattern of initially voluntary behavior into binding customary international law).
used to promote the interests of all mankind, rather than the advancement of a few at the expense of others.