THE INFLUENCE OF LAW UPON COMMAND OF SPACE

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Unless otherwise noted, the conclusions expressed herein are solely those of the author writing in his personal capacity. They are not intended and should not be thought to represent official ideas, attitudes, or policies of any agency of the United States Government. The author has used publicly-available information in the researching and presentation of this work.

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Abstract

The importance of law in military operations has grown exponentially over the course of history. From humble beginnings of regulating particular weapons to governing when war is permissible, law has developed into a tool, or means, of war. Lawfare, as it is called, has significant meaning in the realm of military operations in outer space, especially since both are relatively new phenomena. Although there is a significant body of work applicable to war and military operations that can be adapted to apply to outer space, none of these works consider the impact of law on spatial military operations. While an exhaustive exploration of law's impact on such operations is not possible within the constraints of a thesis, it is hoped that this work can provide a foundation from which a more in-depth approach can be launched. Thus, this thesis will examine the concept of command of space by providing a legal basis for its legitimacy before turning to an examination of lawfare with respect to two main legal issues involved in attaining and maintaining such command: the concept of vertical sovereignty and space debris.

Résumé

Au cours de l'histoire, le rôle exercé par le droit dans les opérations militaires a connu une croissance exponentielle. De débuts modestes, où sa fonction se cantonnait à régir l'usage de certaines armes, au point de déterminer l'admissibilité d'une guerre en tant que telle, le droit est devenu lui-même une arme ou un outil de guerre. La « guerre juridique », ou « *lawfare* » selon le terme consacré par la langue anglaise, revêt une signification importante dans les opérations militaires spatiales, du fait du caractère relativement récent des deux phénomènes. Bien que le droit de la guerre et les opérations militaires aient fait l'objet de nombreux développements, qui peuvent être transposés au domaine spatial, aucune étude spécifique n'a été à ce jour consacrée à la question de l'impact du droit sur les opérations militaires spatiales. Si aborder toutes les dimensions que comporte cette problématique dépasserait le cadre du présent mémoire, celui-ci souhaite jeter les bases sur lesquelles une étude plus approfondie du sujet pourrait se fonder. Ainsi, le présent mémoire entend examiner et légitimer le concept de contrôle de l'espace, en lui conférant un fondement juridique, avant d'étudier la guerre juridique à la lumière des deux principales questions qu'elle suscite, s'agissant d'atteindre et de maintenir le contrôle de l'espace : le concept de souveraineté verticale et les débris spatiaux.

Acronyms and Abbreviations

AFDD	Air Force Doctrine Document (US)
ASAT	Anti-Satellite Weapon
COPUOS	Committee on the Peaceful Uses of Outer Space
DoD	Department of Defense (US)
EEZ	Exclusive Economic Zone
FAA	Federal Aviation Administration (US)
FCC	Federal Communications Commission (US)
GEO	Geostationary Orbit
IADC	Inter-Agency Space Debris Coordination Committee
LEO	Low Earth Orbit
NASA	National Aeronautics and Space Administration (US)
NOAA	National Oceanic and Atmospheric Administration (US)
NPR	NASA Procedural Requirements
NSP	National Space Policy (US)
NTS	NASA Technical Standard
OST	Outer Space Treaty
PLAN	People's Liberation Army Navy
SpLOC	Space Lines of Communication
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
USNS	United States Naval Ship

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I. Introduction

> "You should know, then, that there are two means of contending: one by using laws, the other, force. The first is appropriate for men, the second for animals; but because the former is often ineffective, one must have recourse to the latter." -- Niccolo Machiavelli[1]

In 1890 Alfred Thayer Mahan published his seminal treatise on naval strategy entitled *The Influence of Sea Power Upon History*.[2] His thesis, cogently argued, was that sea power is a dominant influence upon the wealth and security of nations. Twenty-one years later, Sir Julian Corbett built upon Mahan's concept with his treatise entitled *Some Principles of Maritime Strategy*.[3] Corbett expanded the concept of sea power by including the interaction of the land and sea within a maritime strategy designed to achieve command of the sea. Using that maritime strategy as a strategic springboard, John Klein transposed Corbett's teachings to the realm of outer space by recognizing that the concept of "command of space" should be viewed more narrowly than command within other mediums.[4] However, neither of these authors, owing mainly to the time in which they wrote but also to the limited scope of their subject, grasped the importance of law in military operations nor understood how law could be used within the rubric of the strategic defensive in an effort to achieve command of, in this case, space. This thesis seeks to fill that void.

As the United States moves into the next stage of man's quest into outer space, it is necessary to address the military implications of its continued presence in that medium.[5] History

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[1] Niccolo Machiavelli, *The Prince* (eds. Quentin Skinner and Russell Price)(Cambridge, UK: Cambridge University Press, 1988).
[2] Alfred Thayer Mahan, *The Influence of Sea Power Upon History* (London: Sampson Low, Marston & Co., 1890).
[3] Julian S. Corbett, *Some Principles of Maritime Strategy* (London: Longmans, Green & Co., 1911).
[4] John J. Klein, *Space Warfare: Strategy, Principles and Policy* (New York: Routledge, 2006).
[5] C. Robert Kehler, "The Next Space Age" (Remarks to the National Space Symposium, 31 March 2009), online: Air Force Link <http://www.af.mil/library/speeches/speech.asp?id=464> (accessed 11 May 2009).

demonstrates that expanded commercial interests are inevitably followed by military capabilities designed to protect those interests.[6] Indeed, despite the professed goal of cooperation in outer space and the denouncement of aggressive use of force within that realm by many countries, "all spacefaring states today have military missions, goals, and contingency space-operations plans."[7] Thus, space is already a contested environment.[8] However, since the contest has yet to rise to the level of armed force, alternate means of securing command of space must be identified. It is within this vein that international law can be of use. Despite the dismissal of international law and custom as "self-imposed, imperceptible limitations hardly worth mentioning" by the preeminent military strategist Carl von Clausewitz,[9] international law plays an increasingly vital role in military operations. America's extensive use of space for a number of activities puts it in a unique position to guide and shape the international law affecting outer space in such a way as to craft an effective mechanism for achieving putative command of space in the absence of the hostilities that truly determine which nation exercises that command.[10]

The premise of this thesis is that strategic defense is the best strategy for maintaining putative command of space[11] and that international law must serve as its foundation. A strategic defense does not dictate, however, that America forego its offensive capabilities. On

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[6] Klein, *supra* note 4, at 73.
[7] Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (London: Frank Cass, 2002) at 2.
[8] China's 2007 test of an anti-satellite weapon announced to the world their belief that space is a potential theater of conflict. "The Joint Operating Environment: Challenges and Implications for the Future Joint Force" (2008), online: U.S. Joint Forces Command <http://www.jfcom.mil/newslink/storyarchive/2008/JOE2008.pdf> (accessed 8 April 2009). The United States has long understood the need to defend its access to space. See "Fact Sheet: National Space Policy" (19 September 1996), online: Federation of American Scientists <http://www.fas.org/spp/military/docops/national/nstc-8.htm> (accessed 8 April 2009).
[9] Carl von Clausewitz, *On War*, trans. & eds., Michael Howard & Peter Pare (Princeton, NJ: Princeton University Press, 1976), at 75.
[10] Klein, supra note 4, at 60. Applying Corbett to the instant situation indicates that the object of warfare is to gain command of the medium in question (e.g. air, sea, space). Corbett, *supra* note 3, at 87. Klein indicates that "command is normally thought of a being gained and exercised through the use of military might." Klein, *supra* note 4, at 60. Although military might is indeed the final arbiter, putative command of space can, as will be demonstrated, be secured via lawfare.
[11] Klein, *supra* note 4, at 76.

the contrary, offensive counter-strike is a necessary component of the defense as indicated through the pursuit of negative command when necessary.[12] However, offensive strike capabilities must be viewed within the context of strategic defense since these capabilities pose a serious risk to America's own space assets. Thus, it is imperative that the United States always think first of defending its assets and any operations must be conducted with that in mind. To that end, offensive strike must be limited to non-kinetic attack. Additionally, by subordinating offensive strike to the defense, the United States publicly repudiates aggressive armed attack, i.e. non-self defense strikes,[13] and clothes its strategy with moral authority backed by international law. As a result, America's actions receive the benefit of legitimacy and, ostensibly, world support.

This thesis constructs a compelling case for using law as a central element in a defensive strategy designed to achieve putative command of space. It will begin by providing an understanding of outer space as a spherical battlespace. The concept of the spherical battlespace enables one to account for the unique nature of outer space in its military context so that the application of maritime principles of command are more fully understood. The primary maritime concept applicable to outer space is that of lines of communication as space lines of communication are more analogous to sea lines of communication rather than land lines. The importance of these space lines of communication as an enabler of space access and use demonstrate why traditional, kinetic means of protecting those lines of communication are

[12] *Cf.* Corbett, *supra* note 3, at 33 *with* Klein, *supra* note 4, at 78-9. For a description of negative command, see Chapter One, Section 2(b).

[13] Of course, even this statement is subject to interpretation. Although one could point to Article 51 of the United Nations Charter and argue that the U.S. would be limited to self-defense only after suffering an armed attack, such an argument would run contrary to both customary international law and U.S. policy which recognizes that the "inherent" right of self defense encompasses preemptive action in response to an imminent threat. See Steven C. Welsh, "Preemptive War and International Law" (5 December 2003), online: Center for Defense Information <http://www.cdi.org/news/law/preemptive-war.cfm> (accessed 6 April 2009).

counterproductive. Once an understanding of the spherical battlespace is achieved, the concept will be used to frame an exploration of the term "command of space." It will next be demonstrated that "command of space," understood in its proper context, has a firm foundation of legitimacy in international law.

Taking an expansive view of the means for achieving command of space, the thesis will next demonstrate how the concept of lawfare has expanded traditional notions of warfare to the extent that law should now be considered a valuable means of achieving military objectives. The inextricable link between war and politics that Clausewitz spoke of[14] has grown ever stronger since his time and is now driven, in part, by international law. International legitimacy is the key to successful military operations and to obtain that legitimacy, lawfare must be employed to build legal justifications for American actions within the international realm and construct legal barriers to potential adversary actions seeking to impede freedom of access to and use of outer space.

After successfully demonstrating the applicability of lawfare to military operations, this thesis will approach international legal concerns by addressing two instances of lawfare within the outer space realm. The first of these interrelated issues, vertical sovereignty, demonstrates a potential use of lawfare to restrict or prevent American command of space and is a concept that although in its infancy is directly analogous to current expansive notions of sovereignty taking place on the high seas. The application of this enlarged view of sovereignty to the outer space realm has profound implications for military uses of outer space in that it would give nations a *de jure* basis for controlling another nation's use of outer space. Although some may contend that

[14] Clausewitz, *supra* note 9, at 87.

this issue appears settled, the concept of lawfare requires continued vigilance lest fringe arguments morph into accepted practice.

The second issue, which provides an example of how lawfare could be used to enhance command of space, relates to the physical protection of space lines of communication. This entails a legal examination of the issue of space debris, as this problem poses the single greatest risk to continued space access, and thus command of space. Linked to this discussion is the question of weaponization as a means of protecting space assets. This thesis will argue that although weaponization is either now or will soon be a necessity, the use of kinetic weapons in outer space should be prohibited since their effects merely exacerbate the space debris problem. This section will then offer a proposal for debris mitigation designed to ensure space access and use.

Given the relative peace between nations, some may question the necessity of a warfare approach to law. However, war is in the nature of man and, if history is a teacher, it is not if, but when war will reach outer space that is the issue. Recognizing this, it is a disservice to look solely to military science as a method of securing command of space. Indeed, as military methods are confined to actions taken subsequent to the initiation of hostilities, it is necessary to pursue a strategy that remains as applicable in peace as in war for it is in peace that decisive victories might be gained which provide benefits that could not accrue through armed force.[15] It is hoped that the legal strategy offered herein will satisfy that purpose.

[15] Mahan, *supra* note 2, at 22.

II. Command of Space

The intrinsic value of space, as envisioned by the Outer Space Treaty, is the utility it provides.[16] The ubiquitous nature of space technology as the signature feature of globalization continues to magnify global dependence on space-based systems[17] as nations move to exploit space utility to full advantage. However, there is no utility of space without access. Given the increasing importance of space systems to America's own national security,[18] continued access is best secured through the concept of command of space.[19] Although some may argue that command of space "collides head-on with relevant international law,"[20] such an assertion is unsupportable when one looks past its normative definition and considers its definitional construct in light of U.S. policy and then compares that definition to international law. Applying the correct definitional construct to command of space serves the interests of the larger global community in the sense that it recognizes the increasing global dependence on space technology

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[16] Klein, *supra* note 4, at 51. Freedom of use of outer space is guaranteed through Article I of the Outer Space Treaty. *Treaty Governing the Activity of States in the Exploration and Use of Outer Space*, *including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205, 18 UST 2410 [hereinafter OST].

[17] Dolman, *supra* note 7, at xi.

[18] Major General James Armor, Director of the Department of Defense National Security Space Office, indicates that "space capabilities enable unmatched battlefield awareness, advanced warning and characterization of missile attacks, precise application of force, synchronization of our combat forces, and essential command and control functions. Space capabilities also underpin many essential elements of the nation's infrastructure and enable diplomatic, informational, military, and economic elements of national power. Space capabilities are integral to U.S. economic, homeland, and national security." James Armor, "Statement Before the House Committee on Oversight and Government Reform: Subcommittee on National Security and Foreign Affairs" (23 May 2007), online: United States <http://nationalsecurity.oversight.house.gov/documents/20070523162721.pdf> (accessed 8 April 2009).

[19] Klein, *supra* note 4, at 60.

[20] Craig H. Allen, "Command of the Commons Boasts: An Invitation to Lawfare?" (1 June 2007), online: University of Washington School of Law <http://www.law.washington.edu/Directory/docs/Allen/Article_Command_of_Commons.pdf> (accessed 1 May 2009) at 2. While Professor Allen quote is taken from an article focusing on command of the sea, its precepts are readily applicable to outer space given his discussion of the legal implications of "command" in the context of all commons rather than only the sea. Id. at 5-7.

and seeks to ensure universal freedom of access to outer space. To develop a suitable understanding of the concept of command of space it is necessary to determine the proper meaning of both "command" and "space" as those terms are used within the concept. However, before analyzing the concept of command, it is first necessary to appreciate the unique nature of outer space vis-à-vis national security.

A. The Spherical Battlespace[21]

When thinking of outer space, one typically thinks of it in terms of standing on the ground and looking up. However, when it comes to achieving and maintaining command of space this conventional view does not allow for the primacy of space necessary for the achievement of command. Similarly, it also leads to a bifurcated perspective of earth and space. Adhering to this terrestrial-centric view of outer space creates a tendency to view outer space solely as it relates to earth which, in turn, results in the pursuit of a space policy grounded in the perspective of enabling earth operations rather than the best approach for achieving space security. A prime example is the weaponization debate. A terrestrial-based approach to this issue causes many to advance a strategy of achieving security through the use of kinetic weapons. However, the unique *terrain* of outer space mandates a decidedly different approach. This approach is more easily understood by viewing space as a "spherical battlespace" in which some principles of maritime strategy are adapted to the unique environment of outer space.

[21] As the attainment and maintenance of command of space is ultimately a military mission, the use of the term "battlespace" is correct despite the fact that this thesis will propose a non-lethal strategy of attaining and maintaining putative command of space. Battlespace is defined as "the environment, factors, and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission. This includes the air, land, sea, space, and the included enemy and friendly forces; facilities; weather; terrain; the electromagnetic spectrum; and the information environment within the operational areas and areas of interest. U.S. Department of Defense, "Dictionary of Military and Associated Terms" (12 April 2001), online: Defense Technical Information Center <http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf> (accessed 2 May 2009) at 64 [hereinafter DoD Dictionary].

Outer space as a spherical battlespace is a notion first introduced by General C. Robert Kehler, commander of Air Force Space Command.[22] Although General Kehler admits that the concept is still in development, he envisions the spherical battlespace as beginning at geostationary orbit (GEO) and extending down,[23] although it may be more appropriate to define it as beginning at the outer most point of the Hill Sphere and extending down to account for any possible technological advances.[24] This spherical battlespace presents an entirely different environment than that on earth. In outer space, objects are constantly in motion at speeds that can approach, or surpass, 11,000 kilometers per second.[25] This results in a battlespace that continually changes as "objects traverse across a volume that is 6,000 times greater than the airspace of earth below it."[26] Thus, time and distance take on new meanings which obviate a reliance on simplistic, single-geographic focus on a particular problem. Indeed, to properly understand space as a contested medium it must be viewed in its entirety which must be accomplished by seeing outer space as a spherical battlespace.

The *terrain* within this spherical battlespace differs greatly from that on earth, but its most prominent difference as it relates to objective of command is that, like the high seas, it cannot be reduced to possession.[27] As with the sea, one cannot physically exclude neutrals from

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[22] Kehler, *supra* note 5.
[23] Id.
[24] The Hill Sphere approximates the gravitational effects of a body on the objects orbiting around it and defines a celestial body's gravitational sphere of influence. "Hill Sphere," online: EconomicExperts <http://www.economicexpert.com/a/Hill:sphere.htm> (accessed 12 May 2009). The Earth's Hill Sphere consists of an approximately 1.5 million kilometer radius. Id. Presumably, General Kehler uses GEO as a starting point since, aside from one-way exploration missions to other parts of our galaxy and beyond, outer space beyond that point is relatively unused especially from a military standpoint. However, it may be more appropriate from a scientific standpoint to include any point in outer space that can be affected by the earth's gravitational pull within the spherical battlespace.
[25] Kehler, *supra* note 5.
[26] Id.
[27] Although this statement is firmly supported in international law, see OST, Article II, *supra* note 16 and *United Nations Convention on the Law of the Sea*, (1982) U.N. Doc. A/CONF.62/122, reprinted in (1982) 21 I.L.M. 1261 (entered into force 16 November 1994), the possession spoken of here pertains to the military conquest rather than legalistic connotations of possession.

outer space as one might with respect to territory on land.[28] Therefore, the acquisition of command of space must be made by analogy to the sea rather than to *terra firma*. The requirement, then, is to determine what is necessary to secure for ourselves and exclude from the enemy by command of space.[29]

As previously developed with respect to the sea, the exercise of utility within the *terrain* of outer space dictates that certain well-worn paths of travel have evolved.[30] These paths of travel are referred to in military circles as lines of communication and are highly valued in the context of military operations.[31] Although traditional lines of communication, whether upon land or sea or in the air, are well understood as those routes used for the transportation of goods, personnel, and supplies within the applicable medium, the nature of space mandates the inclusion of the intangible benefits of space. Thus, space lines of communication may be defined as "those lines of communication in and through space used for the movement of trade, materiel, supplies, personnel, spacecraft, electromagnetic transmissions, and some military effects" [32] and the means of utilizing those lines of communication (e.g. satellites, launch sites, etc.).[33] Whether on the sea or in space, the protection of these lines of communication is of critical importance since they are the vehicles through which access and utility are enabled.[34] Thus, the primary objective as it relates to command of space is the security of space lines of communication, a task made all the

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[28] Corbett, *supra* note 3, at 89.
[29] See id.
[30] Klein, *supra* note 4, at 51; Mahan, *supra* note 2, at 25 (Captain Mahan recognized that the sea presents itself as a wide common over which men may pass in all directions, but had developed well-worn paths called trade routes).
[31] Klein, *supra* note 4, at 51.
[32] Id. Rather than use the term Space Lines of Communication, which he would abbreviate as SLOC, Klein prefers the use of the term celestial lines of communication (CLOC) to distinguish it from Sea Lines of Communication which is also abbreviated SLOC. This author prefers Space Lines of Communication, which may be abbreviated as SpLOC to avoid confusion, as it better comports with Air Force terminology than does the term celestial.
[33] Although Klein terms the means of utilizing space lines of communication as "space communications" and differentiates between the two, this distinction is unnecessary from a command of space perspective as all are crucial to the maintenance of command. Id. at 52.
[34] Id; U.S. Department of Defense, "Department of Defense Space Policy" (9 July 1999), online: Department of Defense < http://www.fas.org/spp/military/docops/defense/d310010p.htm> (accessed 25 March 2009).

more difficult given that American space lines of communication may overlap with that of an adversary or a neutral.[35]

B. The Legal Implications of Command of Space

The use of the term "command" in crafting a strategy for a segment of the global commons[36] is likely to spark contentious debate given its militaristic undertones. Crafting a proper definition (and understanding of that definition) is important given that the era of the United States as the *sole* superpower may be coming to an end and a new international system is developing wherein emerging powers are increasingly asserting their own interests at the expense of American interests.[37] As relative power (diplomatic, economic, military or otherwise) becomes increasingly diversified and diffused, legitimacy becomes the key component in any strategy.[38] Put differently, legitimacy is the only viable method of appealing to the myriad of world actors and sustaining any effort.[39] Thus, command of space must adhere to international law if it is to be deemed legitimate. In determining whether command of space adheres to international law, it is necessary to distinguish between "command" in its normative sense and in its operative sense.

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[35] Klein, *supra* note 4, at 51.
[36] The global commons, or common spaces, are those domains that lie outside the exclusive jurisdiction of any particular state but may be accessed and used by those states or their nationals. Four domains are traditionally considered to comprise the commons: Antarctica, the high seas, the atmosphere, and outer space. Access and use is not unqualified however. States (and their nationals) must utilize the global common spaces with due regard to the interests of others, a norm that is certainly implicated by the concept of command of any common space. See Christopher C. Joyner, *International Law in the 21st Century: Rules for Global Governance* (Lanham, MD: Rowman & Littlefield Publishers, Inc., 2005) at 224-5.
[37] The JOE, *supra* note 8, at 24; Fareed Zakaria, *The Post-American World* (New York: W.W. Norton & Co., Inc., 2008) at 4, 37.
[38] Zakaria, *supra* note 37, at 39.
[39] Id.

1. The Normative Definition of Command of Space

Distinguishing the legitimacy of the normative construct of command of space requires an examination of the term "command" in both its conceptual and temporal dimensions. The conceptual dimension refers to the degree of control sought to be exercised by "command" while the temporal seeks to determine the legitimacy of such control in times of both peace and armed conflict.[40] For any definition to be legitimate it must comport with international law both conceptually and temporally. In looking at the normative definition of command one quickly learns that it's most relevant definitions include "to have authoritative control over; to rule; to have at one's disposal; to dominate by position."[41] At least one legal scholar has suggested the possibility that such definitions could lead to the conclusion that ownership or sovereignty is contemplated.[42] Quickly, and rightly, dismissing such a notion as a legal oxymoron, the scholar notes that "the very nature of a commons is that no State has sovereignty over it."[43] In the context of outer space, this view could not be better supported. The Outer Space Treaty, as the *Magna Carta* of space law[44] and the legal sources of first resort in all matters pertaining to space law,[45] unequivocally states that "outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."[46] Thus, to the extent that "command" is viewed as extending sovereignty or ownership over outer space, it must be discarded in favor of a meaning short of sovereignty.

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[40] Allen, *supra* note 20, at 3-4.
[41] Id. at 4. As this definitional model fails to provide any temporal distinction, its applicability is measured during both peace and armed conflict.
[42] Id. at 14.
[43] Id.
[44] Nandasiri Jasentuliyana, "The Role of Developing Countries in the Formation of Space Law" (1995) XX:II Ann. Air & Sp. L. 95, 97.
[45] Robert A. Ramey, *Space Warfare and the Future Law of War* (Montreal, Canada: IASL, 1999) at 96.
[46] OST, *supra*, note 16, at Article II.

Turning back to the normative definitions above, it is clear that "to rule" or "dominate" implies an illegitimate conceptual dimension. The last definition, "to have at one's disposal," is perhaps too amorphous to accurately determine legitimacy. However, since ownership and sovereignty would certainly place something at one's disposal, it can be similarly discarded. This leaves the normative definition as something over which "authoritative control" is had. The term "authoritative" implies some legitimate basis for acting[47] while the term "control" would suggest the ability "to exercise power or influence; to regulate or govern."[48] Applying this definitional construct to the realm of outer space (which derives its value from access and usage) indicates that legitimacy can be had if a State has legal authority to influence or regulate access and use of outer space.

Addressing this particular issue in a 1960 lecture at Leiden University, the preeminent air and space lawyer John Cobb Cooper quoted an eloquent statement regarding the sea:

> Upon the ocean, then, *in time of peace*, all possess an entire equality. It is the common highway of all, appropriated to the use of all; and no one can vindicate to himself a superior prerogative there. Every ship sails there with the unquestionable right of pursuing her own lawful business without interruption; but whatever may be that business, she is bound to pursue it in such a manner as not to violate the rights of others.[49]

This very concept was transposed into Article I, paragraph 2 of the Outer Space Treaty:

> Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.[50]

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[47] Allen, *supra* note 20, at 4.
[48] *Black's Law Dictionary*, 8th ed., Bryan A. Garner, ed., (St. Paul, MN: West Group, 2004) at 353.
[49] John Cobb Cooper, "Fundamental Questions of Outer Space Law" in Francis Lyall & Paul B. Larsen, eds., *Space Law* (Burlington, VT: Ashgate Publishing, Ltd., 2007) at 64 (quoting Joseph Story, former Associate Justice of the Supreme Court of the United States).
[50] OST, *supra* note 16, at Article I(2).

Conceptually, the requirement that each State be permitted to explore and use outer space "without discrimination of any kind, on a basis of equality" indicates that no State has the legal right to impose any limitation on another State's exploration and use absent some other provision of international law. While the initiation of an armed conflict might trigger lawful actions designed to curtail a State's freedom of action in outer space,[51] the normative definitional structure for command of space fails to establish such a temporal distinction. This temporal distinction is indeed necessary since "it must also be admitted that freedom within the commons in peacetime does not necessarily prevail when the drums beat the call to quarters."[52] Thus, command of space under a normative definitional construct fails the test of legitimacy. The operative definitional structure, however, proves satisfactory.

2. The Operative Definition of Command of Space

The operative definition of command of space adequately balances the temporal and conceptual dimensions of command such that it is an entirely legitimate pursuit. As alluded above, command is typically thought of a being attained and maintained through the use of military force and thought of in terms of "space control."[53] Space control, however, is much narrower in scope than command of space in that command of space "is inclusive of much more than 'space control.'"[54] Space control is defined as "combat, combat support, and combat service support operations to ensure freedom of action in space for the United States and its allies

[51] The contention that some other provision of international law might permit some restriction is derived from the fact that Article III of the Outer Space Treaty specifically requires that States carry on their outer space activities in accordance with international law, including the Charter of the United Nations. OST, *supra* note 1, at Article III. A review of the UN Charter suggests the possibility that the UN Security Council could curtail a State's freedom of action in outer space. *Charter of the United Nations*, 26 June 1945, Can. T.S. No. 7 (entered into force 24 October 1945) at Article 41 [hereinafter UN Charter]. Moreover, there is a credible argument that a State could take actions in furtherance of self defense designed to restrict a State's free access to and use of outer space. Id. at Article 51.
[52] Allen, *supra* note 20, at 14.
[53] Klein, *supra* note 4, at 60.
[54] Id.

and, when directed, deny an adversary freedom of action in space."[55] The failure to embrace the subtleties of command of space in favor of sole reliance on combat measures to achieve space control generates a mistaken belief that space control equates to hegemony. That space control is grounded in the high ground approach to warfare merely aggravates this mistaken belief.

From a strictly military standpoint, outer space is viewed by some as the ultimate high ground.[56] The highest available ground in a military operation has always been viewed as the most desirable location given its predominance of the surrounding terrain and its concomitant advantages in combating an enemy.[57] These advantages include commanding (in its normative definitional construct) overviews, enhanced fields of fire, and a more secure defensive position.[58] While such advantages are certainly desirable in times of armed conflict, the emphasis on means of combat invokes the hegemonic, normative definitional construct of command of space thereby denying legitimacy. An example of such a strategy illustrates this point. Dr. Everett C. Dolman, a professor at the United States Air Force's School of Advanced Air and Space Studies, offers a three-part plan, based on the political doctrine of *astropolitik*,[59] to achieve space control.[60] Demonstrating the plan's illegitimacy under the current international space law regime, he first advises that the United States withdraw from all space-related treaties.[61] Next, the United States should immediately "seize control of low-Earth orbit" which would, in effect, establish "a police

[55] DoD Dictionary, *supra* note 21, at 505.
[56] This includes at least one former president and one former undersecretary of the Air Force. See Peter B. Teets, "Speech before the Air Force Association Symposium" (15 November 2002) in U.S., United States Air Force, *Counterspace Operations* AFDD 2-2.1 (2 August 2004) at viii [hereinafter AFDD 2-2.1]; U.S., United States Air Force, *Space Operations* AFDD 2-2 (27 November 2006) at 1 (quoting then-senator Lyndon B. Johnson) [hereinafter AFDD 2-2].
[57] AFDD 2-2, *supra* note 56, at 1.
[58] Dolman, *supra* note 7, at 152.
[59] Astropolitik "is identified as a determinist political theory that manipulates the relationship between state power and outer-space control for the purpose of extending the dominance of a single state over the whole of the earth. Id. at 15.
[60] Id. at 157.
[61] Id.

blockade of all current spaceports, monitoring and controlling all traffic both in and out."[62] Lastly, a national space agency would be created to regulate the all space activity.[63] These three steps, Dolman argues, would provide the total domination in space that some within the U.S. military advocate.[64]

If indeed legitimacy is a desirable goal vis-à-vis American space operations, it certainly cannot be gained by withdrawing from the current regime. Rather, a method of command of space which comports with that regime must be devised. By grounding a theory of command of space firmly within the concept of the freedom of use principle as outlined in Article I of the Outer Space Treaty rather than the high ground theory, such legitimacy can be gained. The key is the distinction between positive and negative command. Much like space control, positive command denotes access assurance while negative command represents access denial with respect to an adversary.[65] The distinction, however, is that negative command is not a unilateral action taken outside the existing legal regime as advanced by Dr. Dolman's plan. Here, positive command and negative command are inextricably linked. This linkage is premised on the positive form in that both positive and negative command seeks to maintain freedom of access to and use of outer space.[66] In other words, negative command is linked to positive command in that it is the self-defense component of command of space when positive command is challenged

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[62] Id.
[63] Id. at 157-8.
[64] Id. at 156-8.
[65] To elaborate a more precise definition, command of space may be viewed as the ability to ensure freedom of access to and use of outer space and its lines of communication (positive) and the ability to deny the same to an enemy (negative) where that access and use presents a threat to the national security interests of the United States. See Klein, *supra* note 4, at 60.
[66] Although the word "access" is not used within the Outer Space Treaty, it is clearly envisioned as a right of all States. The specific wording of Article I of the Outer Space Treaty states that "Outer space, including the Moon and other celestial bodies, shall be free *for exploration and use* by all States…." OST, *supra* note 16, at Article I(2). In attempting to clarify these freedoms, three "positive" aspects of the principle of freedom of outer space have been distinguished: (1) the right of free access; (2) the right of free exploration; and (3) the right of free use. Nicolas M. Matte, *Space Activities and Emerging International Law* (Montreal: McGill University, 1984) at 270. Moreover, the rights of exploration and use are predicated upon access to outer space and cannot be exercised without such access.

by an adversary or an adversary's space systems pose a threat to the national security of the United States.[67]

a. Positive Command

Article I of the Outer Space Treaty specifically acknowledges the right of all nations to freedom of access and use of outer space.[68] Positive command of space is nothing more than access assurance. It is the freedom of action necessary to maintain unhindered access to outer space and the use of space lines of communication. Positive command is predicated on America's commitment "to the exploration and use of outer space by all nations for peaceful purposes, and for the benefit of all humanity."[69] This commitment flows from the free exploration and use principle contained in the Outer Space Treaty. As this freedom of action in outer space is vitally important to U.S. national interests, the United States "considers space systems to have the rights of passage through and operations in space without interference."[70] Thus, America will "preserve its rights, capabilities, and freedom of action in space."[71]

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[67] Negative command of space is synonymous with "counterspace operations." Counterspace operations "are the ways and means by which the Air Force achieves and maintains space superiority." AFDD 2.2-1, *supra* note 56, at 2. Space superiority is defined as "The degree of dominance in space of one force over another that permits the conduct of operations by the former and its related land, sea, air, space, and special operations forces at a given time and place without prohibitive interference by the opposing force. DoD Dictionary, *supra* note 21, at 506. It is implicit in the tone of this definition and in the specific use of the term "opposing force" that space superiority is contemplated in the context of armed conflict rather than during peacetime. This temporal aspect separates it from positive command of space in that it is not exercised at all times. Moreover, the "dominance" referred to is limited solely to the "opposing force" which removes it from any association with the normative definitional construct of command of space. Further support for the proposition that negative command of space is temporally separated from positive command of space, i.e. that it does not take place during peacetime, is reflected in the Air Force statement that "space and air superiority are crucial first steps in any military operation." AFDD 2-2.1, *supra* note 56, at 1.

[68] See, *supra* note 16.

[69] U.S., President of the United States, *U.S. National Space Policy*, National Security Presidential Directive 49 (31 August 2006), online: Federation of American Scientists < http://www.fas.org/irp/offdocs/nspd/space.html> (accessed 7 May 2009)[hereinafter National Space Policy].

[70] Id.

[71] Id.

It is for this reason, i.e. the preservation of unfettered access to outer space, that the United States "oppose[es] the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space."[72] The United States rightly believes that new legal regimes have the potential to be counterproductive in the sense that they could be crafted to, intentionally or unintentionally, restrict free access to outer space and erode the important principles of free transit and operations in outer space.[73] However, this opposition to restrictions on freedom of action in outer space is not restricted solely to U.S. freedom of action. Since at least the end of World War Two the United States has consistently acted to secure the global commons for the benefit of all.[74] This preservation of universal continued right of access extends to the present day with respect to outer space. Indeed, a careful reading of the U.S. National Space Policy fails to identify any indication that freedom of access and use is in any way solely restricted to the United States.[75] Moreover, as articulated to the First Committee of the United Nations General Assembly, the United States recognizes that " the modern world relies upon [the] free right of passage in space" and urges other nations to embrace this interest in maintaining unimpeded access to outer space.[76]

Despite its firm commitment to freedom of access to outer space as recognized by the Outer Space Treaty, the United States understands the current threat environment and the potential vulnerability of space systems from both natural and man-made sources.[77] Irrespective

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[72] Id.
[73] U.S., "Statement before the United Nations General Assembly First Committee" (11 October 2006), online: <http://www.reachingcriticalwill.org/political/1com/1com06/statements/USoct11.pdf> (accessed 7 May 2009).
[74] U.S., Department of Defense, "National Defense Strategy" (June 2008), online: DoD <http://www.defenselink.mil/news/2008%20national%20defense%20strategy.pdf> (accessed 6 May 2009) at 16.
[75] Admittedly, the National Space Policy does discuss the ability to "deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests." National Space Policy, *supra* note 69. However, as discussed below, this capability falls within the realm of negative command which is predicated upon the preservation of the right to free access and use of space as enumerated within the Outer Space Treaty.
[76] *Supra* note 73.
[77] Id.

of the freedom of access principle, prudence mandates the understanding that some may attempt to interfere with the right of access to outer space. Indeed, the fact that space is now a contested environment is evident from the Chinese test of a direct-ascent anti-satellite weapons system in January of 2007.[78] Recognizing that "covenants, without the sword, are words and of no strength to secure man,"[79] there is a need to "cooperate with our allies and the private sector to identify and protect against intentional and unintentional threats to U.S. and allied space capabilities."[80] The ability to protect this right of access is embraced within the concept of negative command of space, the most controversial element of command given mistaken assumptions as to its application.

b. Negative Command

At the outset, it must be stated unequivocally that the capability to exercise negative command of space is not, in and of itself, violative of international law. Surely, the veracity of this statement may be questioned given that command of space embraces the ability to deny another State's access to outer space. However, as with any weapons capability, space denial can obviously be used in violation of or in concert with international law. The determination of legality, however, lies in the intent behind the use of the capability, not with the capability itself. With respect command of space vis-à-vis the United States, the intent is certainly one of self defense tied directly to continued access assurance.[81]

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[78] U.S., Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China* (2008), online: University of Southern California US-China Institute <http://china.usc.edu/ShowArticle.aspx?articleID=963> (accessed 4 February 2009) at 28 [hereinafter Annual Report].
[79] Thomas Hobbes, *The Leviathan* (1651), *quoted in* Allen, *supra* note 5, at n.87.
[80] U.S., President of the United States, *Issues: Defense*, online: < http://www.whitehouse.gov/issues/defense/> (accessed 7 May 2009).
[81] See *supra* note 70-76 and accompanying text. Indeed, the United States Air Force "executes the counter space function *to protect* US military and friendly space capability while denying space capability to the adversary, as situations require." AFDD 2-2.1, *supra* note 56, at 1 (emphasis added). Some may continue to balk at this

The great American jurist, Chief Justice John Marshall opined that "the authority of a nation within its own territory is absolute and exclusive. . . . But its power to secure itself from injury may certainly be exercised beyond the limits of its territory."[82] This principle was reiterated a number of years later by former United States Secretary of State Elihu Root when he discussed the "right of self protection" as "a right recognized by international law" in stating: "The right is a necessary corollary of independent sovereignty. It is well understood that the exercise of the right of self-protection may and frequently does extend its effect beyond the limits of the territorial jurisdiction of the State exercising it."[83] International treaty law indisputably supports this contention. Specifically, the Outer Space Treaty contains two distinct provisions that, when read in conjunction, specifically stand for the proposition that self-defense is indeed an authorized use of outer space. Although not specifically addressing self-defense *per se*, Article IV is applicable in that it addresses restrictions on the means of exercising self-defense. Article III more broadly applies due to its application of international law to all outer space activities.[84]

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justification given that space denial envisions an offensive space capability. AFDD 2-2.1, *supra* note 56, at 31-34. However, as articulated by the great naval strategist Sir Julian Corbett, this assumption confuses the issue in that it substitute means for the objective; it presupposes that the classifications of offensive and defensive are mutually exclusive rather than mutually complimentary. Defense must always be supported by the offensive for "even behind the walls of a fortress men know that sooner or later the place must fall unless by counter-attack . . . they can cripple [the enemy's] power of attack." It is for this reason that classifications of offense and defense are discarded in favor of positive and negative. Corbett, *supra* note 3, at 30-1.

[82] *Church v. Hubbart*, 6 U.S. (2 Cranch) 187 (1804). Although Chief Justice Marshall was referring to the exercise of extraterritorial self defense in the context of the maritime domain, it is equally applicable to outer space. See John Cobb Cooper, *supra* note 49, at 66.

[83] John Cobb Cooper, *supra* note 49, at 66.

[84] Article I(2) does include the language "in accordance with international law," but a common reading of that phrase within the context of Article I indicates that such requirement applies to equality of use. OST, *supra*, note 16, at Article IV. However, given the general rule of interpretation of treaties, there can be no doubt as to the extraterrestrial application of international law via Article III. *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 U.N.T.S. 331, at Article 31 [hereinafter Vienna Convention].

Article IV is, at first glance, the most relevant Outer Space Treaty article to the exercise of self defense since it is the only article to specifically address military uses of outer space. It states:

> States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.
>
> The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortification, the testing of any type of weapons and the conduct of military manoeuvres [sic] on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of an equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.[85]

It is noteworthy in that it addresses not self-defense in its entirety but only specific *means* of exercising self-defense, principally the prohibition of nuclear weapons and weapons of mass destruction. In other words, it is noteworthy for what it fails to do: prohibit the exercise of self-defense in outer space via non-nuclear weapons/non-weapons of mass destruction.[86] This would ostensibly dictate that other means of engaging in self-defense, both kinetic and non-kinetic,[87] are legally permissible assuming, of course, compliance with other relevant international law.

Before moving to Article III a few words are necessary with respect to the perennial debate regarding Article IV's use of the phrase "peaceful purposes," a phrase which is also used

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[85] OST, *supra* note 16, at Article IV.
[86] Nicholas Berry, "Existing Legal Constraints on Space Weaponry" (1 February 2001), online: Center for Defense Information <http://www.cdi.org/program/document.cfm?documentid=1610&programID=75&from_page=../friendlyversion/printversion.cfm> (accessed 7 May 2009).
[87] For our purposes, a kinetic weapon may be defined as any device that uses the energy derived from its motion to destroy or disable an intended target. Such weapons may or may not contain explosives. "Kinetic Energy Weapons" (3 September 2008), online: GlobalSecurity.org <http://www.globalsecurity.org/space/systems/kew.htm> (accessed 9 April 2009).

in the preamble, and its relation to military uses of outer space, including self-defense.[88] This debate centers on whether the phrase should be interpreted to mean "non-military" or "non-aggressive or non-hostile."[89] The position of the United States has consistently been that this phrase means "non-aggressive."[90] Moreover, State practice appears to support this position.[91] Consistent with that international State practice, current American space doctrine employs this same definition:

> The OST recognizes "the exploration and use of outer space for peaceful purposes." The majority of nations have traditionally held that the "peaceful purposes" language does not prohibit military activities in outer space; such activities have taken place throughout the space age without significant international protest. The phrase, rather, has been interpreted to require that activities in space be non-aggressive, or in other words, in compliance with the requirements under the United Nations Charter and international law to refrain from the threat or use of force except in accordance with the law, such as in self-defense or pursuant to United Nations Security Council authorization.[92]

Thus, as American space doctrine looks to the application of international law via Article III of the Outer Space Treaty as support for negative command of space,[93] it is necessary to determine whether, in fact, the application of international law provides such support.

Article III of the Outer Space Treaty sets forth the extraterrestrial application of international law and specifically provides:

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[88] Although Article IV mentions the phrase "peaceful purposes" solely within the context of the moon and other celestial bodies, this thesis will not explore the possible ramifications. Rather, this thesis will assume *arguendo* that such phrase applies to the entirety of outer space given its use within the preamble as illustrative of the context and purpose of the treaty. Vienna Convention, *supra* note 84, at Article 31(2).

[89] Michael N. Schmitt, "International Law and Military Operations in Space" (2006) 10 U.N.Y.B. 89, 101.

[90] Bin Cheng, *Studies in International Space Law* (Oxford: Clarendon Press, 1997) at 515.

[91] The Vienna Convention states that "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation" shall be considered, in context with the treaty, for purposes of treaty interpretation. Vienna Convention, *supra* note 84, at Article 31(3)(b); see also, Schmitt, *supra* note 89, at 101 (stating that such state practice is "widespread").

[92] AFDD 2-2, *supra* note 56, at 27.

[93] Air Force doctrines states: "Article III clarifies that international law applies to activities in outer space. The right of self-defense, as recognized in the United Nations Charter and more fundamentally in customary international law, applies in outer space. Also, law of war precepts such as necessity, distinction and proportionality will apply to any military activity in outer space." Id. at 26.

> States Parties to the Treaty shall 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.[94]

Indicative of its specific mention within Article III, the UN Charter must be considered when ascertaining the legality of self-defense. The relevant provision for initial consideration mandates that "all Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations."[95] Despite this seemingly universal prohibition on the use of force, the UN Charter does provide for exceptions to this general rule, of which Article 51 is relevant here.[96]

It must be noted that while the UN Charter, by including Article 51, abolishes the right to wage aggressive war,[97] it does not completely bar the use of force.[98] Article 51 states:

> Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.[99]

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[94] OST, *supra* note 16, at Article III.
[95] UN Charter, *supra* note 51, at Article 2(4).
[96] A second exception to the rule proscribing the threat or use of force in international relations is collective UN action pursuant to Article 42. Id. at Article 42.
[97] The UN Charter uses the term "armed force" in lieu of "war." As will be discussed in Chapter 4, these two terms are not necessarily synonymous.
[98] Ingrid Detter, *The Law of War*, 2 ed. (Cambridge: Cambridge University Press, 2000) at 157.
[99] UN Charter, *supra* note 51, at Article 51.

As the principal purpose of the UN Charter is to "maintain international peace and security," the inclusion of a self-defense mechanism would indicate that the exercise of such right is consistent with that purpose. In other words, exercising a right of self-defense, as recognized by Article 51, would fall within the parameters of "the interest of maintaining international peace and security" as outlined in the Outer Space Treaty. A key difference, however, between the UN Charter and the Outer Space Treaty is that the latter is weapon specific while the former is not.[100] Thus, a conjunctive reading would indicate that extraterrestrial self-defense is indeed a permissible action so long as such action does not contravene the exclusions contained within Article IV of the Outer Space Treaty.

The ability to exercise negative command of space, e.g. space denial as a component of access assurance, is clearly permissible under both the Outer Space Treaty and the UN Charter in at least some circumstances.[101] Thus, the blanket statement above that command of space is grounded on the freedom of use principle contained in the Outer Space Treaty is supported by international law. However, the fact that command of space can legitimately be exercised through the use of armed force does not mean that it *should* be exercised in that way. The current peacetime status indicates that command of space must be maintained via means other than armed force lest America be deemed an aggressor nation in violation of international law. This dictates that America overcome its aversion to international legal regimes regarding outer space,[102] and view international law as a means of achieving military objectives such as

[100] Michel Bourbonniere & Ricky J. Lee, "Legality of the Deployment of Conventional Weapons in Earth Orbit: Balancing Space Law and the Law of Armed Conflict" (2007) 18:5 The European Journal of International Law 873 at 888.
[101] The discussion thus far has been limited to the right of self-defense as set forth in the UN Charter. The use of the phrase "inherent right" in Article 51 in recognizing the right of self-defense raises the issue of whether such right exists outside the UN Charter construct. As this section has been limited merely to the development of the understanding that the exercise of negative command has a legitimate basis in international law in at least some circumstances, the issue of self-defense outside the UN Charter is not discussed.
[102] See *supra* note 72-73 and accompanying text.

command of space rather than simply viewing it as a roadblock. This calls for a blend of law and warfare, otherwise known as lawfare.

III. Law as a Method of Warfare

It has been said that globalization is "the most important economic, political, and cultural phenomenon of our time."[103] Despite its many benefits, the tectonic shift of humankind in the face of globalization's onslaught has caused some to "argue that we are in a period of history with potentially cataclysmic dangers."[104] The phenomenon known as globalization, whether for good or ill, is here to stay and has fundamentally altered the national security landscape.[105] At its core, globalization "is the growing interconnectedness of all people and their societies on a worldwide scale."[106] It is characterized by "a rapid, ongoing, uneven, and sometimes disruptive process of expansion of cross-border networks and flows not only of goods, services, money, and technology, but [perhaps more importantly] also of ideas, information, culture, people, and power."[107]

The major driving force of globalization is a knowledge revolution enabled mainly through enhanced telecommunications and technology transfer,[108] much of which is further enabled through the use of space-based assets. This revolution, characterized by an exponential increase in information-sharing across borders, has fundamentally altered the geopolitical landscape such that it is malleable and "perpetually unfolding across land and sea – and now

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[103] John Micklethwaite & Adrian Wooldridge, *A Perfect Future: The Challenge and Hidden Promise of Globalization* (New York: Random House-Crown Business, 2000) xvi.
[104] R Michael Worden, "Developing Twenty-First Century Airpower Strategists" (2008) 2 Strategic Studies Quarterly 18.
[105] Stephen J. Flanagan, "Meeting the Challenges of the Global Century" in Richard L. Kugler & Ellen L. Frost, eds., *The Global Century: Globalization and National Security* (Honolulu, HI: University Press of the Pacific, 2002) 7, 8.
[106] Marilyn Dudley-Flores & Thomas Gangale, "The Globalization of Space: The Astrosociological Approach" (2007), online: American Institute of Aeronautics and Astronautics <http://www.astrosociology.com/Library/PDF/Contributions/Space%202007%20Articles/Globalization%20of%20Space.pdf > (accessed 28 April 2009) at 2.
[107] Ellen L. Frost, "Globalization and National Security: A Strategic Agenda" in Richard L. Kugler & Ellen L. Frost, eds., *The Global Century: Globalization and National Security* (Honolulu, HI: University Press of the Pacific, 2002) 35, 37.
[108] Id. at 43.

outer space and cyberspace as well."[109] What emerges is a true global order wherein economically emerging countries are creating an international system in which they are no longer mere objects but *bona fide* players.[110] This creates a diversification and diffusion of power within the international system that leads to an increased need for legitimacy in international conduct.[111] Indeed, one foreign policy advisor has opined that "the struggle to define and obtain international legitimacy . . . may prove to be among the most critical contests of our time. In some ways, it is as significant in determining the future of the U.S. role in the international system as any purely material measure of power and influence."[112] Although seemingly incongruous, the use of law as a method of war is the best means of achieving that legitimacy.

A. Seamless War

Despite the placement of the objective of command of space within the realm of military responsibility, resort to martial means need not be the sole basis for achieving that objective. Indeed, the iconic Chinese military strategist Sun Tzu acknowledged that war and diplomacy "comprise a continuous, seamless activity."[113] Moreover, he viewed diplomacy as the best means of attaining victory without bloodshed.[114] Diplomacy, i.e. "the art or practice of

[109] Parag Khanna, *The Second World: How Emerging Powers Are Redefining Global Competition in the Twenty-first Century* (New York: Random House, 2009) at xx, xxii.
[110] Fareed Zakaria, *supra* note 37, at 4-5.
[111] Id. at 39.
[112] Robert Kagan, "America's Crisis of Legitmacy" (2004) 83:2 *Foreign Affairs* 65.
[113] Michael I. Handel, *Masters of War: Classical Strategic Thought*, 2d ed. (London: Frank Cass & Co., 1996) at 31.
[114] Id. Sun Tzu is famous for opining that "For to win one hundred victories in one hundred battles is not the acme of skill. To subdue the enemy without fighting is the acme of skill." Sun Tzu, *The Art of War*, translated by Samuel B. Griffith (Oxford, UK: Oxford University Press, 1963).

conducting international relations, as in negotiating alliances, treaties, and agreements,[115] includes, *inter alia*, international law since such law is composed of both treaty law and state practice (customary international law). However, viewing outer space as a spherical battlespace results in a paradigm shift vis-à-vis law. Rather than simply seeking to transpose terrestrial-based law to space operations and suffering the influences that result, a strategic vision of the spherical battlespace can assist in using law as a means of achieving the desired objectives in outer space. Determining just how law can be used as a method of warfare to achieve military objectives, however, requires an understanding of how the evolving temporal and structural dimensions of war have altered its very meaning.

War, at its fundamental core, is merely a means by which political objectives are accomplished.[116] Thus, it is multi-dimensional rather than restricted to a use of force dimension. It encompasses myriad means in addition to armed force and stretches across time dimensions so that "war" is not initiated solely when the bullets start flying but, rather, at some point prior. Put differently, war in its normative sense no longer exists; it is no longer (if it ever was) restricted by temporal or structural constraints. The formal division between war and peace has become artificial in the sense that military action alone can no longer represent a complete meaning of war since force of arms encompasses but a single dimension of warfare.[117] A prime example is the Cold War which not only consisted of active uses of armed force by proxies on the

[115] Diplomacy is essentially "the art or practice of conducting international relations, as in negotiating alliances, treaties, and agreements. *The American Heritage Dictionary of the English Language*, 4th ed. (2004), online: <http://dictionary.reference.com/browse/diplomacy> (accessed 9 June 2009). As international law is composed of both treaty law and state practice (customary international law) it fits within this construct for the purposes herein.
[116] Clausewitz, *supra* note 9, at 87.
[117] It is this single dimension of war, i.e. armed force, with which the so-called law of war is concerned given its preference for the term "armed conflict." See, e.g. *Geneva Convention (I) for the Amelioration of the Condition of Wounded and Sick in Armed Forces in the Field*, 12 August 1949, 75 U.N.T.S. 31, 6 U.S.T. 3114, T.I.A.S. 3362 (entered into force 21 October 1950) at Article 2 (this article is common to all four Geneva Conventions); UN Charter, *supra* note 51, at Article 2(4).

battlefield, but also comprised, *inter alia*, an ideological battle waged in the court of public opinion, a space race, and legal maneuvering within international institutions. War has undergone a metamorphosis wherein it is no longer simply "using armed force to compel the enemy to submit to one's will, but rather . . . using all means, including armed force or non-armed force, military and non-military, and lethal and non-lethal means to compel the enemy to accept one's interests."[118] Thus, war has become seamless, without shape, with no discernable beginning or end and encompassing countless means.

"It has been said that between war and peace there is nothing."[119] Although some may argue that this is an accurate statement of the law[120] in relation to its temporal dimension, it is merely a throwback to past practice and fails to account for the changing nature of war. It has its foundation in Hugo Grotius' claim that a declaration of war was a necessary condition for the concept to exist.[121] This rule was eventually codified into international law[122] and was sufficient to create a *de jure* war.[123] However, the requirement of a declaration, based on the subjective will of individual States, soon resulted in the avoidance of the use of the term in an effort to secure the political advantages of applying armed forces without upgrading the event to the status of war.[124] This practice became more prevalent after war became outlawed in international

[118] Qiao Liang & Wang Xiangsui, *Unrestricted Warfare* (Beijing: PLA Literature and Arts Publishing House, 1999) at 7.
[119] Detter, *supra* note 98, at 17 (citing Hugo Grotius).
[120] Id.
[121] Id. at 10.
[122] *Hague Convention (III) Relative to the Opening of Hostilities*, 18 October 1907, 36 Stat. 2259, 205 Consol. T.S. 263.
[123] Detter, *supra* note 98, at 11.
[124] Id. at 11-12.

society[125] and is indeed the norm in modern times. The result is that a *de facto* war can exist in the absence of a *de jure* war thereby obviating any temporal distinctions vis-à-vis war.[126]

The gradually vanishing structural distinctions of war have had an even more profound effect on war than its temporal features. As indicated by the Sun Tzu reference above, an expansive concept of war is almost timeless. However, in the ebb and flow of warfare, asymmetry of means is once again becoming a growing factor. Rather than rely solely on the use of armed force, States and non-state actors are increasingly using "all available networks – political, economic, social, and military" to effect a positive action from an adversary.[127] Thus, war is currently much more than a clash of armed men upon the battlefield, it has become "widely dispersed and largely undefined; the distinction between war and peace is seamless. War [has become (once again?)] nonlinear and may have no definable battle space."[128]

Carl von Clausewitz counsels that war may be viewed as an act of physical force designed to compel an adversary to do that which he would not otherwise be predisposed to do.[129] Although recognizing that an adversary's psychological capacity (or will) to resist is of paramount importance in war, Clausewitz, due to the difficulty of quantifying such capacity, "defaulted to the aim of rendering an enemy defenseless by destroying his physical capacity to

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[125] Id. at 12. Detter references the Kellogg-Briand Pact which purported to renounce war as an instrument of national policy. *The Treaty of Paris* [Kellogg-Briand Pact], 1928, (1929) 94 L.N.T.S. 57.
[126] As noted in Chapter 4, *infra*, modern international law eschews the use of the term "war" in favor of "armed force" or "armed conflict" or similar phrases.
[127] Thomas X. Hammes, *The Sling and the Stone: On War in the 21st Century* (St. Paul, MN: Zenith Press, 2004) at 2. Hammes discusses modern war as an evolutionary process that has, to date, culminated in "fourth-generation warfare." Whether Hammes' historical analysis and conclusions are factually accurate in no way diminishes his observations of the current state of warfare. For a critique of the fourth-generation warfare concept, see Antulio J. Echevarria II, "Fourth Generation War and Other Myths" (November 2005), online: Strategic Studies Institute <http://www.strategicstudiesinstitute.army.mil/pdffiles/pub632.pdf> (accessed 18 February 2009).
[128] James Gardiner, "Facing a New Form of War" (2009), online: Air Force Times <http://www.airforcetimes.com/community/opinion/marine_opinion_gardiner070319/> (accessed 20 May 2009).
[129] Clausewitz, *supra* note 9, at 75.

resist."[130] This compartmentalized notion of war as comprising solely military action has continued to affect modern thinking to such a degree that many overlook the fact that war is, and has always been, the province of families, tribes, cities, business entities, and a multitude of other non-state entities using strategies that often involve means other than physical force.[131] Clausewitz alluded to this broader concept of war when he opined that war is "the continuation of political activity by other means."[132] Therefore, despite Clausewitz's mostly one dimensional focus on warfare (i.e. the use of physical force),[133] he acknowledged that war should be viewed as part of a continuum wherein war and political activity are not divorced.[134] Although this Clausewitzian continuum remains valid, the increasingly asymmetric nature of warfare indicates that its concept has intensified to such a degree that warfare should be viewed as an activity that stretches across dimensions and is inclusive of non-violent means in pursuit of military objectives.[135] In other words, war is seamless and statesmen and commanders would do well not only to heed Clausewitz's advice to identify the "kind of war on which they are embarking; neither mistaking it for, nor trying to turn into, something that is alien to its nature,"[136] but should also endeavor to accurately identify measures just short of war that are nevertheless aimed at achieving military objectives. Thus, while war may be a continuation of political activity, lawfare is the continuation, or initiation, of war by political or legal means.[137]

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[130] Echevarria, *supra* note 127, at 12.
[131] William S. Lind, "Cultures in Conflict: The Four Generations of Modern War" (23 April 2003), online: Counterpunch < http://www.counterpunch.org/lind04232003.html> (accessed 18 February 2009).
[132] Clausewitz, *supra* note 9, at 87.
[133] Clausewitz states that "among the contingencies for which the state must be prepared is a war in which every element calls for policy to be eclipsed by violence." Id. at 88. Thus, policy become subservient to violence.
[134] Id. at 605.
[135] For two views on the multi-dimensionality of warfare see Thomas X. Hammes, *supra* note 127; Qiao & Wang, *supra* note 118.
[136] Clausewitz, *supra* note 9, at 88.
[137] Phillip Carter, "Legal Combat: Are Enemies Waging War in Our Courts?" (4 April 2005), online: Slate <http://www.slate.com/id/2116169/pagenum/all/> (accessed 24 February 2009).

B. Lawfare

Although lawfare is not war *per se*, it has its place within Clausewitz's war continuum as a variant of warfare whereby law is used "as a substitute for traditional military means to achieve military objectives."[138] Placing lawfare within this continuum is appropriate given its war-like aims and the need to think in terms of military strategy as a means of combating its use against the United States and employing its use in furtherance of American interests. Although some may balk at the inclusion of law as a method of warfare, it is a natural fit. In analyzing the writings of Clausewitz and Jomini,[139] Sir Julian Corbett opined that each agreed that "the fundamental conception of war is political"[140] and these policy considerations permeate every aspect of war. This broad view of war was shared, and discussed in finer detail, by Sun Tzu as well. Sun Tzu viewed the use of armed force and the political, diplomatic, and logistical preparations for war as integral parts of the same activity.[141] It is from this view of war that Sun Tzu counsels commanders that "what is of supreme importance in war is to attack the enemy's strategy."[142] Law not only provides the method of doing so in peacetime, but can also generate positive effects designed to achieve or move toward wartime objectives.

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[138] "Lawfare, the Latest in Asymmetries" (18 March 2003), online: Council on Foreign Relations <http://www.cfr.org/publication.html?id=5772> (accessed 24 February 2009). It is interesting to note that Hugo Grotius, the "father of international law," may be the first practitioner of lawfare with his publication of *Mare Liberum* in 1609 defending the concept of freedom of the high seas. At the time of its publication, European countries, including Grotius' Holland, were in keen competition for commercial rights to trade routes over the high seas. Having lost out to Portuguese and Spanish domination, Grotius was commissioned to defend Holland's right to navigate freely upon the seas. Thus, Grotius used law to accomplish an objective that Dutch military power could not and thereby solidified the concept of freedom of the seas in modern international law. See R.P. Anand, "Maritime Practice in South-East Asia until 1600 A.D. and the Modern Law of the Sea" (1981) 30 Int'l & Comp. L.Q. 440 (available at http://journals.cambridge.org/download.php?file=%2FILQ%2FILQ30_02%2FS0020589300038392a.pdf&code=64c01c2bcd1dcc00d298f403f4d38dc7).

[139] Baron Antoine-Henri de Jomini was a prominent military strategist. See Handel, *supra* note 113.

[140] Corbett, *supra* note 3, at 25-26.

[141] Handel, *supra* note 113, at 37.

[142] Id. at 41.

Air Force General Charles Dunlap, perhaps the most vocal advocate of lawfare theory, provides two Gulf War instances of lawfare wherein law, or at least the perceived violation of law, was used to achieve desired military effects. First, an air attack on the Al Firdos bunker in Baghdad was ordered by American commanders because it was believed to be an Iraqi command and control center.[143] Despite the lawfulness of attacking this target, post-strike photographs of the bodies of the families of Iraqi officials that had used the bunker as a bomb shelter resulted in downtown Baghdad being placed off-limits to further air attacks.[144] In a second instance, the photographs of the destruction of hundreds of vehicles used by the retreating Iraqi Army on the so-called Highway of Death similarly resulted in a halt to air operations.[145] The military effect is obvious; lawfare achieved what the Iraqi Army could not, it gave the Iraqis the equivalent of air superiority in the sense that they had become immune from American airpower.[146] Thus, the Iraqi Army attacked the American airpower strategy with an effective use of lawfare. While these instances of lawfare took place on the battlefield, the use of lawfare off the battlefield can also have profound effects on military operations.

The examples employed by General Dunlap have caused some commentators, including General Dunlap himself,[147] to think in terms of "positive" lawfare and "negative" lawfare. This school of thought would classify the legitimate use of law in pursuit of military objectives as positive lawfare and the misuse of law to achieve military objectives as negative lawfare.[148]

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[143] Charles J. Dunlap, "Law and Military Interventions: Preserving Humanitarian Values in 21st Century Conflicts" (29 November 2001), online: Harvard Kennedy School <http://www.hks.harvard.edu/cchrp/Web%20Working%20Papers/Use%20of%20Force/Dunlap2001.pdf> (accessed 13 February 2009) at 5.
[144] Id.
[145] Id.
[146] Id.
[147] Charles J. Dunlap, "Lawfare Today: A Perspective" (Winter 2008) Yale Journal of International Affairs, at 149 and "Lawfare in Modern Conflicts" in *The Reporter* (Keystone Edition, 2005) at 95.
[148] Harriette Hill, "Lawfare and the International Criminal Court: Questions and Answers" (14 January 2008), online: AMICC <http://www.amicc.org/docs/Lawfare.pdf> (accessed 24 February 2009).

Although this distinction may be useful from a pedagogic standpoint, the positive-negative dichotomy merely clouds the issue as any categorization of a particular use of lawfare is subjective.[149] Additionally, as evidenced by those same examples, this positive-negative division of lawfare is predicated on the use or abuse of law within an operational setting.[150] In other words, law is viewed as a barrier whereby American troops have little recourse but to adhere to international law despite the refusal of an adversary to do so. Harnessing the value of lawfare, however, requires that the subjective positive-negative view of lawfare be discarded in favor of an objective perspective. This necessitates an understanding of lawfare in its operational and strategic contexts.

1. Operational Lawfare

Operational lawfare is so named because its use is aimed at the achievement of a distinct military objective at the tactical or operational level of war.[151] Although failing to use the term,

[149] For example, Professor John Yoo has accused attorneys representing Guantanamo detainees of using the legal system as a weapon against the United States. Randall T. Coyne, "A Law Professor's Reflections on Representing Guantanamo Detainees" (Spring, 2009) 1:1 Northeastern University Law Journal 97, 104. One presumes this to be a negative characterization despite the fact that defense attorneys were working within the legal system and adhering to the rule of law rather than misusing it.

[150] General Dunlap states that in exploring the use of lawfare in warfare he "was trying to focus on the exploitation of real, perceived, or even orchestrated incidents of law-of-war violations being employed as an unconventional means of confronting American military power." Charles J. Dunlap, "Lawfare Amid Warfare" (3 August 2007), online: Washington Times <http://www.washingtontimes.com/news/2007/aug/03/lawfare-amid-warfare/> (accessed 13 May 2009).

[151] The tactical level of war is "The level of war at which battles and engagements are planned and executed to achieve military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. DoD Dictionary, *supra* note 21, at 540. The operational level of war is "the level of war at which campaigns and major operations are planned, conducted, and sustained to achieve strategic objectives within theaters or other operational areas. Activities at this level link tactics and strategy by establishing operational objectives needed to achieve the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. Id. at 399. The term "operational" rather than "tactical" is used as a modifier vis-à-vis lawfare since its use at this level is confined to distinct military operations. Of course, operational lawfare can also achieve strategic effects, but the difference is the immediate effect sought. General Dunlap's examples illustrate their operational characterization in that both instances of lawfare achieved the operational objectives of neutralizing American airpower. See *supra* notes 143-46 and accompanying notes.

General Dunlap provides perhaps the most in-depth look at this aspect of lawfare.[152] In addition to the examples above wherein operational lawfare was used to curtail American airpower, the opening phases of Operation Enduring Freedom also provides an example of the use of operational lawfare by the United States. Concerned about the commercial availability of satellite imagery that could be used by Taliban and Al Qaeda forces in Afghanistan, the United States used legal means, in this case contracts, to deny enemy use of that information thereby enhancing American operations.[153]

However, the typical form of operational lawfare is its use as a values-based method of asymmetric warfare.[154] The immediate, operational objective is to constrain an adversary's military options. This method of lawfare has been used quite extensively against the United States by using our adherence to the rule of law against us.[155] It typically takes the form of putting lawful targets (e.g. enemy weapons or troops engaged in combat) near protected persons or property in the hopes of either achieving protection for those lawful targets (i.e. placing them off limits) or provoking an attack that could be used in propaganda to portray American action as contrary to international law.[156] The inherent dilemma for American forces in these cases centers on the principle of proportionality in the law of armed conflict. This principle dictates that lawful targets can be engaged under international law despite the presence of civilians or other protected persons or property so long as the damage inflicted is not out of proportion to the

[152] Dunlap does suggest that multiple dimensions of lawfare exist. Dunlap, *supra* note 143.
[153] Charles J. Dunlap. "Lawfare in Modern Conflicts" in *The Reporter* (Keystone Edition, 2005) at 95. Perhaps this example best demonstrates the futility of bifurcating lawfare into positive and negative categories since this use would obviously be deemed positive from the American perspective, but negative from the Iraqi viewpoint.
[154] Id. at 96.
[155] Id.
[156] Id.; U.S., Department of Defense, "Report of the Defense Science Board: Challenges to Military Operations in Support of U.S. Interests" (December 2008), online: DoD <http://www.acq.osd.mil/dsb/reports/2008-12-2007_SS_Vol_II.pdf> (accessed 14 May 2009) at 36.

military advantage gained.[157] However, it becomes extremely difficult to advance cold legal arguments in the face of media attention focused on images of dead and maimed civilians.[158]

Law permeates the modern battlefield. General James L. Jones, 32d Commandant of the United States Marine Corps, emphasizes this phenomenon:

> It used to be a simple thing to fight a battle . . . . In a perfect world, a general would get up and say, 'Follow me, men,' and everybody would say, 'Aye, sir,' and run off. But that's not the world anymore . . . . You have to have a lawyer or a dozen. It's become very legalistic and very complex.[159]

While the operational component of lawfare is generally most often thought of as representative of its dangers, it does not present the most danger to, nor does it offer the most support for American interests. It is lawfare in its strategic context that offers such challenges and opportunities.

2. Strategic Lawfare

Law as it relates to military conduct has clearly evolved from the days when it merely governed military conduct on the battlefield. Although tactical lawfare often seeks to gain some battlefield advantage, strategic lawfare seeks to bind military power by establishing the parameters of an adversary's political will or military action. Binding, in the context of military power, seeks to exploit a commitment to the rule of law to insulate one from the full effects of an

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[157] *Protocol Additional to the Geneva Conventions of 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I)*, 8 June 1977, 1125 U.N.T.S. 3 (entered into force 7 December 1978) at Article 51, para 5(b) and Article 57, para 2(b).

[158] An illustration of this difficulty is found in a comment from a coalition soldier in Afghanistan. Responding to a media inquiry regarding civilian casualties in light of military operations, a coalition soldier responded that "NATO would not fire on positions if it knew there were civilians nearby." In addition to being a misstatement of the law of armed conflict, such statement ostensibly yields a definite military objective to enemy forces by, in the least, generating the perception that subsequent civilian casualties are violative of international law. Dunlap, *supra* note 147, at 149.

[159] Lyric Wallwork Winik, "A Marine's Toughest Mission" (3 November 2006), online: Parade Magazine <http://www.parade.com/articles/editions/2003/edition_01-19-2003/General_Jones> (accessed 24 February 2009).

adversary's military power.[160] In effect, strategic lawfare is used to fasten military power to international rules and institutions that channel or confine the ways in which that power can be used.[161] As with operational lawfare, it is also used effectively to constrain American power. The familiar metaphor is the small and weak Lilliputians lashing the more powerful Gulliver to the ground as he lay sleeping.[162] Gulliver erred through inattentiveness. America cannot make the same mistake and, instead, must recognize that strategic lawfare can be used either for or against American interests.

The premise for binding the United States using strategic lawfare lies in the knowledge that America, perhaps more than others, assigns a more prominent role to law within our society.[163] Indeed, rightly or wrongly, Americans envision their country as "a city upon a hill" for all to see, exemplifying and personifying the rule of law.[164] Indeed, even in military matters we have recognized the primacy of law since our founding. The Declaration of Independence, our founding document, was but an appeal to law to justify the taking up of arms against a

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[160] Stephen M. Walt, *Taming American Power: The Global Response to U.S. Primacy* (New York: W.W. Norton and Co., 2005) at 144.

[161] G. John Ikenberry, "Strategic Reactions to American Preeminence: Great Power Politics in the Age of Unipolarity" (28 July 2003), online: National Intelligence Council <http://www.dni.gov/nic/confreports_stratreact.html> (accessed 24 February 2009). An early use of strategic lawfare occurred with the Brussels Act of 1890 in which European powers sought to maintain their edge in firepower vis-à-vis African tribes by prohibiting the sale of breech loading rifles in equatorial Africa. Max Boot, *War Made New: Weapons, Warriors, and the Making of the Modern World* (New York: Gotham Books, 2006) at 153-54. Since Europeans were typically heavily outnumbered in their colonial confrontations with African tribes, it is not difficult to surmise that without the effect of this use of strategic lawfare the colonization of Africa might not have been possible. Id at 146-69. In this sense, any treaty which seeks to limit the spread of weapons can be viewed as achieving a strategic advantage for those states already possessing the weapons in question. A case in point is the Nuclear Non-Proliferation Treaty. *Treaty on the Non-Proliferation of Nuclear Weapons*, 1 July 1968, 729 U.N.T.S. 161, 21 U.S.T. 483 (entered into force 5 March 1970). Despite non-adherence issues involving some states, a majority of non-nuclear states have forgone nuclear weapons development thereby enhancing the strategic position of those that do possess such weapons.

[162] Walt, *supra* note 160, at 144.

[163] David B. Rivkin, Jr. and Lee A Casey, "The Rocky Shoals of International Law" (1 December 2000), online The National Interest <http://www.nationalinterest.org/General.aspx?id=92&id2=10704> (accessed 23 February 2009).

[164] John Winthrop, "A Model of Christian Charity" (1630), online: University of Virginia <http://religiousfreedom.lib.virginia.edu/sacred/charity.html> (accessed 24 February 2008).

despotic regime.[165] Thus, law is both our genius and our Achilles' heel.[166] So much so that Clausewitz's dismissal of international law and custom as "self-imposed, imperceptible limitations hardly worth mentioning,"[167] clearly misses the mark of the modern impact of international law on military operations. Indeed, the rising importance of international law in military operations has caused at least two commentators to opine that "international law may become one of the most potent weapons ever deployed against the United States."[168] Another commentator has argued the validity of this warning by indicating that a common strategy is to attack public support for particular actions (e.g. military action, weaponization of space, etc.) by painting them as violations of international law.[169] Resort to such strategic lawfare by our adversaries, whether near-peer or otherwise, has altered the traditional warfare paradigm since the effects (real or perceived) of international treaties, laws, and resolutions will not only affect policy choices, but also military decision-making and, indeed, the very legitimacy of American military operations.

Although strategic lawfare is a threat to American military power, it is still simply a means of warfare that may be used for good or for ill. As with any means of warfare the nature of its use belongs to those that use it. Although Robert Bork argues, at least with respect to the use of force, that international law is "a harmful fantasy" given that there is no international law deserving of the name,[170] it is clear that international law does indeed exist and America is bound by it.[171] Moreover, since its existence binds not only America but also other nations as well, it

[165] Rivkin & Casey, *supra* note 163.
[166] Id.
[167] Clausewitz, *supra* note 9, at 75.
[168] Rivkin & Casey, *supra* note 163.
[169] Robert H. Bork, *Coercing Virtue: The Worldwide Rule of Judges* (Washington D.C.: AEI Press, 2003) at 39.
[170] Id. at 38.
[171] Rivkin & Casey, *supra* note 163.

can be shaped "in ways that both support our national interests and that are consistent with our philosophical foundations."[172] Thus, the remedy is not apathy but engagement.

America must actively engage the international legal process in an effort to mold law in such a way as to enhance national security interests. As new technology arises and America's reliance on space-based assets increases, a lawfare strategy becomes crucial in the outer space medium. Although the Outer Space Treaty and its progeny have met the needs of the international community, and continue to do so, there has been a constantly increasing push to create additional restraints to American freedom of action in outer space.[173] Moreover, where additional restraints have not been proposed, there has been an effort to interpret existing international law in such a way as to limit American freedom of action in outer space.[174] To counter this effort, American attorneys, both civilian and military, must offer critical analyses of international law proposals and alternative views of existing law that comport with American views on the utility of space. To date, much of the scholarly writing on international law

[172] Id.

[173] See, e.g., Nancy Gallagher, "Towards A Reconsideration of the Rules for Space Security" in *Perspectives on Space Security*, John M. Logsdon & Audrey M. Schaffer, eds. (December 2005), online: George Washington University <http://www.gwu.edu/~spi/PERSPECTIVES_ON_SPACE_SECURITY.pdf> (accessed 31 may 2009). Interestingly, Gallagher claims that it is the United States that seeks to "unilaterally rewrite the rules for space in support of a national security strategy" despite the fact that the U.S. position is that the current space legal regime is sufficient. Id. at 24. Similarly, one is at a loss in understanding the argument that additional international law is necessary when, according to Gallagher, the international community is "not satisfied by US reassurances that its military space activities will be restrained by UN Charter provisions governing the use of force, by military rules of engagement, and by requirements for high-level approval of particularly consequential military space operations." Id. at 23. Indeed, if the concern is that both international and domestic law and regulation are insufficient to assuage international concern, how can more law and regulations address those concerns? In other words, if the U.S. is predisposed to ignore international law as this proffered argument insinuates, why would one expect that additional law would matter? Thus, the inescapable conclusion is that arguments such as these are not advanced in response to a perceived unwillingness of the United States to follow international law, but rather in the hopes that the United States will continue its adherence to such law and be restricted in its ability to employ the freedom of use of outer space it currently enjoys to secure its national security interests in outer space. For an understanding of how international law is used to bind nation-states, see Walt, *supra* note 160, at 144.

[174] This issue is explored in Chapter Three with respect to the issue of vertical sovereignty.

applicable to outer space is often quite critical of American freedom of action in outer space.[175] America has succumbed to strategic lawfare long enough and must now pursue its own lawfare strategy to reassert its interpretation of international law. The analysis and proposals in the following chapters are but a beginning.

[175] See, e.g., Hui Zhang, "Act Now to Stop a Space Arms Race" (10 June 2005), online: The Financial Times <http://www.ft.com/cms/s/0/8f862780-d94c-11d9-8403-00000e2511c8.html?nclick_check=1> (accessed 9 June 2009); Bruce K. Gagnon, Árms Race in Space" (19 March 2009),online: Foreign Policy in Focus <http://www.fpif.org/fpiftxt/5971> (accessed 9 June 2009); Neha Kumar, "US Anti-Satellite Weapon Test: Arms Race in Outer Space (28 February 2008), online: Institute of Peace and Conflict Studies <http://www.ipcs.org/article_details.php?articleNo=2499> (accessed 9 June 2009).

IV. Vertical Sovereignty

> The lack of transparency in China's military and security affairs poses risks to stability by increasing the potential for misunderstanding and miscalculation. This situation will naturally and understandably lead to hedging against the unknown.[176]

A future conflict with China over Taiwan may be seen by some as improbable given China's increasing integration into the global economy, but prudence requires that any military planner recognize the possibility of such a scenario especially in light of China's apparent unwillingness to renounce armed force to achieve unification.[177] Recognizing its technological inferiority in space vis-à-vis the United States, China has focused its military efforts on "developing capabilities that target potential vulnerabilities of the United States."[178] This is particularly the case with American dependence on space assets, something China views as America's "soft ribs and strategic weakness."[179] Recognizing that military options are not a viable choice at this time given the financial, military, and technological gap between it and America, China has sought to use international law as a means of countering American space power, in part to buy itself time to develop the capabilities needed to take advantage of America's space vulnerabilities.[180] To justify its future military actions in outer space, China is continually developing doctrine and legal justifications to garner support within the international community.[181] It has, in essence, taken Machiavelli's advice[182] and not only sought to achieve

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[176] Annual Report, *supra* note 78, at I.
[177] Id. at 41; Michael E. O'Hanlon, *Neither Star Wars Nor Sanctuary: Constraining the Military Uses of Space* (Washington D.C.: Brookings Institution Press, 2004) at 91-2.
[178] United States-China Economic and Security Review Commission, *Report to Congress* (2008), online: United States-China Economic and Security Review Commission < http://www.uscc.gov/index.php> (accessed 16 February 2009), at 161 [hereinafter Report to Congress].
[179] Id. at 156.
[180] Trevor Brown, Soft Power and Space Weaponization" (2009) XXIII Air & Space Power Journal 66, 67.
[181] Larry M. Wortzel, "The Chinese People's Liberation Army and Space Warfare: Emerging United States-China Military Competition" (17 October 2007), online: American Enterprise Institute for Public Policy Research <http://www.aei.org/publications/pubID.26977/pub_detail.asp> (accessed 6 February 2009).
[182] See *supra* note 1.

its military objectives through resort to law but also to legitimize its military actions should resort to military means become necessary.

A. Chinese Lawfare

The Chinese view space as an essential arena for future warfare.[183] However, given its technological inferiority vis-à-vis the United States, viewed by China as its most likely adversary, "the 'correct' strategy for the weaker power is to deny its opponent use of [space] as much as possible."[184] China has indeed made the "correct" choice by pursuing a strategy that seeks to inhibit American freedom of action in space through the development of capabilities to destroy, damage, and interfere with American satellite systems in an effort to blind and deafen its military.[185] Complementing its increase in military capabilities, China has embraced asymmetric warfare at a level previously unimagined.[186] Taking an expansive view of warfare wherein war is viewed as "not only a military struggle, but also a comprehensive contest on fronts of politics, economy, diplomacy, and law,"[187] China employs "a cocktail mixture of warfare" that is prosecuted both with a force of arms and without.[188] Thus, China appears to eschew the operational use of lawfare in favor of the strategic use of lawfare as an "active defense" to be employed in advance of actual conflict and across the spectrum of human activity.[189]

The Chinese recognition of the need to engage in warfare across the spectrum of human activity is evident from their adoption of the concept of "Three Warfares" whereby

[183] Report to Congress, *supra* note 178, at 160.
[184] Craig H. Allen, "Command of the Commons Boasts: An Invitation to Lawfare?" in Michael D. Carston, ed. *Global Legal Challenges* 83 Int'l Legal Studies 1 (Newport, RI: Naval War College, 2007), at 35.
[185] Military Report, *supra* note 78, at 19, 22-23.
[186] See Qiao & Wang, *supra* note 118; Annual Report, *supra* note 78, at 19-21.
[187] Annual Report, *supra* note 78, at 19.
[188] Qiao & Wang, *supra* note 118, at 56.
[189] Annual Report, *supra* note 78, at 16-19; Wortzel, *supra* note 181.

psychological, media, and legal warfare are combined and incorporated into a coordinated strategy.[190] This approach views lawfare as "the use of international and domestic laws to gain international support and manage possible political repercussions of China's military actions"[191] and counsels that one should seize "the earliest opportunity to set up regulations."[192] The interplay between public opinion warfare (i.e. media and psychological warfare), as used by the Chinese, and lawfare is significant. Media warfare seeks to manipulate the news media to achieve a propaganda victory and break an enemy's will to fight.[193] Psychological warfare employs the use of "selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups and individuals . . . to induce or reinforce foreign attitudes and behavior favorable to [China]."[194] Thus, China blends lawfare and public opinion warfare in order to achieve international legitimacy for its actions.[195]

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[190] Use of this concept was approved in 2003 by the Chinese Communist Party Central Committee and the Central Military Commission. Annual Report, *supra* note 78, at 19.
[191] Id.
[192] Qiao & Wang, *supra* note 118, at 55.
[193] U.S., US-China Economic and Security Review Commission, *Hearing on China's Views of Sovereignty and Methods of Access Control*, 110th Cong. (27 February 2008)(Prepared Statement of Phillip A. Meek), online: US-China Economic and Security Review Commission <http://www.uscc.gov/hearings/2008hearings/written_testimonies/08_02_27_wrts/08_02_27_meek_statement.php> (accessed 13 February 2009) [hereinafter Meek Statement].
[194] Id.
[195] A Congressional Report states:

> China uses news media and information resources to develop a favorable environment to achieve propaganda objectives and break the adversary's will to fight. Such activities, although they do not make use of military force, are employed for the purpose of catalyzing negative international opinion concerning the nation or national activity against which they are targeted. The PRC government's use of public opinion warfare may entail comments to the press by Chinese officials, articles in China's daily newspapers and publications, advertisements purchased in domestic or foreign publications, employment of public relations firms or lobbyists, and actions of Chinese representatives at various international venues, including UN gatherings. China frequently employs these venues to deliver criticisms of or rebuttals to claims that run counter to those of the PRC government. Although they are nonmilitary attacks, these occasions are used to produce negative international opinion of the nations that oppose China's interests or desires.

China's skillful use of international organizations to mold opinion in its favor is readily apparent when one considers its diplomatic maneuvering in the United Nations where it often uses its Security Council veto power to protect abusive regimes with which it is on friendly terms.[196] The military implications of such action can be found in the fact that ulterior motives are often at stake.[197] Indeed, such diplomatic wrangling within the United Nations, where resolutions can often be interpreted as "soft" law,[198] has been quite favorable to China and contributed to a fall in American influence in that organization.[199] For example, on human rights issues, the United States has seen its win-rate decline from 57 to 22 percent between 1995 and 2006, while China saw an increase from 43 to 82 percent.[200] The driving issue for China and, it seems, the allies which it covets, is sovereignty which has replaced ideology as the principle source of division within the United Nations.[201] As Western nations have begun attempts to use the United Nations to protect individuals against abusive states, China has positioned itself as the guardian of national sovereignty.[202] Along with former colonial possessions, China has consistently blocked resolutions designed to condemn or impose sanctions on abusive nations.[203] Perhaps because of its own history of violated sovereignty at the hands of Western powers, the

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Report to Congress, *supra* note 178, at 154.

[196] James Traub, "The World According to China" (3 September 2006), online: New York Times Magazine <http://www.nytimes.com/2006/09/03/magazine/03ambassador.html?_r=2&adxnnl=1&oref=slogin&adxnnlx=1157245759-EcrExowPPWQir41HdLINDA> (accessed 24 February 2009).

[197] For example, in a classic example of *real politik*, China has appointed itself protector of Sudan, a country that continues to permit Janjaweed insurgents to slaughter innocents in Darfur, because it buy much of its oil from that country. Id.

[198] Soft law is most often viewed as hortatory rather than legally binding obligations. In other words, although it appears to be a legally binding obligation, it nevertheless falls short of what is required to formally bind a State. Andrew T. Guzman & Timothy L. Meyer, "Explaining Soft Law" (2009), online: Berkley Electronic Press <http://works.bepress.com/cgi/viewcontent.cgi?article=1040&context=andrew_guzman> (accessed 21 May 2009) at 3-4. Given its non-binding nature, one wonders how the term "law" can properly be used within the phrase.

[199] Mark Leonard, "Unrestricted Warfare" (6 February 2009), online: Adbusters <http://www.adbusters.org/magazine/79/unrestricted_warfare.html > (accessed 24 February).

[200] Id.

[201] Traub, *supra* note 196.

[202] Id.

[203] Id.

doctrine of absolute sovereign rights is a central aspect of China's foreign policy.[204] Nowhere is China's expansive view of sovereignty more prevalent than in relation to the sea, a use of lawfare that has enormous ramifications for outer space.

B. China's Maritime Predicate

For China, the concept of sovereignty is inextricably linked to the "national humiliation" it has historically suffered at the hands of Western military powers.[205] Once a powerful nation in its own right, China suffered a century of national humiliation that was ushered in by its defeat in the First Opium War.[206] As a result, China was forced to sign the Treaty of Nanjing which, among other things, required China to open five Chinese ports to foreign trade and cede the island of Hong Kong to the British.[207] After a Second Opium War, the terms of this treaty was extended to all European nations operating in China.[208] Chinese national prestige was dealt another major blow with its loss in the Sino-Japanese War of 1894-95 and the subsequent Treaty of Shimonoseki whereby China ceded the island of Taiwan to Japan.[209] Having little respect for the oft-defeated Chinese military, Western powers responded with a policy of "carving up the Chinese melon," whereby China was forced to permit them to operate "spheres of influence"

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[204] Id.
[205] Report to Congress, *supra* note 178, at 141.
[206] Li Deyi, "Great Significance of China's War of Resistance Against Japanese Aggression" (8 December 2005), online: Chinese People's Institute of Foreign Affairs <http://www.cpifa.org/EN/Html/2005128171058-1.html> (accessed 26 February 2009).
[207] "Treaty of Nanjing (Nanking), 1842" (26 June 1843), online: UCLA Asia Institute <http://www.international.ucla.edu/eas/documents/nanjing.htm> (accessed 24 February 2009). Not to be undone, the United States demand a similar treaty, the Treaty of Wangxia, which essentially gave the United States the same terms. U.S., Department of State, "The Opening of China Part I: The First Opium War, the United States, and the Treaty of Wangxia, 1839-1844, online: U.S. Department of State <http://www.state.gov/r/pa/ho/time/dwe/82011.htm> (accessed 24 February 2009).
[208] U.S., Department of State, "The Opening of China Part I: The First Opium War, the United States, and the Treaty of Wangxia, 1839-1844, online: U.S. Department of State <http://www.state.gov/r/pa/ho/time/dwe/82011.htm> (accessed 24 February 2009).
[209] "100 Years Since Treaty of Shimonoseki: Asia's First Independent Republic" (2 June 1996), online: New Taiwan <http://www.taiwandc.org/hst-1895.htm> (accessed 24 February 2009).

within China.[210] The subsequent Boxer Rebellion protesting these spheres was violently crushed and, once again, China was forced to make concessions; this time giving Western Powers the right to maintain military troops in Beijing which effectively placed the Chinese Imperial government under house arrest.[211] The subjugation and exploitation of China continued through the end of World War II when the defeat of Japan "declared the end of the history that the Chinese nation was subjected to foreign bullying and persecution, and signified a great turning point in the annals of the Chinese nation from decline to rejuvenation."[212]

The emergence of the People's Republic of China in 1949 brought with it a strong desire to recapture its great power stature and the staunch defense of sovereignty factors heavily into this desire.[213] To that end, a fundamental objective of the People's Liberation Army, as evidenced by China's 2006 Defense White Paper, is the "enhancement" of national sovereignty.[214] It is noteworthy that objective is "enhancing national security" rather than simply defending it since this statement telegraphs China's intent to expand its sovereignty. In keeping with its "Three Warfares" concept, China has pursued a policy of sovereignty enhancement with respect to the sea by using small military-style actions combined with aggressive legal

[210] "Ch'ing China: The Boxer Rebellion" (14 July 1999), online: Washington State University <http://wsu.edu/~dee/CHING/BOXER.HTM> (accessed 24 February 2009). These spheres of interest involved holding leases for all railway and commercial privileges in various regions. The Russians got Port Arthur, the British got the New Territories around Hong Kong, the Germans got a leasehold in Shantung. Due to a focus on the Philippines and Guam, the United States received no sphere, but instead insisted on an "open door" policy in China in which commercial opportunities were equally available to all European powers and the political and territorial integrity of China remained untouched. Id.
[211] Id.
[212] Deyi, *supra* note 206.
[213] Report to Congress, *supra* note 178, at 141.
[214] Id. at 150.

maneuvering to shape international opinion and interpretation of the maritime legal regime in an effort to extend its sovereignty and justify military preparations to enforce such claims.[215]

1. China's Position

Although China is a signatory to the United Nations Convention of the Law of the Sea (UNCLOS),[216] which specifically indicates that territorial waters (i.e. sovereignty) end at the twelve nautical mile mark as measured from a nation's low-water line along its coast,[217] China has consistently sought to extend its sovereignty beyond the limits of internationally recognized territorial waters. In addition to the completely exclusive nature of territorial waters, UNCLOS permits a nation to enjoy exclusive economic rights within its Exclusive Economic Zone (EEZ), which extends outward two hundred nautical miles from the same baseline used to determine territorial waters.[218] Within the EEZ, a nation enjoys "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources,"[219] but cannot restrict another state's freedom of navigation or overflight.[220] China, however, has sought to extend its sovereignty to include its entire EEZ through the passage of a domestic law subjecting passage and overflight through its EEZ to the laws and regulations of the People's Republic of China.[221]

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[215] Id. at 152. Any argument that these writings are merely academic lost credibility in the aftermath of China's 2007 anti-satellite weapon test. Bruce W. MacDonald, *China, Space Weapons, and U.S.* (New York: Council on Foreign Relations, 2008) at 7.

[216] *United Nations Convention on the Law of the Sea*, (1982) U.N. Doc. A/CONF.62/122, reprinted in (1982) 21 I.L.M. 1261 (entered into force 16 November 1994)[hereinafter UNCLOS]. China became a signatory on 7 June 1996. "Chronological Lists of Ratifications of, Accessions and Successions to the Convention and the Related Agreements (5 February 2009), online: United Nations <http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#The United Nations Convention on the Law of the Sea> (accessed 16 February 2009).

[217] Id. at Art. 3.

[218] Id. at Article 57.

[219] Id. at Article 56.

[220] Id. at Article 58, 87.

[221] Report to Congress, *supra* note 178, at 145. Indeed, China's extension of sovereignty with respect to the sea began the day it ratified the treaty. Upon ratification of UNCLOS, China made a declaration that, *inter alia*, placed a notification requirement on warships exercising the right of innocent passage as provided by Article 17 of UNCLOS. See, "Declarations and Statements Upon Ratification: China" (7 June 1996), online: UN <http://www.un.org/Depts/los/convention_agreements/convention_declarations.htm#China Upon ratification>

It has used this interpretation of UNCLOS and its domestic law "to substantiate the interception, harassment, and engagement of U.S. aircraft flying above its [EEZ]"[222] and U.S. ships operating within its EEZ.[223]

The first major airspace incident occurred in April of 2001, when an unarmed United States Navy EP-3E (Aries II) turboprop reconnaissance aircraft, while on a routine mission in international airspace approximately 70 miles off the coast of China, was struck by a People's Liberation Army Navy (PLAN) F-8II jet fighter.[224] The U.S. aircraft survived the near-fatal encounter and landed safely at a Chinese naval base where the crew and craft were promptly detained by the Chinese government.[225] In March of 2009, a similar incident occurred with respect to the USNS *Impeccable*, an American naval vessel under supervision of the U.S. Navy but carrying a civilian crew, while it was conducting a survey of the ocean floor about 75

(accessed 15 June 2009). UNCLOS fails to distinguish between warships and other ships with respect to innocent passage. So long as foreign ships, whether warships or otherwise, operate peacefully by adhering to the requirements of innocent passage as enumerated in Article 19(2), they are entitled an unhindered right of innocent passage. Although a coastal state may adopt laws and regulations regarding innocent passage, Article 21 of UNCLOS limits such laws and regulations to safety and environmental concerns. China's notification requirement is not related to such concerns and the fact that it applies solely to a particular class of ships further supports this contention. As a result, China's attempted extension of jurisdiction past its territorial waters runs afoul of UNCLOS. This area of dispute is compounded by the fact that China opted out of the treaty's dispute settlement mechanisms, leaving no mechanism for the impartial consideration of China's claims. "Declarations and Statements Upon Ratification: China" (25 August 2006), online: UN <http://www.un.org/Depts/los/convention_agreements/convention_declarations.htm#China Upon ratification> (accessed 15 June 2009).

[222] Id. at 145.

[223] See "Naked Aggression" (12 March 2009), online: The Economist <http://www.economist.com/world/asia/displayStory.cfm?story_id=13279348&source=most_commented> (accessed 21 May 2009).

[224] Richard Best, et.al, "China-U.S. Aircraft Collision Incident of April 2001: Assessments and Policy Implications" (10 October 2001), online: Congressional Research Service <http://www.fas.org/sgp/crs/row/RL30946.pdf> (accessed 16 February 2009), at 1. The United States contends that the Chinese pilot flew so close to the EP-3 as to clip its wings thereby causing a near fatal accident. Although China and the United States disagree as to the cause of the incident, there is photographic evidence supporting the contention that the United States previously filed a formal protest with China regarding the aggressively flying of the very pilot involved in this incident. In the previous incidents, the pilot flew within ten feet of another U.S. Navy aircraft, and in one encounter even held up a piece of paper with his email address written on it, thereby lending credence to the American version of this incident. Id. at 4, 9-10.

[225] Id. at 1.

nautical miles from China's Hainan Island.[226] In this incident, five Chinese Navy ships intercepted and impeded the free navigation of the *Impeccable* by forcing her to come to an emergency stop before she eventually withdrew from the area.[227] Despite the fact that both of these incidents took place outside Chinese territorial waters, the justification for both of these actions lies in China's belief that the U.S. violated its sovereignty by conducting military operations, military reconnaissance in these two cases, within the Chinese EEZ.[228]

2. Legal Analysis

As indicated above, China is bound by UNCLOS as a result of its consent to be governed by that treaty as indicated by ratification on 7 June 1996.[229] The fact that the other party to these incidents, the United States, is not a party to the convention is of no consequence since the relevant provisions of UNCLOS apply to all states and, indeed, treaty law applicable to this issue is also supported by customary international law.[230] UNCLOS specifies that State sovereignty extends only so far as the limits of its territorial sea which may extend up to a limit of 12 nautical miles as measured from baselines further specified in the treaty.[231] Within this territorial sea,

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[226] See "Naked Aggression," *supra* note 223. China clams that the ship was actually conducting a reconnaissance mission of Chinese submarine bases on Hainan Island. Id. This distinction does not affect the legal analysis of Chinese maritime sovereignty claims that follows.

[227] Id.

[228] James Kraska & Brian Wilson, "China Wages Maritime Lawfare" (11 March 2009), online: Foreign Policy <http://experts.foreignpolicy.com/posts/2009/03/11/china_wages_maritime_lawfare> (accessed 13 May 2009). It is interesting to note that although China claims that U.S. military reconnaissance operations within the Chinese EEZ is a violation of international law, it has enaged in the very same conduct with respect to Japan. See Vaudine England, "Who's Right in the South China Sea Spat?" (13 March 2009), online: BBC News <http://news.bbc.co.uk/2/hi/asia-pacific/7941425.stm> (access 15 June 2009)(arguing, incorrectly (see *infra* note 238 and accompanying text) that the requirements of innocent passage as defined in Article 19 of UNCLOS applies to transit through a coastal state's exclusive economic zone).

[229] See *supra* note 216.

[230] Since the Reagan Administration, the official U.S. position has been that the navigational provisions of UNCLOS are reflected in international customary law. Peter Buxbaum, "US Administration Pushed UNCLOS" (24 August 2007), online: ISN < http://www.isn.ethz.ch/isn/Current-Affairs/Security-Watch/Detail/?ots591=4888CAA0-B3DB-1461-98B9-E20E7B9C13D4&lng=en&id=53665> (accessed 9 June 2009).

[231] UNCLOS, *supra* note 216, at Articles 2, 3. Sovereignty extends to the air space above the territorial sea as well. Id. at Article 2(2).

ships of all nations enjoy the right of innocent passage.[232] Passage is deemed innocent if it is not prejudicial to the peace, good order, and security of the coastal State.[233] A ship is considered to be operating prejudicial to the peace, good order, or security of a coastal State if it engages, *inter alia*, in any act aimed at collecting information to the prejudice of the defense or security of the coastal State.[234] Were these two incidents to involve aircraft or ships operating in or above China's territorial sea, the United States would clearly be in the wrong.[235] However, these incidents took place approximately 70-75 miles off the coast of China, clearly outside Chinese territorial waters.

Both China and the U.S. agree that the EP-3E aircraft and the *Impeccable* were operating outside China's territorial sea but within China's EEZ.[236] The EEZ is defined as the zone adjacent to the territorial sea not to exceed a limit of 200 nautical miles as measured from the same baseline to determine the territorial sea.[237] Within the EEZ, all States enjoy the freedom of navigation and overflight.[238] Despite the clarity of the treaty's language, China continues to aggressively pursue a strategy of gradually extending its strategic depth or sovereignty in order to support offshore defensive operations.[239] China's continual adherence to this flawed legal logic and penchant for reinforcing it with military maneuvers demonstrates that, "through an orchestrated program of scholarly articles and symposia, China is working to shape international opinion in favor of a distorted interpretation of the Law of the Sea by shifting scholarly views and national perspectives away from long-accepted norms of freedom of navigation and toward

[232] Id. at Article 17.
[233] Id. at Article 19(1).
[234] Id. at Article 19(2)(c).
[235] For sake of argument, it is assumed, in accordance with China's contention, that both craft were conducting military reconnaissance missions.
[236] Best, *supra* note 224, at 1; "Naked Aggression," *supra* note 223.
[237] UNCLOS, *supra* note 216, at Article 57.
[238] Id. at Article 58.
[239] Kraska & Wilson, *supra* note 228.

interpretations of increased coastal state sovereign authority."[240] By doing so, China is not only misreading the law of the sea, but perhaps also setting the stage for the same strategy in outer space.

C. The Implications for Outer Space

China's use of scholarly articles and symposia to shape international law in such a way as to deter an adversary prior to combat is not restricted to the maritime arena. Principle among China's non-military means of sovereignty enhancement is its use of lawfare within the outer space realm. In keeping with China's seamless view of warfare, a number of Chinese authors[241] are exploring the nexus between traditional notions of State sovereignty and outer space. In so doing, particular emphasis is placed on establishing a clear legal basis for potential military operations in outer space. Although the legal justifications for vertical sovereignty may only be in their formative stages it is necessary to address them now lest they gain any measure of credence necessary to support military operations designed to restrict freedom of movement as has already been attempted with respect to the sea.

It is only in recent times that man has sought to place a vertical limit on sovereignty. The right of absolute sovereignty over the airspace above a state's territory has "been claimed and

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[240] Id. China has maritime-related dispute with at least five other nations: Philippines, Malaysia, Vietnam, Brunei, and Taiwan. Pauline Jelinek, "Chines Vessels "Harassed US Navy Ship"" (9 March 2009), online: The Independent <http://www.independent.co.uk/news/world/politics/chinese-vessels-harassed-us-navy-ship-1640814.html> (accessed 15 June 2009).

[241] There is an opaque quality in China's space doctrine and policy that complicates an understanding of China's true intentions. Pinning down Chinese policy positions is even more difficult since China, when challenged, can always deny that a specific author's opinion represents those of the government and, in turn, assert that the international community was on notice when taking actions consistent with published opinions. Given the risk involved in determining Chinese intent through its authors, one must understandably hedge against the unknown. Annual Report, *supra* note 78, at I; U.S., Meek Statement, *supra* note 193. Any argument that these writings are merely academic lost credibility in the aftermath of China's 2007 anti-satellite weapon test. Bruce W. MacDonald, *China, Space Weapons, and U.S.* (New York: Council on Foreign Relations, 2008) at 7.

exercised as far back into history as proof may exist of the creation and protection by state law of exclusive private property rights in such place."[242] Land and airspace, therefore, were viewed as inseparable; a rule that can be traced to Roman times.[243] This right of absolute vertical sovereignty continued to prevail until the Chicago Convention of 1944 when, despite the Convention's failure to define airspace, it defined an aircraft as "any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of air against the earth's surface."[244] By indicating that the Convention would apply "only to those parts of the atmosphere where gaseous air is sufficiently dense to support balloons and airplanes," it can be argued that the Convention set a *de facto* limit on airspace.[245] The proposition received further support when, at the dawn of the space age, no nations objected to the overflight of satellites above their territorial airspace.[246] However, the absence of a definitive resolution of this issue in international law has caused some within China to embrace the concept of vertical sovereignty.[247]

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[242] John Cobb Cooper, *Roman Law and the Maxim "Cujus est solum" in International Air Law*, *reprinted in* John Cobb Cooper, Exploration in Aerospace Law (Ivan A. Vlasic, ed., 1968) at 58.
[243] Id. at 58.
[244] *Aircraft Nationality and Registration Marks, Annex 7 to the Convention on International Civil Aviation* § 1 (4th ed. 1981). The words "other than the reactions of the airagainst the earth's surface" were added in the 1960s to exclude hovercraft from the definition of aircraft.
[245] John Cobb Cooper, *Legal Problems of Upper Space*, *reprinted in* John Cobb Cooper, Exploration in Aerospace Law (Ivan A. Vlasic, ed., 1968) at 272.
[246] John Cobb Cooper, *The Russian Satellite – Legal and Political Problems*, *reprinted in* John Cobb Cooper, Exploration in Aerospace Law (Ivan A. Vlasic, ed., 1968) at 282. It is interesting to note that one week after Russia launch ed its Sputnik satellite, twenty-one nations (including Britian, Canada, France, and the United States) submitted a draft disarmament resolution calling for an international inspection system to ensure outer space would be used for peaceful purposes. This proposal supports the argument that the sponsors believed sovereignty did not extend to the space beyond airspace (as derived from the Chicago Convention's definition of aircraft) otherwise a multilateral inspection system would not be necessary as any state could prohibit such activity by exercising their sovereign rights. Id. at 282-3.
[247] Meek Statement, *supra* note 193.

1. The Chinese Position and Its Implications

China's principle advocate for vertical sovereignty is Major General Cai Fengzhen, the Deputy Chief of Staff of the People's Liberation Army Air Force.[248] General Cai contends that the space above ground, including airspace and outer space, is inseparable and integrated.[249] Thus, General Cai reaches back to the Roman-based doctrine of *cujus est solum, ejus est usque ad coelum*,[250] which essentially means "he who owns the soil, owns up to the sky."[251] Support for this principle ostensibly lays in the fact that black letter international law, i.e. treaty law, fails to provide a concrete definition of airspace, outer space, or any delineation between the two. The absence of a clear, legal demarcation point, so the argument goes, dictates that this vertical sovereignty argument is not contrary to international law.[252] This failure to establish the delineation between sovereign air space and outer space led one legal scholar to predict the possible emergence of claims of vertical sovereignty. Bin Cheng warned in 1997 that "States which object to certain types of satellites, such as those that engage in remote sensing, [may] claim sovereignty over national space above the usual heights at which such satellites orbit so as to subject them to the consent and control of the States overflown but not necessarily to exclude them."[253]

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[248] Report to Congress, *supra* note 178, at 147; "Chinese People's Liberation Army Air Force Visits RAF Leuchars" (22 November 2007), online: Royal Air Force <http://www.raf.mod.uk/news/archive.cfm?storyid=67FB2780-1143-EC82-2E106DA30199531A> (accessed 16 February 2009).
[249] Report to Congress, *supra* note 178, at 147.
[250] See Cooper, *Roman Law*, *supra* note 242, at 58.
[251] *A Law Dictionary, Adapted to the Constitution and Laws of the United States* (John Bouvier, ed., 1856), online: <http://legal-dictionary.thefreedictionary.com/Cujus+est+solum> (accessed 9 June 2009).
[252] Meek Statement, *supra* note 193.
[253] Bin Cheng, *Studies in International Space Law* (Oxford, UK: Oxford University Press, 1997) at 398.

This is precisely the position taken by Bao Shixiu, a Senior Fellow at the Academy of Military Sciences of the People's Liberation Army of China.[254] In his critique of the United States' 2006 National Space Policy (NSP), Bao advances the notion of vertical sovereignty with the following curious statement: "The NSP declares that U.S. space systems should be guaranteed safe passage over all countries without exception (such as 'interference' by other countries, even when done for the purpose of safeguarding their sovereignty and their space integrity)."[255] An immediate exception that can be taken with Bao's skewed presentation of the NSP is that the statement to which he refers is not limited solely to U.S. space systems. The statement actually reads: "The United States considers space systems to have the rights of passage through and operations in space without interference."[256] Thus, the right recognized in the U.S. Space Policy is applicable to all space systems, which is compatible with the Outer Space Treaty. However, the principle issue of concern vis-à-vis vertical sovereignty is not whether China may seek to claim complete sovereignty of the portions of outer space over its territory, which is not claimed herein, but rather that the statement presupposes that satellite navigation above Chinese territory is subject to Chinese "consent and control" as articulated by Professor Cheng.[257]

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[254] Although the authoritativeness of civilian Chinese authors is difficult to access, the writings of researchers at the Academy of Military Sciences (AMS) are accorded significantly more weight since Chinese military doctrine is developed by researchers and academics rather than warfighters and the AMS is considered to have the most reputable staff. Kevin Pollpeter, "The Chinese Vision of Space Military Operations" in James Mulvenon and David Finkelstein, eds., *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People's Liberation Army* (Alexandria, VA.: The CNA Corporation, 2005), at 329-30.
[255] Bao Shixiu, "Deterrence Revisited: Outer Space" (Winter 2007) China Security, at 2.
[256] U.S., President of the United States, *U.S. National Space Policy*, National Security Presidential Directive 49 (31 August 2006), online: Federation of American Scientists < http://www.fas.org/irp/offdocs/nspd/space.html> (accessed 7 May 2009)[hereinafter National Space Policy].
[257] Cheng, *supra* note 253, at 398.

The basis for this argument can be traced to Chinese assertions of sovereignty over the airspace above its EEZ.[258] Recall that the root of that argument lies in China's assertion that the conduct of military reconnaissance missions constitutes an abuse of overflight rights.[259] Some authors have argued that such rationale can be extended to outer space as much of the missions conducted by American satellites passing over China relate to military missions.[260] Dr. Larry Wortzel, formerly of the U.S. Army's Strategic Studies Institute, captured this potential argument quite well:

> Military thinkers in China are also debating how sovereignty affects warfare in space. Legal scholar Ren Xiaofeng summarizes Beijing's sensitivity to reconnaissance and military activities in its exclusive economic zone (EEZ) and its adjacent airspace this way: "Freedom of navigation and overflight does not include the freedom to conduct military and reconnaissance activities. These things [military reconnaissance activities] amount to forms of military deterrence and intelligence gathering as battlefield preparation." These activities in the EEZ, according to Ren, connote preparation to use force against the coastal state. When Ren refers to the "adjacent airspace," he includes outer space and space reconnaissance.[261]

Although some may balk at this interpretation or seek to discern an innocuous rationale for its proffer, there is a military advantage to be had in advancing it. The ostensible military objective for such action is denial, i.e. "the temporary elimination of some or all of a space system's capability to produce effects, usually without physical damage."[262] Essentially, this legal argument, if ultimately successful, would have the strategic effect of rendering American military satellites useless and could establish a legal predicate for Chinese military action against

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[258] Meek Statement, *supra* note 193.
[259] Best, *supra* note 224, at 20.
[260] Meek Statement, *supra* note 193.
[261] Wortzel, *supra* note 181 (quoting Ren Xiaofeng, "Zhuanyu Jingjiqu Junshi Liyong de Falu Wenti: Zhongguo de Guanjiao").
[262] AFDD 2-2.1, *supra* note 56, at 31. The American definition is used here despite the discussion's focus on Chinese military objectives for lawfare because the Chinese vision of space warfare draws heavily from American doctrine and writings. Pollpeter, *supra* note 254, at 351.

those satellites.[263] Additionally, in light of China's increased military expenditures for research and development of counterspace[264] technology, such action would effectively blind the United States with regard to Chinese military actions. Finally, it would make national means of verification with respect to any existing or new arms reduction treaties impossible. Thus, any proposal to ban or limit weapons in outer space would be meaningless since there would be no effective method for ensuring treaty compliance.

2. Legal Analysis

At first glance the loophole afforded the vertical sovereignty argument via the failure to establish a legal demarcation between airspace and outer space appears insurmountable. However, reliance on this failure ignores the historical context of that debate which centers on the establishment of a minimum limit to outer space; there is no controversy over the fact that current satellite orbital patterns are indeed within outer space.[265] Irrespective of the demarcation argument, Articles I and II of the Outer Space Treaty are dispositive of the issue in that these Articles expressly refute any contention that vertical sovereignty, in any form, is a legally viable argument.[266] Article I, in pertinent part, states that outer space, including the moon and other celestial bodies, "shall be the province of all mankind." This language has been universally understood to act as an extension of the Treaty's freedom of exploration and use language by

[263] Meek Statement, *supra* note 193. Although one may point to real or perceived American space capabilities and make the same argument, the difference is that, unlike China, American does not advance a policy that limits freedom of navigation.
[264] Counterspace operations are the ways and means by which an air force achieves and maintains air superiority, which means that it enjoys freedom to attack in space as well as freedom from attack in space. AFDD 2-2.1, *supra* note 56, at 1.
[265] Meek Statement, *supra* note 193.
[266] OST, *supra* note 16.

specifically indicating that "all nations have a *nonexclusive* right to use and explore space."[267] Coupled with this nonexclusive right of use is Article II's proscription of "national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." Thus, a conjunctive reading of Articles I and II indicates that, for our purposes, a use of outer space is permissible so long as it does not rise to the level of an appropriation by claim of sovereignty or by any other means.[268] The issue then becomes whether the vertical sovereignty argument, in spite of the phrase's invocation of sovereignty, actually constitutes an appropriation.

Sovereignty denotes supreme authority within a territory.[269] The authority suggested is one of "the right to command and correlatively the right to be obeyed," with the term "right" connoting legitimacy.[270] Thus, a claim of sovereignty over outer space, or any portion thereof, seeks, in some measure, to extend a State's territorial sovereignty, i.e. "the right of states to determine the rules applicable to a certain area and to enforce those rules," into outer space.[271] The holder of sovereignty derives its authority for sovereignty from some mutually acknowledged source of legitimacy.[272] In the realm of outer space, such legitimacy must be had through the Outer Space Treaty which explicitly prohibits appropriation via means of sovereignty, thus removing the essential ingredient for sovereignty.[273] In this sense the vertical sovereignty argument is akin to the 1976 Bogota Declaration which relied on the fact that there

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[267] Joanne Irene *Gabrynowicz, "Still Relevant (and Important) After All These Years: The Case for Supporting the Outer Space Treaty" (22 October 2007), online: Res Communis* <http://rescommunis.wordpress.com/2007/10/page/2/> *(accessed 2 March 2009)(emphasis added).*

[268] As the vertical sovereignty claim centers on a perceived legal right to regulate activity within that portion of outer space directly above a State's territory, there is no indication that said State is actually making use of that portion of outer space or occupying it in such a way as to invoke an analysis of an appropriation "by means of use or occupation" as that phrase is uses with Article II of the Outer Space Treaty.

[269] Dan Philpott, "Stanford Encyclopedia of Philosophy: Sovereignty" (17 March 2009), online: Stanford University < http://plato.stanford.edu/entries/sovereignty/> (accessed 25 May 2009).

[270] Id.

[271] Katrin Nyman Metcalf, *Activities in Space – Appropriation or Use?* (Uppsala, Sweden: Uppsala Universitet, 1999) at 95.

[272] Philpott, *supra* note 269.

[273] Philpott, *supra* note 269.

was (and still is) no legal definition of outer space to declare that geostationary orbit was not part of outer space since its nature depends specifically on gravitational phenomena from earth.[274] Thus, it was argued, those portions of geostationary orbit directly above equatorial States are sovereign territory of those States rather than part of outer space.[275] This argument has been rejected by the international community[276] and although the vertical sovereignty argument differs slightly in that it seeks a limited scope of sovereignty,[277] it must meet the same fate.

To the extent that territorial sovereignty is not specifically advanced, however, the concept of jurisdiction becomes relevant. Jurisdiction is linked to territorial sovereignty in that it includes the right to make and enforce rules outside of a State's territory.[278] It is the authority to regulate without taking physical possession as is done in relation to physical territory. Recall that the unique terrain of outer space, as discussed in chapter one, does not permit one to reduce it to possession[279] or to cordon it off from the use of others.[280] However, the ability to deny certain uses of outer space would clearly usurp a State's freedom of use of outer space as provided in Article I of the Outer Space Treaty since a State exercising the right to consent and control has the implied authority to deny by simply refusing consent or by imposing onerous conditions. This would clearly constitute an appropriation by other means, as that term is used in Article II of the Outer Space Treaty, since "any use of [outer space] which excludes others or

[274] Metcalf, *supra* note 271, at 232.
[275] Id.
[276] Id. at 237.
[277] Philpott states that sovereignty can be absolute or non-absolute. Absolute sovereignty bestows unconditional authority over all matters within a specified territory while non-absolute limits the scope of such authority to certain matters. Philpott, *supra* note 269. Vertical sovereignty seeks only to regulate certain aspects of use of the outer space above a State's territory with respect to specific military operations. See *supra* notes 248-61 and accompanying text.
[278] Metcalf, *supra* note 271, at 97.
[279] Of course, in contrast to outer space, celestial bodies can be physically possessed but such possession is not the subject matter of this work.
[280] Metcalf, *supra* note 271, at 218.

lays claim on a permanent basis are banned according to international treaties and principles of customary international law."[281]

For the purposes of addressing the vertical sovereignty argument, the problem which must be addressed is whether the use of a satellite is exclusionary with respect to other states' right to free access and use of outer space. While it is true that a satellite in operation does preclude the use of the space it occupies to other states, it is not feasible to interpret the prohibition of appropriation so broadly.[282] A more workable interpretation would indicate that a State could not legitimately deny a use of space to another State unless it interfered with its own use or was otherwise not permitted under international law. As a satellite passing over a State does not possess the permanence and preclusion of any other use necessary to constitute an appropriation, it does not prohibit the use of outer space by another State.[283] Similarly, most space related treaties do not impose any limitations on the use of space.[284] The one exception is the Outer Space Treaty's prohibition of specific military uses related to nuclear weapons, weapons of mass destruction, and military activities related to celestial bodies.[285] Thus, the use of satellite for military reconnaissance and other military-related missions such as communications would be permitted since they are not expressly forbidden and the concept of vertical sovereignty is not an avenue for introducing such restrictions.

[281] Id. at 242.
[282] Id. at 240-41.
[283] Id. at 222.
[284] Id.; see also Cheng, *supra* note 253, at 526-38.
[285] OST, *supra* note 16, at Article IV.

V. Space Debris and Space Weapons

On February 10, 2009 at 11:56 AM Eastern Standard Time, two satellites attempted to occupy the same position in outer space with disastrous consequences.[286] Traveling at nearly 17,000 miles per hour approximately 470 miles above the earth's surface, the collision of the two satellites, an active communications satellite owned by the American company Iridium and a defunct Russian satellite, substantially increased the amount of space debris in earth's most congested orbit thereby exacerbating the danger of future collisions.[287] Space debris, or space junk as it is sometimes called,[288] is any man-made object in outer space that serves no useful purpose;[289] it is the trash created from man's presence in outer space. Unlike debris on earth, space debris travels in space at high speed thereby posing a risk of damage to or destruction of other man-made space objects.[290] Space debris can be created as a result of normal human space activity as described above or through the testing or use of anti-satellite weapons (ASAT).[291]

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[286] David Wright, "Colliding Satellites: More Space Junk in Exactly the Wrong Place" (26 February 2009), online: Union of Concerned Scientists <http://www.ucsusa.org/assets/documents/nwgs/SatelliteCollision-2-12-09.pdf> (accessed 16 March 2009) at 1.

[287] Id. at 5-6.

[288] In addition to space debris and space junk, the term orbital debris is also used. These terms are interchangeable and have an identical meaning. However, the term space debris is used throughout this paper as it complies with the term used by the Department of Defense. DoD Directive 3100.10, *Space Policy* (9 July 1999) at 13.

[289] Id. at 1.

[290] David Wright, "Space Debris" *Physics Today* (October 2007), online: American Institute of Physics < http://www.ucsusa.org/assets/documents/nwgs/wright-space-debris-physics-today.pdf> (accessed 18 March 2009) at 36. Debris as small as 1 millimeter can damage a satellite if it strikes a vulnerable area. Although shielding a satellite can afford some protection from debris smaller than 1 centimeter, this shielding increases the cost of the satellite and of the launch resulting in minimal shielding for many satellites. Shielding is ineffective for debris larger than 1 centimeter, the size of which has the capability of completely destroying a satellite. Low Earth Orbit, the most congested orbit, has an estimated 284,000 known pieces of debris larger than 1 centimeter. Id. However, shielding also results in what Michael Taylor refers to as a "mass penalty." This mass penalty results from the addition of the shield itself and the increased propulsion system necessary to deliver the increased weight into orbit. This added mass reduces the amount of fuel the satellite can carry and increases the amount of fuel necessary to maneuver in orbit, thus reducing its lifespan. Moreover, the increased mass increases launch cost. See Michael Taylor, *Orbital Debris* (Montreal: IASL, 2006) at 31-32.

[291] Id.

Indeed, the intentional ASAT test by China in January 2007 has been called "the most prolific and severe fragmentation" in the history of space operations.[292]

The cold reality is that as a result of American reliance on vulnerable space assets, "the incentive for any potential foe to develop ways of attacking them remain too great to be overcome by any international agreement."[293] As space technology spreads, the incentives for small and medium states to seek space-warfare capabilities increase, and the destruction of a major US satellite would represent both a substantive and symbolic victory over the United States.[294] To combat these threats, U.S. space doctrine calls for a number of measures including offensive counterspace operations which incorporate both kinetic and non-kinetic means of attacks.[295] Thus, the space debris danger to U.S. space security is two-fold: that which emanates from routine civilian operations and that which results from kinetic weapon testing and use.

However created, the compounding space debris problem creates the danger of Kessler's syndrome[296] within the region of space most used by military reconnaissance satellites.[297] The degree of importance of American space assets to national security cannot be overstated. Although myriad threats to space security exist, space debris is the only threat that is self-replicating. Moreover, efficient space debris mitigation is unlikely to be achieved voluntarily and, thus, must be accomplished through the application of international law. Given the crucial

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[292] Leonard Davis, "China's Anti-Satellite Test: Worrisome Debris Cloud Circles Earth" (2 February 2007), online: Space.com < http://www.space.com/news/070202_china_spacedebris.html> (accessed 20 March 2009).
[293] Taylor Dinerman, "Space Weapons Agreements, Treaties, and Politics" (10 March 2008), online: The Space Review <http://www.thespacereview.com/article/1078/1> (accessed 27 February 2009).
[294] Trevor Brown, Soft Power and Space Weaponization" (2009) XXIII Air & Space Power Journal 66, 68.
[295] AFDD 2-2.1, *supra* note 56, at 32-3 (referencing the use of kinetic ASATs for use in destroying on-orbit space-craft).
[296] The Kessler syndrome, named for NASA scientist Donald J. Kessler, suggests a scenario wherein the amount of space debris results in space objects being unable to avoid a collision with debris thereby creating a cyclical effect whereby collisions cause more debris which, in turn, results in more collisions until space is effectively unuseable. Donald J. Kessler and Burton G. Cour-Palais, "Collision Frequency of Artificial Satellites: The Creation of a Debris Belt" *Journal of Geophysical Research* 83:A6 (1 June 1978) 2637.
[297] Dolman, *supra* note 7, at 65, 69.

importance of space debris mitigation vis-à-vis effective military operations and that its accomplishment must occur through international law, shepherding an international legal response to space debris generation becomes an inherent component of any successful command of space strategy.

This chapter will confine itself to an examination of the effects of space debris on the access assurance component of command of space. It will build on the understanding of the importance of space lines of communication as an enabler of space access and use developed in chapter one and demonstrate why traditional, kinetic means of protecting those lines of communication are counterproductive. Initially, an examination of domestic legal authority regarding space debris is necessary to develop an understanding of the measures necessary to effectuate a comprehensive space debris mitigation program. It is proffered that these domestic laws, regulations, and guidelines, can serve as a foundation for an international debris mitigation proposal that affects both civilian and military space applications in an effort to enhance space security. Space debris is an international problem which is in need of an international solution. In being proactive, the United States can shape the space debris debate, and the international proposals that will surely evolve, in a manner that best preserves its national security interests. As the space debris mitigation measures proposed herein advocate what amounts to a *de facto* ban on kinetic weapons in space, this paper will also analyze the question of whether the use of non-kinetic weapons in space constitutes a use of force under the Charter of the United Nations. This is necessary in order that military commanders and policy-makers understand the ramifications of substituting kinetic for non-kinetic means in outer space.

A. Technical Measures for Space Debris Mitigation

Resort to an examination of technical measures is instructive given that space debris is a technical issue. Moreover, it is one in which law currently has no definitive solution.[298] Although a number of non-governmental organizations have made proposals seeking to address the concerns regarding space debris, the issue must be addressed through determining the common ground with respect to the guidelines of national governments if any real progress is to be made. Indeed, the history of the Moon Treaty[299] demonstrates that to ensure timely progress, *relevant* national governments must be on board from the beginning.[300] As the United States is currently the more prominent actor in space, any proposal must also consider its position. Moreover, the U.S. arguably has the most advanced debris control system.[301] Thus, an examination of U.S. regulations and guidelines is a necessary precursor to establishing any international regulation of space debris. For reasons set forth below, the NASA debris mitigation program will serve as the representative example of American efforts at controlling space debris.

Before examining NASA's space debris mitigation guidelines, it should be noted that NASA is a member of the Inter-Agency Space Debris Coordination Committee (IADC), which was born out of multilateral discussions initiated by NASA.[302] The IADC is an international consortium of space agencies created for the purpose of coordinating activities related to the

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[298] Taylor, *supra* note 290, at 82.
[299] *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (Moon Treaty), entered into force 11 July 1984U.N. Doc. A/RES/34/68, 18 ILM 1434 (1979).
[300] Glenn Harlan Reynolds, "The Moon Treaty: Prospects for the Future", Space Policy (May 1995), at 117.
[301] A. Kato, "Comparison of National Space Debris Mitigation Standards" (2001), online: Science Direct <http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6V3S-450KK1B-2J-1&_cdi=5738&_user=458507&_orig=search&_coverDate=12%2F31%2F2001&_sk=999719990&view=c&wchp=dGLbVzW-zSkWz&md5=a1ca3a0dcce62d061987c2900ffb198e&ie=/sdarticle.pdf> (accessed 29 March 2009).
[302] Taylor, *supra* note 290, at 53.

issue of space debris.[303] Although not currently binding upon member agencies, the IADC has created Space Debris Mitigation Guidelines that represent a consensus approach to debris mitigation and may offer the best approach to an international solution.[304] These Guidelines provide a formal structure from which members agencies can craft their own debris mitigation guidelines. In so doing, state agencies are encouraged to address four areas of concern: limitation of debris during normal operations, minimization of the potential for on-orbit break-ups, post-mission disposal, and prevention of on-orbit collisions.[305] As NASA Guidelines conform to this format, the similarity between the IADC Guidelines and the NASA Guidelines are such that a detailed enumeration of the IADC Guidelines is unnecessary here since the NASA Guidelines provide more detail.

However, recognizing the environmental implications of space debris, the IADC Guidelines, unlike the NASA guidelines, do establish protected zones in outer space which consists of LEO in its entirety and a segment of a spherical shell of GEO defined as an altitude of + or - 200 kilometers and a latitude of + or – 15 degrees.[306] Although the term "protected" with respect to these two regions is a bit misleading given that the regions are only used as a frame of reference for otherwise limiting debris and are conferred no special status *per se*, their recognition is a noteworthy demonstration of the evolution of the space debris problem. Indeed,

[303] Membership includes the Italian Space Agency (ASI), the British National Space Centre (BNSC), the French National Center for Space Studies (CNES), the Chinese National Space Administration (CNSA), the German Aerospace Center (DLR), the European Space Agency (ESA), the Indian Space Research Organization (ISRO), the Japanese Aerospace Exploration Agency (JAXA), NASA, the National Space Agency of Ukraine (NSAU), and the Russian Federal Space Agency (ROSCOSMOS). "Terms of Reference for the Inter-Agency Space Debris Coordination Committee (IADC)" (4 October 2006), online: IADC <http://www.iadc-online.org/index.cgi?item=torp_pdf> (accessed 1 April 2009).
[304] "IADC Space Debris Mitigation Guidelines" (September 2007), online: IADC <http://www.iadc-online.org/index.cgi?item=docs_pub> (accessed 1 April 2009) at 4.
[305] Id.
[306] IADC Guidelines, *supra* note 304, at 6.

mere recognition of protected zones can be useful in formulating binding international law with respect to debris mitigation.

The current United States Space Policy recognizes that space debris "poses a risk to continued reliable use of space-based services and operations and to the safety of persons and property in space and on earth."[307] As a result the U.S. government has taken affirmative action to minimize the creation of space debris by establishing Orbital Debris Mitigation Standard Practices.[308] Although all government departments and agencies are counseled to follow those standard practices with respect to the procurement and operation of spacecraft, launch services, and test and experimental space operations, it should be noted that the Policy adds the caveat that such standards are applicable only if consistent with mission requirements and cost effectiveness.[309] These cost effectiveness and mission requirement concerns factor into first objective of the Standard Practices, control of debris during normal operations. The Standard Practices require that in all orbital regimes, spacecraft and upper stages should be designed to eliminate or minimize the release of debris and that each instance of planned debris release in excess of 5mm in dimension that remains in orbit for more than 25 years must be justified on the basis of cost effectiveness and mission requirement.[310] The remaining objectives of the Standard Practices include minimizing the creation of debris during accidental explosions, collision of space objects, and post-mission disposal of spacecraft.[311]

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[307] United States Space Policy (2006), online: Federation of American Scientists <http://www.fas.org/irp/offdocs/nspd/space.pdf> (accessed 29 March 2009).
[308] U.S. Government Orbital Debris Mitigation Standard Practices, online: NASA <http://orbitaldebris.jsc.nasa.gov/library/USG_OD_Standard_Practices.pdf> (accessed 29 March 2009) [hereinafter Standard Practices].
[309] Id.
[310] Id.
[311] Id.

Since the Standard Practices are guidelines, each applicable agency and department within the U.S. government is responsible for establishing regulations consistent with those guidelines. Several agencies have published guidelines, directives, or polices regarding space debris. Thus, myriad space debris mitigation procedures exist throughout the U.S. government, but five lead agencies can be identified within the U.S. government that have responsibility for developing and enforcing guidelines or regulations aimed at mitigating the creation of space debris:[312]

Agency	**Authority**	Operative Document
NASA	Civil government space missions	NASA Procedural Requirements 8715.6A
DoD	Military spacecraft/launch vehicles	DoD Directive 3100.10
FCC	Civilian satellites	69 Federal Register 54581
NOAA	Civilian remote sensing satellites	65 Federal Register 46822
FAA	Commercial launch/reentry vehicles	14 Code of Federal Regulations § 415.39

NASA is a recognized leader in debris mitigation practices[313] and is at the forefront of U.S. governmental space debris mitigation efforts.[314] As a result, a review of its regulations is

[312] "Orbital Debris Mitigation: Regulatory Challenges and Market Opportunities" (15 March 2006), online: Futron Corporation <http://74.125.93.104/search?q=cache:http://www.futron.com/pdf/resource_center/white_papers/OrbitalDebris.pdf> (accessed 29 March 2009)[hereinafter Futron]. It should be noted that the FCC, NOAA, and FAA do not launch their own satellites but are responsible for the licensing of civilian satellites and, thus, pursue debris mitigation through the licensing process. Id. at 3-4; see also Taylor, at 58-59.

[313] "About Us: NASA Orbital Debris Program Office" (29 April 2005), online: NASA <http://orbitaldebris.jsc.nasa.gov/> (accessed 31 March 2009). Moreover, NASA was the first U.S. government agency to recognize the problem of space debris; the agency initiated an assessment program in 1981. F. Kenneth Schwetje, "Current U.S. Initiatives to Control Space Debris" (1988) *Proceedings of the 30th Colloquium on the Law of Outer Space* 163 at 168. The plan was initiated in an effort to establish U.S. policies regarding space debris and,

dispositive of the highest standard of procedures within the U.S. government.[315] In fact, it was NASA guidelines, with input from DoD, that formed the basis for the Standard Practices.[316] To implement the Standard Practices, NASA has constructed a comprehensive debris mitigation program outlined in mandatory procedural requirements.[317] This debris mitigation program requires each NASA program or project to conduct a formal assessment of the potential to generate space debris during any and all phases of a particular mission.[318]

NTS 8719.14 sets forth the NASA procedure for conducting a pre-mission orbital debris assessment. The objective of this assessment is to limit the generation of space debris in the following manner:

- Limiting the generation of debris associated with normal space operations;
- Limiting the probability of impact with other objects in orbit;
- Limiting the consequences of impact with existing orbital debris or meteoroids;
- Limiting the debris hazard posed by tether systems;
- Depleting onboard energy sources after completion of mission;
- Limiting orbital lifetime in LEO after mission completion or maneuvering to a disposal orbit; and
- Limiting the human casualty risk from space system components surviving reentry as a result of postmission disposal.[319]

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ultimately, work toward international agreements on the issue. Nicholas L. Johnson & Darren S. McKnight, *Artificial space Debris* (Malabar, FL: Orbit Book Company, 1987) at 85.

[314] Futron, *supra* note 312, at 3.

[315] A study by the Futron Corporation indicates that the Department of Defense has little regulatory guidance regarding space debris, choosing instead to rely on the U.S. Government Orbital Debris Mitigation Standard Practices. The result is that DoD is the least defined and most lenient environments with respect to debris mitigation. Id.

[316] Id.

[317] NASA Procedural Requirements 8715.6A, *NASA Procedural Requirements for Limiting Orbital Debris* (19 February 2008) at 3 [hereinafter NPR 8715.6A].

[318] NASA Technical Standard 8719.14, *Process for Limiting Orbital Debris* (28 August 2007) at 5 [hereinafter NTS 8719.14].

[319] Id. at 16.

These goals are accomplished through the generation of an Orbital Debris Assessment outlining the potential to generate debris in four areas: (1) normal operations; (2) explosions and intentional breakups, (3) collision with debris or other orbiting space systems; and (4) post-mission disposal.[320]

1. Limitation of Debris during Normal Operations

With respect to normal space operations, the goal is that all space systems be designed so as to permit the release of no space debris.[321] Perhaps recognizing that such a goal may be infeasible in certain scenarios, the alternative is to minimize the number, area, and orbital lifetime.[322] This is accomplished by imposing specific requirements on debris intentionally left in orbit as a result of space operations. Within low earth orbit (LEO)[323] any debris one millimeter or larger must be limited to a maximum orbital life of 25 years from the date for release.[324] An additional limitation is also placed on the total amount of debris and their cumulative permissible lifetime in orbit. This is called the total object time product and it must be less than 100 object-years per mission.[325] In other words, since the maximum orbital life per debris object in LEO is 25 years, any particular mission cannot generate more than 4 piece of debris larger than one millimeter.[326] For debris passing near geostationary orbit (GEO),[327] i.e. within an orbit +/- 200 kilometers of GEO, the requirement is that debris five centimeters or

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[320] Id. at 17.
[321] Id. at 21.
[322] Id.
[323] An orbit with a mean altitude less than or equal to 2000 km, or equivalently, an orbit with a period less than or equal to 127 minutes. Id. at 14.
[324] Id. at 22.
[325] Id.
[326] Id. at 22, 24.
[327] An orbit with a period equal to the sidereal day. A circular GEO with 0° inclination is a geostationary orbit; i.e., the nadir point is fixed on the Earth's surface. The normal altitude of a circular GEO is 35,786 km and the inclination is normally +/- 15 degrees latitude. Id. at 13.

larger shall be placed in an orbit than will permit it to remain no higher than 200 kilometers below GEO within 25 years after release.[328]

2. Limitation of Debris Generated by Explosions and Intentional Breakups

Accidental explosions within earth orbit have been the primary source of space debris.[329] Prior to launch, each mission must demonstrate that the integrated possibility of an explosion is 0.001, or one in 1000.[330] Furthermore, since the chief source of these explosions has been residual propellants, all spacecraft and launch vehicles shall be designed for passivation.[331] Passivation is "the process of removing stored energy from a space structure at EOM which could result in an explosion or deflagration of the space structure to preclude generation of new orbital debris after End of Mission."[332] Intentional breakups, or planned explosions and intentional collisions, are used to reduce the amount of debris that survives reentry into earth's atmosphere, thereby jeopardizing humans.[333] To minimize the impact on other space objects, the requirement is that the planned breakup occurs at an altitude such that fragments larger than 10 centimeters exceed an object-time product of 100 object years.[334] Additionally, the breakup cannot generate debris greater than one millimeter that will remain in orbit for more than one year.[335] A final requirement is that the probability of debris related to the breakup colliding with another space object within 24 hours must be assessed and cannot exceed a set standard.[336]

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[328] Id. at 22, 23.
[329] Id. at 27. Intentional explosions through the testing of anti-satellite weapons have also been a significant contributor to space debris. See, *supra*, note 292.
[330] NTS 8719.14, *supra* note 318, at 28.
[331] Id.
[332] Id. at 14.
[333] Id. at 27-28.
[334] Id. at 28.
[335] Id. at 29.
[336] Id.

3. Limitation of Debris Generated by On-orbit Collisions

Additional debris can be generated directly through collision between a space vehicle and another large space object or indirectly though collision with small debris that damages the space vehicle in such a way as to prevent end-of-mission disposal.[337] Eliminating the creation of debris in this manner is accomplished via two requirements. First, it must be verified for each spacecraft and launch vehicle that the probability of accidental collision with a space object larger than 10 centimeters in diameter is less than 0.001 or one in 1000.[338] Second, the accidental collision of the space craft with orbital debris or meteoroids sufficient to prevent applicable post-mission disposal shall be less than 0.01 or one in 100.[339]

4. Limitation of Debris Related to Post-Mission Disposal

Spacecraft disposal may be accomplished in one of three methods: (1) atmospheric reentry, (2) maneuvering to a storage orbit, or (3) direct retrieval.[340] Since the third method, direct retrieval, is not generally an option due to logistical constraints and cost, reentry and maneuvering to storage orbit are the most relied upon methods.[341] When engaging in reentry disposal, two methods may be utilized: (1) the space craft is left on an orbit that permits natural forces to effectuate reentry within 25 years of end-of-mission but no more than 30 years after launch or (2) the space craft is maneuvered into a controlled de-orbit trajectory as soon as possible after mission termination.[342] To minimize risks to human resulting from controlled entry, the selected trajectory must ensure that debris with a kinetic energy impact greater than 15 joules is closer than 370 kilometers to any landmass or within 50 kilometers of the United States

[337] Id. at 33.
[338] Id.
[339] Id.
[340] Id. at 37.
[341] Id. at 38.
[342] Id. at 39.

or its territories or the permanent ice pack of Antarctica.[343] Moreover, the risk of human casualties must be less than one in 10,000.[344]

The requirements for maneuvering to storage orbit are dependent upon the orbit in which the spacecraft has used. In GEO the spacecraft must be maneuvered to an orbit that permits it to remain at an altitude of 200 kilometers above GEO for a period of at least 100 years.[345] For disposal of spacecraft between LEO and GEO, disposal can be in any orbit between 2000 kilometers above the earth and 500 kilometers below GEO.[346] All maneuvering disposal operations must have a 90 percent chance of probability of success.[347] Similarly, all spacecraft utilizing a storage orbit must be passivated to the extent necessary to prevent breakup.[348]

The NASA Guidelines implement the IADC Guidelines in a detailed manner. It is evidence that NASA, and the U.S. government, has not taken its debris mitigation responsibility lightly. However, as the IADC Guidelines are merely suggestions with no force of international law, the degree to which countries choose to implement those suggestions may vary. It is evident from the discussion above that measures can be taken to eliminate, or at least limit, the continued generation of space debris. It is further evident that space debris poses a significant risk to the efficient operation of space lines of communication. However, even stringent U.S. adherence to debris mitigation measures can only provide limited protection to those lines of communication given the presence of multiple nations in space. The effective defense of U.S. space lines of communication requires the pursuit of a comprehensive defensive strategy with a sound basis in international law. Given the military implications of threats to space lines of

[343] Id. at 39, 46-47.
[344] Id.
[345] Id. at 39.
[346] Id.
[347] Id.
[348] Id.

communication it is necessary that any strategy used encompass lawfare as a means of attaining that defense.

B. Mitigating the Space Debris Threat to Achieve Command of Space

In analyzing the *terrain* of international law and policy in the context of lawfare, one must do so with an eye toward identifying both obstacles and opportunities to accomplish military objectives. The international discussion on the problem of space debris presents America with an opportunity to enhance its space security by advocating comprehensive debris mitigation measures backed by the authority of international law. The quickest and most efficient method of pursuing this advantage is to identify existing international efforts at debris mitigation that comport with American guidelines and security needs.[349] In securing putative command of space through lawfare, two areas of concern arise: (1) overall preventative measures and (2) military offensive capabilities. These areas of concern are addressed in turn.

1. Overall Preventative Measures

Since the United States possesses the most comprehensive space system, it is obviously in America's interest to mitigate the debris that poses a danger to that system. However, the need to prevent the generation of additional space debris is in the interests of all nations.

[349] There have been a number of proposals aimed at addressing the threat of space debris in the realm of legal liability. See, e.g. Lawrence D. Roberts, "Addressing the Problem of Orbital Space Debris: Combining International Regulatory and Liability Regimes" (1992) 15 B.C. Int'l & Comp. L. Rev. 51, 69-17; Allen Rostron, "Beyond Market Share Liability: A Theory of Proportional Share Liability for Nonfungible Products" (2004) 52 UCLA L. Rev. 151, 200-02; Howard A. Baker, *Space Debris: Legal and Policy Implications* (Dordrecht, The Netherlands: Martinus Nijhoff Publishers, 1989), note 41 at 86-7. While liability may certainly be a viable method of addressing the problem, but see Taylor, *supra* note 290, at 86-90 (outlining problems inherent in the proposals), it centers on remedial measures which may be beneficial in the commercial realm, but offer no real security in a military context. Indeed, the idea of compensatory damages presupposes a measure of permissibility in the proscribed activity in the sense that such activity may be engaged in if one is willing to pay the fee. Compensatory damages are of little consequence, however, when national security interests are at stake. Thus, this paper will focus on the preventative measures necessary to eliminate the *intentional* creation of space debris altogether.

Certainly space-faring nations have a direct interest in the protection of their space investments, but even non-space faring nations derive benefits from outer space assets thereby giving them a vested interest in debris mitigation. The military advantage that the United States will gain by debris mitigation, therefore, should not be presented as the sole rationale for debris mitigation. Indeed, the selling point for debris mitigation – not that anyone really needs to be "sold" on the idea – is the benefit to the world in general which finds support in the "common interest" principle of the Outer Space Treaty.[350] That the concept is already understood by the world community is evidenced by the interest of the United Nations in debris mitigation.

First addressing the issue in 1989, the United Nations General Assembly noted that "it is essential that Member States pay more attention to the problem of collisions with space debris and other aspects of space debris. . . ."[351] However, it took another ten years before a technical report[352] was published and it proved unhelpful as it merely regurgitated information previously known to space-faring nations.[353] With a speed that might be viewed as inversely proportional to the importance of the issue, the United Nations General Assembly finally endorsed a set of space debris mitigation guidelines in 2008.[354] However, the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space[355] suffer from an inherent defect that renders them essentially ineffective.

At the outset, the guidelines specifically state that "they are not legally binding under international law."[356] While this particular issue could be resolved by incorporating the

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[350] See, *supra*, note 16.
[351] *International Co-operation in the Peaceful Uses of Outer Space*, GA Res. 44/46, UN GAOR, 1989 at para. 23.
[352] UN, *Technical Report on Space Debris* (New York: UN, 1999)(also available as UN Doc. A/AC.105/720).
[353] Taylor, *supra* note 290, at 64.
[354] *International Cooperation in the Peaceful Uses of Outer Space*, GA Res. 62/217, UN GAOR, 2008 at para. 26.
[355] *Report of the Committee on the Peaceful Uses of Outer Space-Supplement No. 20*, UN COPUOS, UN Doc. A/62/20, 2007 at paras. 117, 118 and annex [hereinafter COPUOS Guidelines].
[356] Id. at 48.

guidelines into a binding international treaty, the infusion of equivocal language into the guidelines makes this solution inadvisable.[357] In other words, these guidelines can never serve as more than mere guidelines. That being said, it is useful to note that they do closely track the principles of the IADC Guidelines[358] and, thus, demonstrate a greater acceptance of those Guidelines. This being the case, a review of the COPUOS Guidelines is beneficial for determining the potential for common ground among the world community.

The COPUOS Guidelines present seven general principles that space-faring nations are asked to adhere to in their space activities. The first two guidelines related to spacecraft design and indicate that states should "limit debris released during normal operations" and "minimize the potential for break-ups during operational phases."[359] The third guideline, "limit the probability of accidental collision in orbit," relates to both design and mission profile.[360] Although not specifically stated, this guideline does indicate a need for shared orbital data, an issue discussed below. Building on the need to avoid collisions in outer space, guideline four recommends states "avoid intentional destruction and other harmful activities."[361] Since the commentary associated with this particular guideline lacks specificity, it is presumed that it encompasses both intentional breakups associated with normal operations and intentional breakups resulting from military operations and tests. Guideline five simply seeks to "minimize potential for post-mission break-ups resulting from stored energy" and is thus crafted to require

[357] For example, the COPUOS Guidelines state that they should be implemented "to the greatest extent feasible" and recognizes that "exceptions" may be necessary. Id. While this may certainly be the case and, due to technical limitations, some debris may be unavoidable, the infusion of this concept within the guidelines leads to a situation where the exception swallows the rule.
[358] Taylor, *supra* note 290, at 65.
[359] COPUOS Guidelines, *supra* note 355, at 48.
[360] Id. at 49.
[361] Id.

passivation.[362] Guidelines six and seven seek to limit congestion in LEO and GEO, respectively, by recommending the use of storage orbits.[363]

It is apparent, from a comparison of these guidelines with the NASA technical requirements discussed above, that the COPUOS Guidelines place importance on similar issues as does the NASA Technical Requirements.[364] A 2001 study by the National Space Development Agency of Japan indicates that these main points are also incorporated into the debris mitigation guidelines of the Japanese, French, and Russian space agencies.[365] Although this study was conducted prior to more recent modifications of space agency regulations, it continues to be a useful tool for demonstrating common ground. In fact, any differences are mostly attributable to degree rather than substance. The study indicates that although the United States and other space-faring nations generally adhere to the spirit of the COPUOS Guidelines, NASA takes a more technical approach which results in more stringent requirements due to the incorporation of quantitative and qualitative values into its standards. As NASA has the more stringent guidelines, it is proposed that these guidelines be integrated, along with the proposal below, into a draft agreement to be used as an initial position for the negotiation of a binding international agreement. It is hoped that negotiation might result in a full-scale incorporation of the NASA Technical Standards into such an agreement. However, it should be noted that technological limitations, or even advances, may dictate that certain exceptions be permitted on a case-by-case basis. Given the glacial pace of the United Nations on debris issues thus far, it is advised that such responsibility lie with the Inter-Agency Debris Coordination Committee rather than any UN-mandated organization.

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[362] Id.
[363] Id. at 50.
[364] See *supra* notes 317-48 and accompanying text.
[365] Kato, *supra* note 301.

2. Military Offensive Capabilities

As discussed above, the protection of space lines of communication is imperative to American national security.[366] In seeking to protect those lines of communication some advocate the introduction of kinetic weapons in outer space.[367] Although weapons capabilities and the will to use them have offered protection throughout history, the unique environment of outer space counsels against such a move. Unlike on land, in the air, or on the sea, the use of kinetic weapons in outer space generates a debris cloud that acts as perpetual shrapnel in search of a target and it cares not whose satellite it hits. Even if a potential adversary cannot be somehow convinced of the futility of using kinetic weapons against space-based targets, it is in the interests of America to refrain from doing so since any American use of kinetic weapons in space would be an attack not only on our adversary's space lines of communication but on our own space lines of communication as well. Thus, in keeping with the preventive measures outlined above, it is necessary to proscribe the use of kinetic weapons in outer space as a means of preventing the intentional creation of space debris.[368]

Any proscription, however, must focus on the effect to be avoided rather than any particular weapon. Indeed, the definitional issues surrounding space weapons present a

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[366] See *supra* notes 30-35 and accompanying text.

[367] David E. Lupton, *On Space Warfare: A Space Power Doctrine* (Maxwell AFB, AL: Air University Press, 1998)(arguing in favor of a space control doctrine of which space weapons is a necessary component). This doctrinal school of thought is the prevalent American space strategy. See "National Space Policy," *supra* note 307 at 4 (charging the Secretary of Defense with maintaining capabilities to execute, *inter alia*, a space control mission); AFDD 2-2.1, *supra* note 56 (discussing offensive counterspace operations).

[368] In light of the analysis in Chapter 3 of China's use of strategic lawfare, it might be easy to dismiss this advice as succumbing to the pressure of potential adversaries given the joint proffer of a treaty banning weapons in space and the use of force against space objects by China and Russia. See Victor Vasiliev, "The Draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects" (2008), online: UNIDIR <http://www.unidir.org/pdf/articles/pdf-art2822.pdf> (accessed 15 June 2009). Indeed, this is a classic use of strategic lawfare that may be providing dividends for its sponsors as shown by the writings cited in notes 173, 175 *supra*. However, as noted within the text below, this only encompasses kinetic weapons since the use of such weapons by any party poses a threat to American space objects. To the extent that this proposed treaty seeks to prohibit non-kinetic weapons, it must be avoided as inconsistent with national security interests.

significant barrier to the goal of space sanctuarians, such as the Secure World Foundation.[369] One method proposed for dealing with this issue is the development of a Space Code of Conduct that charges states with "the responsibility to refrain from harmful interference against space objects."[370] However, as acknowledged by its drafters, this suggestion suffers from the same definitional defect as occurs with defining space weapons.[371] How should one define harmful interference? Surely, all could agree that the permanent destruction of a satellite would qualify, but what of temporary interference that causes no long term physical damage? Reasonable minds could disagree. Indeed, the principle drafter of the Code states his belief that the inclusion of radio frequency jamming within the definition of harmful interference would likely result in the Code not gaining significant support by space-faring nations.[372] Moreover, since the Code itself is not binding, debris mitigation is still left to the goodwill of space-faring nations.

The Code, however, does have some redeeming value. In redirecting attention from space weapons *per se* to the desired effect, i.e. proscribing the intentional generation of space debris rather than specific methods of debris generation, it avoids the space weapon definitional problem since it does not rely upon technological equivocating with respect to the purpose or capability of a particular spacecraft or space object. This is a critical step in crafting a binding debris mitigation strategy that is compatible with space security. However, any language

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[369] Space sanctuarians seek to maintain outer space as a sanctuary free from war and, thus, support the prohibition of weapons in space. See "Avoidance of a Space Arms Race: Sustainable Space Security" (2009), online: Secure World Foundation <http://www.secureworldfoundation.org/index.php?id=15&page=Avoidance_of_Space_Arms_Race> (accessed 13 April 2009). One hindrance to this goal is the problem of defining a space weapon. Indeed, during negotiations on a space arms control regime in the late 1970s, the Soviet Union argued passionately that the American Space Shuttle should be classified as a space weapon. Theresa Hitchens, "When is a Space Weapon Not a Space Weapon?" (23 January 2004), online: Center for Defense Information <http://www.cdi.org/friendlyversion/printversion.cfm?documentID=2012> (accessed 13 April 2009).

[370] "Space Code Of Conduct: Factsheet" (28 May 2008), online: Secure World Foundation <http://www.secureworldfoundation.org/siteadmin/images/files/file_18.pdf> (accessed 13 April 2009).

[371] Id. According to Michael Krepon, the principle drafter of this Space Code of Conduct, the failure to define the term was intentional. Id.

[372] Id.

seeking to prohibit the intentional generation of space debris must allow for the use of weapons that do not generate such debris.[373] Perhaps the simplest language that could be used for this purpose is found in the European Code of Conduct for Debris Mitigation which simply states that the "intentional destruction of a space system or any of its parts in orbit is prohibited."[374] This is the type of language that should serve as the genesis for any proposal to prohibit the intentional creation of space debris as it is all-encompassing without completely proscribing the tools necessary to maintain command of space.

Despite the inclusion of a binding *de facto* prohibition of the use of kinetic weapons in space, full-spectrum security of vital space assets must still be achieved. Recognizing that, as a result, a proscription of all weapons intended for use in space is impractical and inadvisable, it should be noted, as indicated above, that non-kinetic weapons that do not generate debris would still be permitted. Such a concession is necessary given the implications of an undefended space system and the absence of a significant deterrent. In other words, America cannot rely solely upon the professed peaceful intentions of its strategic competitors. Indeed, given American reliance on space technology, it is simply too lucrative a target for any potential adversary to forego.[375] Thus, America must have the means of ensuring the peaceful intentions of other nations. To that end, there are several non-kinetic weapon options that would provide an offensive capability without also jeopardizing America's own space assets. Rather than destroying an adversary's satellites, such weapons would merely disable, degrade, or otherwise

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[373] Examples of such weapons include radio frequency jamming, blinding a satellite's optical sensors, and enslaving the satellite by taking command of it. William Spacy, "Assessing the Military Utility of Space-Based Weapons" in John M. Logsdon & Gordon Adams, eds., *Space Weapons: Are they Needed?* (Washington D.C.: George Washington University, 2003) at 195-97.

[374] "European Code of Conduct for Space Debris Mitigation" para. 4.1.2 (28 June 2004), online: CNSA <http://www.cnsa.gov.cn/n615708/n676979/n676983/n893604/appendix/2008529151013.pdf> (accessed 13 April 2009).

[375] Dinerman, *supra* note 293.

render it inoperable for the purpose for which it was intended. Thus, it becomes possible to attack an adversary's space lines of communication without endangering our own or those of a non-belligerent third party.[376]

C. Command of Space and the Use of Force Under the UN Charter

The lawfare strategy outlined above necessarily prohibits the use of kinetic weapons in an effort to secure valuable space assets against the hazards of space debris. The nature of man being what it is, the strategy acknowledges the necessity of maintaining non-kinetic weapons as a deterrent. As this deterrent employs methods of neutralizing an adversary's space assets that differ significantly from that of kinetic weapons, the question may arise as to whether the use of these non-kinetic weapons would violate international law. Put differently, does the use of non-kinetic weapons against a space object constitute an impermissible use of force? The law of armed conflict addresses this issue.

An examination of the applicability of the law of armed conflict is justified through application of Article III of the Outer Space Treaty which applies international law, including the United Nations Charter, to activities in outer space.[377] Thus, any discussion of the use of weapons in outer space for the purpose of command of space would incomplete without such an examination. The seminal provision of the UN Charter vis-à-vis armed conflict is Article 2(4). This provision provides that "[a]ll Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in

[376] In addition to limiting the creation of space shrapnel, another benefit to the use of non-kinetic weapons over kinetic weapons is the ability to limit adversary use of third party satellites without unduly antagonizing the third party. This scenario raises questions of neutrality under international law which could be avoided through the use of non-kinetic weapons. See Michel Bourbonniere, "The Ambit of the Law of Neutrality and Space Security" (2006) 36 Israeli Yearbook on Human Rights 205.

[377] Outer Space Treaty, *supra* note 16, at Article 3.

any other manner inconsistent with the Purposes of the United Nations."[378] The principle purpose of the UN Charter is to maintain international peace and security.[379] Unlike the Kellogg-Briand Pact,[380] however, the UN Charter specifically provides for two exceptions to this general proscription of the use of force. Article 42 provides for the use of force to maintain or restore international peace and security. Such use of force, however, is dependent upon action by the UN as a whole. Article 51, on the other hands, provides for a unilateral use of armed force by a state acting in self defense.[381] Although the wording of Article 51 indicates that the use of armed force is only permissible after an armed attack, customary international law recognizes that self defense is nonetheless permissible in response to an imminent attack.[382]

So what does this mean for activities in outer space? Let us suppose that an adversary attacks a US space object. Whether the attack violates international law may be dependent upon the circumstances. The UN Charter does not use the term "attack." Rather it prohibits, as discussed above, the use of force in a manner inconsistent with the purposes of the UN Charter. As the Charter provides no definition of the term "use of force," it becomes necessary to look outside the Charter for a more clear understanding of this term. In an effort to assist the UN with its duty of maintaining international peace and security, the UN General Assembly established a high-end boundary of the use of force spectrum through its provision of a definition of aggression. Recognizing that "aggression is the most serious and dangerous form of the illegal

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[378] Id. at Art 2(4).
[379] Id. at Art 1.
[380] Kellogg-Briand sought to prohibit war as an instrument of national policy. *The Treaty of Paris* [Kellogg-Briand Pact], 1928, (1929) 94 L.N.T.S. 57.
[381] UN Charter, *supra* note 51, at Article 51. This exception to the general ban on the use of armed force will be discussed in detail below.
[382] See David M. Ackerman, "International Law and the Preemptive Use of Force Against Iraq" (11 April 2003), online: Air University < http://www.au.af.mil/au/awc/awcgate/crs/rs21314.pdf> (accessed 13 April 2009). It should be noted here that since the question presented herein is whether the use of non-kinetic weapons is violative of the UN Charter's proscription of the use of armed force, a discussion of the applicability of customary international law notions of self defense will not be addressed.

use of force," it defined aggression as "the use of armed force by a State against the sovereignty, territorial integrity or political independence of another State, or in any other manner inconsistent with the Charter of the United Nations. . . ."[383] The seemingly circular nature of this definitional investigation would be unhelpful but for the Resolution's use of the word "armed." By using this word to modify force, as in "the use of armed force," the Resolution suggests something more specific or narrow than the prohibition contained in the UN Charter. In other words, the UN Charter precludes a State from exercising "the use of force," while the Resolution narrows aggression to "the use of *armed* force." Thus, while the use of armed force may constitute aggression, the use of force generally may or may not constitute aggression but still be precluded by the UN Charter.

This distinction becomes vital when considering the nature of the threat to space objects. Indeed, this threat encompasses a wide array of weapons, technology, and tactics. The objective of an attack on a space object is not necessarily to destroy it in the typical battlefield sense, but to render it unusable for the purpose for which it was intended.[384] Thus, an attack is simply a permanent or temporary disruption of normal service.[385] Such disruptions may be caused kinetically or non-kinetically.[386] Kinetic disruptions involve the use of tradition military-style weapons that collide with its target, e.g. missile striking a satellite, and would necessarily fall within the definition of armed force. Non-kinetic disruptions, however, do not involve traditional weapons but are designed to achieve the same effects. A disruption of service via non-kinetic means can involve, among other things, blocking or jamming a satellite's signals, transmitting false signals to control the satellite's movements, or using electronic negation to

[383] United Nations General Assembly Resolution 3314 (14 Dec 1974).
[384] See, generally, AFDD 2-2.1, *supra* note 56, at 31.
[385] Id.
[386] Id. at 33.

shut the satellite down.[387] Thus, a non-kinetic disruption does not involve a level of violence normally thought sufficient to constitute a use of armed force.[388] The question then becomes whether an unprovoked, non-kinetic, permanent or temporary disruption of services vis-à-vis a space object constitutes a use of force under international law and is thus forbidden by the UN Charter absent an authorization in accordance with Article 42 of the Charter or necessity emanating from Article 51.

Having established that "armed force" constitutes the high end of the use of force spectrum, it becomes necessary to establish the low end of that spectrum. Using the general rule of interpretation under international law dictates that a treaty's terms be interpreted by the ordinary meaning given the term whenever possible.[389] Force has been defined, *inter alia*, as "physical strength exerted on an object or person, esp. in order to compel or constrain action" and as "compel or constrain by physical, mental, moral, or circumstantial means."[390] While indeed demonstrating that force necessarily involves a broad spectrum of action, these multiple meanings do little to establish the boundaries of the use of force spectrum as contemplated by the drafters of the UN Charter. Given this ambiguity, an examination of the travaux preparatoires[391] proves useful. This examination indicates that the Brazilian delegation attempted to broaden the scope of the use of force proscribed by the Charter to include economic coercion, but the

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[387] Robert Windrem, "U.S. Favors Stealthy Anti-Satellite Strategy: Shooting Down Spacecraft Isn't the Best Option, Experts Say," (11 Apr. 07) available at http://www.msnbc.msn.com/id/18023834/ (visited 15 Jan 09).
[388] Indeed, at least with respect to space-based communication, the UN Charter specifically indicates that a disruption of communications services would not constitute a use of armed force. UN Charter, Article 42. Presumably, this disruption would need to be non-kinetic to fall within the ambit of Article 42 since the use of kinetic, military-style weapons would, by definition, make such an act a use of armed force.
[389] Vienna Convention, *supra* note 84, at Article 31.
[390] The Shorter Oxford English Dictionary volume 1, (Oxford, UK, Oxford University Press: 1993), 998.
[391] In French, the term literally means preparatory work. It is used to signify the record of negotiations leading to final adoption of a Convention. Michael N. Schmitt, "Computer Network Attack and the Use of Force in International Law: Thoughts on a Normative Framework," 37 Colum. J. Transnat'l. L. 885, 905 n.57 (1995). Article 32 of the Vienna Convention on the Law of Treaties specifies that such records may be consulted in discerning the meaning of treaty terms when the plain mean proves ambiguous or obscure.

proposed amendment was summarily rejected by the Conference.[392] Thus, "use of force" is something more than economic coercion and, presumably, political coercion as well.[393]

It is clear then that the term "use of force" as used in the UN Charter contemplates more than simply armed force, i.e. physical or kinetic force applied via military-style weaponry. Thus, the Charter takes an effects-based approach to use of force rather than an instrument-based approach. In other words, it is the effects caused (or intended) by the disruption rather than the instrument used to cause the disruption that matters in determining whether such disruption falls within the use of force prohibition contained in the Charter.[394] Overly focusing upon the means employed in causing a permanent or temporary disruption of space-based services may cause one to fail to recognize the resemblance that non-kinetic means can have to kinetic means. However, the international community is likely to be far more concerned with the actual or intended consequences rather than the tools used to bring about those consequences in determining whether a breach of the peace has occurred.[395] Moreover, the fact that a use of force is measured along a continuum indicates the possibility of debate regarding whether a use of force, as that term is used within international law, has occurred. Just where a non-kinetic attack falls within this continuum is unsettled. Keeping in mind that an adversary gets to utilize the same rules as the United States, it is crucial that American policymakers determine a position[396] and begin advancing that position within the international community so as to influence the development of international law vis-à-vis the use of non-kinetic weapons in outer space.

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[392] Id. at 905.
[393] Id.
[394] Id. at 913.
[395] Dimitrios Delibasis, "State Use of Force in Cyberspace for Self-Defense: A New Challenge for a New Century," in *Peace, Conflict and Development: An Interdisciplinary Journal* (Feb. 2006), 8.
[396] Policymakers may determine that any non-kinetic interference with the normal operation of U.S. satellites constitutes an infringement upon the sovereign rights of the United States, but must recognize that such a determination cuts both ways. The United States must advocate a position that it can not only support, but also adhere to in its normal peacetime military and intelligence operations.

V. CONCLUSION

It is imperative to American national security that command of space be maintained since our space system is crucial to every aspect of American life and our interaction with the world. Access assurance is guaranteed through constant adherence to the principle of freedom of access and use for all nations as espoused in Article I of the Outer Space Treaty and the protection of space lines of communication. An effective use of international law within the space realm can achieve the military objective of weakening American power and restricting American options. This is a form of warfare, or lawfare, must be identified and combated in its formative stages whenever possible. The issue of lawfare vis-à-vis American freedom of action in outer space rests upon the twin pillars of guarding against an unnecessary expansion of international law and a proper interpretation of existing international law. Thus, any Chinese claim of vertical sovereignty, despite its tenuous nature, must be swiftly opposed with cogent legal arguments designed to shape international law in such a way as to eliminate any attempts at curtailing America freedom of action in outer space. Only through a meticulous adherence to a proper interpretation of international law can America secure the very freedoms guaranteed in that law.

In addition to maintaining freedom of access, America must also maintain its freedom of use of outer space. Although many dangers to this principle exist, the preeminent danger to freedom of use of outer space for all nations centers on the problem of space debris. However, given American reliance on space-based technology, it has the most to lose or gain with respect to this issue. Although a review and strict application of traditional airpower doctrine with its emphasis on offensive, kinetic airpower may appear to be a viable means of assuring both freedom of access and use given that it is an unmatched American strength, the space environment is too dissimilar for such an approach to be effective. However, the law of

unintended consequences counsels against the use of kinetic effects in outer space. Unlike the land, air, and sea environments, there is no zone of safety to which spacecraft can retreat from the danger of space debris. There is no refuge from threat simply because our nation is at peace. Space assets face a daily threat from space debris which, in turn, jeopardizes American space lines of communication.

Although there is certainly no foolproof method of ensuring absolute immunity from space debris' dangers or of completely eliminating the generation of such debris, this threat to our space systems, like any other, must be minimized to the maximum extent possible. However, it is not a threat that can be solved with armed force; nay, armed force merely exacerbates the problem as it only serves to generate additional debris thereby enhancing rather than diminishing the threat. Similarly, it is not a problem that can be solved by a single country as multiple countries utilize outer space. Thus, it is only a problem that can be solved by law. However, recognizing that outer space is a potential arena for conflict, any legal approach to achieving debris mitigation should consider not only the effects on the maintenance of command of space but also of how such an approach can enhance that command. Lawfare balances these considerations.

Lawfare blends law and warfare in such a way as to use law as a means of achieving military ends. In using this approach, law can significantly influence the actions of potential adversaries in such a way as to favor American command of space. As it stands now, America is the preeminent space power thus any elimination of potential space threats serves only to preserve that status quo. This paper presented two potential avenues for mitigating space debris that could preserve that status quo. First, a comprehensive set of binding standards designed to mitigate, to the maximum extent possible, the creation of additional space debris would decrease

the chances of space debris interference or destruction of American space assets. Second, a binding prohibition on the intentional creation of space debris, which necessarily entails a ban on the use of kinetic weapons, also decreases the chances of such interference or destruction but also removes a potential weapon from an adversary's arsenal. To be sure, comprehensive verification is necessary, but even if an adversary were able to launch such a weapon a response in kind merely generates additional space shrapnel that endangers our own satellites. By spearheading an international effort to create such standards, America can reap the secondary rewards that will flow from such a system.

Describing the United States as the preeminent military power in world history has become cliché.[397] Whether or not this statement is indeed a historical fact is irrelevant; the rest of the world is keenly aware of American power and is troubled by it.[398] Even our fellow-democracies find little solace in the empirical evidence demonstrating that democracies do not make war upon each other[399] and worry about the concentration of power in the hands of a single country.[400] This concern is heightened with respect to outer space, where America is apparently moving toward kinetic weaponization,[401] in an attempt to mitigate its vulnerabilities in space. It is assumed that the proposal herein of a *de facto* ban on kinetic weapons in outer space is likely to face the most opposition in American military circles. Such opposition is the byproduct of shortsightedness. As this paper demonstrates, however, it is possible to use a lawfare strategy to achieve command of space without resort to the most destructive of weapons, which would have

[397] Walt, *supra* note 160, at 11.
[398] Id.
[399] Dolman, *supra* note 7, at 4.
[400] Walt, *supra* note 160, at 11.
[401] Leonard David, "Weapons in Space: Dawn of a New Era" (17 June 2005), online: Space.com <http://www.space.com/news/%20050617_space_warfare.html> (accessed 27 February 2009); Bryan Bender, "Pentagon Eyeing Weapons in Space: Budget Seeks Millions to Test New Technologies" (14 March 2006), online: Boston Globe <http://www.mail-archive.com/infowarrior@attrition.org/msg00291.html> (accessed 27 February 2009).

the concomitant effect of allaying some of the fears of other nations. However, the principle basis for this proposal, as stated above, is the security of American space lines of communication. Indeed this proposed strategy incorporates Sun Tzu's advice with respect to interaction with an adversary: "that which depends on me, I can do; that which depends on the enemy cannot be certain."[402] Surely a ban on kinetic weapons in outer space is no guarantee that they won't be used by an adversary in the future, but we do know that our own use of those weapons will generate debris. The mitigation of that debris, then, depends on America and it should act regardless of the uncertainty of an adversary's actions, especially since it retains the ability to respond non-kinetically in space and kinetically on earth. However, since such a ban would have the imprimatur of international law, maybe, just maybe, the entire threat of debris from kinetic weapons can be eliminated.

[402] Handel, *supra* note 113, at 29.

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