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by

Christopher M. Petras

A thesis submitted to the Faculty of Graduate Studies
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for the degree of **MASTERS OF LAWS (LL.M.)**

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McGill University
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"Peace in space will help us naught once peace on earth is gone."

JOHN F. KENNEDY

To my wife, Lee Ann, and our children,
Clayton and Monica

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THE CONVERGENCE OF U.S. MILITARY AND COMMERCIAL SPACE ACTIVITIES: SELF-DEFENSE AND CYBER-ATTACK, "PEACEFUL USE" AND THE SPACE STATION, AND THE NEED FOR LEGAL REFORM

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ABSTRACT

The ever-increasing convergence of U.S. military and commercial space activities poses new challenges to the viability of the legal concepts that have traditionally governed the use of outer space, and particularly the military use of space, from the beginning of the space age. This paper will look at two examples of where the melding of U.S. military and commercial space activities necessitates a reexamination of the applicable legal theories. Part I will examine the concept of self-defense in outer space, by considering the legality of the use of conventional military force to defend against "cyber-attack" on its commercial space assets. Part II will examine the concept of the use of outer space for "peaceful purposes" under international law, by focusing on the permissibility of military use of the International Space Station. As private commercial entities increasingly take their place aside State actors in outer space, understanding the impact of space commercialization on the law governing military-related activities in outer space becomes more-and-more important to policymakers, military planners, legal scholars and space law practitioners alike.

RESUME

La convergence croissante aux Etats-Unis des activités spatiales militaires et commerciales tend à remettre en cause les concepts juridiques qui ont traditionnellement régi l'utilisation de l'espace extra-atmosphérique, et en particulier l'utilisation militaire de l'espace, et ce, dès le début de l'âge spatial. Le présent mémoire examine deux exemples où la fusion des activités spatiales militaires et commerciales Américaines nécessite un réexamen des théories juridiques actuellement applicables. La 1ère partie analyse le concept de légitime défense dans l'espace extra-atmosphérique, en étudiant la légalité de l'utilisation de la force militaire conventionnelle pour se défendre contre les cyber-attaques du patrimoine spatial commercial. La 2ème partie examine le concept de l'utilisation de l'espace extra-atmosphérique « à des fins pacifiques » au regard du droit international, en se concentrant sur la légalité de l'utilisation militaire de la Station Spatiale Internationale. Etant donné que les entités commerciales privées prennent une place croissante aux côtés des acteurs étatiques dans l'espace extra-atmosphérique, la compréhension de l'impact de la commercialisation spatiale sur le droit régissant les activités militaires dans l'espace extra-atmosphérique devient de plus en plus importante pour les politiciens, les planificateurs militaires, les académiciens ainsi que pour les praticiens de droit spatial.

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INTRODUCTION

In January 2001, the Commission to Assess U.S. National Security Space Management and Organization (or "the Space Commission") released its report on "the organization and management of space activities that support U.S. national security interests."[1] In the report the Commission observed: "The U.S. Government is increasingly dependent on the commercial space sector to provide essential services for national security operations... includ[ing] satellite communications as well as images of the earth useful to government officials, intelligence analysts and military commanders."[2] While historically speaking, the military use of commercial space systems is not in-and-of-itself a new phenomenon,[3] the Commissioners' remarks serve to highlight the unprecedented convergence of U.S. military and commercial space activities that has taken place over the past decade and is indeed likely to continue.[4] In fact, published figures show that the U.S. Department of Defense (DoD) spent approximately $600 million on commercial satellite services during this period, and will spend up to $2.2 billion more for

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[1] COMM'N TO ASSESS U.S. NAT'L SECURITY SPACE MGMT. & ORG., REPORT PURSUANT TO P.L. 106-65 (2001), *available at* http://sun00781.dn.net/spp/military/commission/report.htm [hereinafter SPACE COMM'N REPORT]. Prior to becoming Secretary of Defense, Donald H. Rumsfeld chaired the Space Commission.

[2] *Id.*, Executive Summary, at 8.

[3] Military and commercial space capabilities first shared the same satellite in 1973, when the Navy entered into a contract with the Communications Satellite (COMSAT) Corporation for "gapfiller" service pending the completion of its Fleet Satellite Communications (FLTSATCOM) system. DAVID N. SPIRES, BEYOND HORIZONS: A HALF CENTURY OF AIR FORCE SPACE LEADERSHIP, at 139 n.8 (rev. ed., Air Univ. Press 1998).

[4] Current DoD policy states that civil and commercial space capabilities are to be used "to the maximum extent feasible and practical." DoD Directive 3100.10, Space Policy, para. 4.6, at 8 (Jul. 9, 1999) [hereinafter DoDD 3100.10]; *see also* U.S. SPACE COMMAND, VISION FOR 2020, at 7 (1997) ("Military use of civil, commercial, and international space systems will continue to increase.") [hereinafter USSPACECOM 2020]; *and* USAF SCIENTIFIC ADVISORY BD., *Forward* to NEW WORLD VISTAS: AIR AND SPACE POWER FOR THE 21ST CENTURY, SUMMARY VOLUME (1995), at iii ("The crucial importance of detailed and timely knowledge and rapid communications to the successful pursuit of our new missions will demand creative use of commercial systems and technologies. This will produce an intimate intertwining of commercial and military applications to an extent not yet encountered.") [hereinafter NEW WORLD VISTAS].

commercial satellite services over the next 10 years.[5] DoD's open recognition and extensive utilization of the military capabilities of commercial space systems represents a dramatic shift away from the overt separation of military and civilian programs that for decades characterized U.S. activities in space.

As the space age dawned amidst the shadows of the Cold War, President Eisenhower believed it was imperative that the first artificial satellite be "civilian" in order to help establish the principle of "freedom of space" and the corresponding right of unimpeded overflight in outer space for the first-generation military reconnaissance satellites, which were then being secretly developed to defend against the possibility of a surprise nuclear attack by Soviet Union.[6] Consequently, the establishment of dual military and civilian space programs was a key element of the "open sky" policy that guided the nation's effort at an initial foray into space in the mid-1950s.[7] Of course, with the launch of *Sputnik I* by the Soviet Union in October 1957, the assumption that the United States would be the first to launch a satellite and thereby create a precedent for the freedom of overflight in space proved to be mistaken. Nevertheless, the outward separation of America's military and civilian space programs was steadfastly upheld[8] and thereafter became the basis for organization of the National Space Program under the

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[5] Jeromy Singer, *Firms to Arrange Satellite Services for Pentagon*, SPACE NEWS, Feb. 19, 2001, at 19.

[6] *See* PAUL B. STARES, THE MILITARIZATION OF SPACE: U.S. POLICY, 1945-1984, at 35 (Cornell Univ. Press 1988); *see also* SPIRES, *supra* note 3, at 38-40.

[7] *See* NAT'L SECURITY COUNCIL, U.S. SCIENTIFIC SATELLITE PROGRAM (NSC 5520) (May 26, 1955), *reprinted in* ORGANIZING FOR EXPLORATION, 1 EXPLORING THE UNKNOWN: SELECTED DOCUMENTS IN THE HISTORY OF THE U.S. CIVIL SPACE PROGRAM (J. Logsdon ed., 1998) [hereinafter ORGANIZING FOR EXPLORATION], *construed in* STARES, *supra* note 6, at 33-35, *and* SPIRES, *supra* note 3, at 40-43.

[8] *See* The President's News Conference (Oct. 9, 1957), PUB. PAPERS, DWIGHT D. EISENHOWER ¶ 210, at 719-32 (1958); *and* Statement by the President Summarizing Facts in the Development of an Earth Satellite by the United States (Oct. 9, 1957), PUB. PAPERS, DWIGHT D. EISENHOWER ¶ 211, at 733-35 (1958).

National Aeronautics and Space Act of 1958, Pub. L. No. 85-568, 72 Stat. 426 (1958) (unamended) (codified as amended at 42 U.S.C. §§ 2451 et seq. (2000)).[9]

The air of separation between U.S. military and civilian space activities was maintained by the Kennedy administration, which, like its predecessor, appreciated the need to downplay U.S. military space activities while it sought to gain international acceptance of the right of overflight in space for reconnaissance purposes.[10] As the Cold War confrontation between the United States and the Soviet Union grew in intensity, the U.S. was increasingly dependent on satellite reconnaissance as "a means of penetrating Soviet secretiveness."[11] So, to curtail international criticism of American satellite reconnaissance and avoid encouraging Soviet countermeasures, subsequent administrations adhered to a veritable *code of silence* concerning military space activities, which perpetuated the split personality of the nation's space program.[12]

Such was the nature of the relationship between U.S. military and commercial space activities until three factors ultimately combined to move commercial space

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[9] *See* SPIRES, *supra* note 3, at 56-67. The Act required that responsibility and control over U.S. space activities be vested in "a civilian agency" and created the National Aeronautics and Space Administration (NASA) to fill that role; however, activities "peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States)" remained within the purview of the Department of Defense (DoD). National Aeronautics and Space Act of 1958 §§ 102, 202.

[10] *See* STARES, *supra* note 6, at 59-71; *see also* SPIRES, *supra* note 3, at 108-112.

[11] DEPT. OF STATE, PLANNING IMPLICATIONS FOR NATIONAL SECURITY OF OUTER SPACE IN THE 1970S, BASIC NATIONAL SECURITY POLICY PLANNING TASK I (Jan. 30, 1964), *quoted in* STARES, *supra* note 6, at 94; *see also* COLIN S. GRAY, AMERICAN MILITARY SPACE POLICY: INFORMATION SYSTEMS, WEAPON SYSTEMS AND ARMS CONTROL 26 (Abt Books 1982) ("The different political characteristics of the two societies render the U.S. far more dependent upon photographic and electronic intelligence.").

[12] On March 23, 1962, DoD imposed an information "blackout" on military space activities and, although restrictions on public references to some parts of the military space program were relaxed by later administrations, a moratorium on any acknowledgement of reconnaissance from space was essentially maintained until 1978, when President Carter admitted that the U.S. operated satellites for this purpose. *See* STARES, *supra* note 6, at 65; *see also* Paul B. Stares, *Space and U.S. National Security*, *in* NATIONAL INTERESTS AND THE MILITARY USE OF SPACE 35, 37-39 (William J. Durch ed., 1984) [hereinafter NATIONAL INTERESTS].

systems increasingly into the military lexicon. First, with heightened international recognition of the lawfulness of reconnaissance from space, evidenced by President Carter's public acknowledgement of U.S. reconnaissance satellites in 1978,[13] the secrecy and sensitivity surrounding intelligence gathering from space eventually abated to the point that it became an express tenet of U.S. space policy.[14] Secondly, the surge of "space commercialization" in the 1980s, precipitated within the United States by President Reagan's 1982 National Space Policy,[15] resulted in increased commercial exploitation of space by both "the government entrepreneur" and private industry, as well as the privatization of space technology.[16] Finally, "the absence of a known 'enemy'" and "the reality of high costs" at the end of the Cold War (*c.* 1991), prompted the U.S. military to endeavor to produce more affordable space capabilities through the military application of commercial technologies.[17]

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[13] *See* STARES, *supra* note 6, at 186 ("Carter chose the Congressional Space Medal of Honor awards ceremony at Kennedy Space Center, Florida on 1 October 1978, to remark that: 'Photoreconnaissance satellites have become an important stabilizing factor in world affairs in the monitoring of arms control agreements. They make an immediate contribution to the security of all nations. We shall continue to develop them.'").

[14] *See* White House Fact Sheet, National Space Policy (Sep. 1, 1996), *available at* http://ast.faa.gov/licensing/regulations/nsp-pdd8.htm ("'Peaceful purposes' allow defense and intelligence-related activities in pursuit of national security and other goals.") [hereinafter National Space Policy (1996)]; *and* National Space Policy Directive No. 1, National Space Policy (Nov. 2, 1989), *available at* http://www.hq.nasa.gov/office/codez/nspd1.html ("The United States... rejects any limitations on the fundamental right to acquire data from space.") [hereinafter NSPD 1]; *see also* National Security Decision Directive No. 42, National Space Policy 2 (Jul. 4, 1982), *available at* http:// www.nasa.gov/office/pao/History/nsdd-42.html [hereinafter NSDD 42]; *and* Presidential Directive NSC-37, National Space Policy 2 (May 11, 1978), *available at* http://www.hq.nasa.gov/office/pao/History/nsc-37.htm [hereinafter PD/NSC-37].

[15] George S. Robinson & Pamela L. Meredith, *Domestic Commercialization of Space: The Current Political Atmosphere*, *in* AMERICAN ENTERPRISE, THE LAW, AND THE COMMERCIAL USE OF SPACE, 1, 1-4 (National Legal Center for the Public Interest, 1986) ("[President Reagan] made it clear that he wanted an aggressive far-sighted space program that included a strong private sector involvement and capital investment.") [hereinafter AMERICAN ENTERPRISE]; *see also* NSDD 42, *supra* note 14, at 1 (A basic goal of the 1982 policy was to "expand United States private sector investment and involvement in civil space and space related activities.").

[16] *See* Robinson & Meredith *in* AMERICAN ENTERPRISE, *supra* note 15, at 1-4; *see also*, Art Dula, *Private Sector Activities in Outer Space*, 19 INT'L LAWYER 159 (1985).

[17] SPIRES, *supra* note 3, at 281.

For the first 25 years of the space age (1957-1982), however, space activities (including commercial space activities) were performed almost exclusively by *governments*, acting individually or in concert through intergovernmental agencies.[18] Moreover, while the fact that many space systems intended for civil or commercial uses simultaneously had potential military usefulness[19] did not go unnoticed,[20] "the development and use of space technology for military and civil applications... [generally] occurred in parallel" through separate military and civilian agencies.[21] The body of international law governing outer space and space activities or the "*corpus juris spatialis*" was formulated in conjunction with this background; in fact, all five of the major international treaties relating to the use of outer space, including the 1963 Limited-Test-Ban Treaty,[22] the 1967 Outer Space Treaty,[23] the 1968 Rescue Agreement,[24] the 1972

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[18] *See* Lawrence D. Roberts, *A Lost Connection: Geostationary Satellite Networks and the International Telecommunication Union*, 15 BERKELEY TECH. L.J. 1095, 1096-1097 (2000) ("For most of its history, space activity has been the province of government.... While the potential for commercial activity involving outer space was recognized relatively early on, and there were occasionally dramatic successes, commercial investments represented only a tiny portion of total space expenditures.") (footnotes omitted); *see also* Christian Roisse, The Roles of International Organizations in Privatization and Commercial Use of Outer Space, Discussion Paper presented at the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (1999) ("In the early nineteen sixties, any utilization and, above all, any commercial use of Outer Space was not conceivable with the involvement of entities other than intergovernmental agencies.") (copy on file with author); *and* Henry Wong, *2001: A Space Legislation Odyssey—A Proposed Model for Reforming the Intergovernmental Satellite Organizations*, 48 AM. U. L. REV. 547, 548-556 (1998) (discussing the factual and legal history of international satellite organizations).

[19] *See* STEPHEN E. DOYLE, CIVIL SPACE SYSTEMS: IMPLICATIONS FOR INTERNATIONAL SECURITY 2, 4 (United Nations Institute for Disarmament Research 1994).

[20] *See*, STAFF OF HOUSE COMM. ON GOVERNMENT OPERATIONS, 89TH CONG., REPORT ON GOVERNMENT OPERATIONS IN SPACE (ANALYSIS OF CIVIL-MILITARY ROLES AND RELATIONSHIPS), at 31 (Comm. Print 1965) ("[P]ractically every peaceful use of outer space appears to have a military application."), *quoted in* SPIRES, *supra* note 3, at 63.

[21] DOYLE, *supra* note 19, at 2.

[22] Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, 14 U.S.T. 1313, 1963 U.S.T. LEXIS 257 (ratified by the United States on Oct. 7, 1963; entered into force on Oct. 10, 1963) [hereinafter Limited-Test-Ban Treaty].

[23] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, U.N. GAOR, 21st Sess., Supp. No. 16, at 13, U.N. Doc. A/6316 (1967); 18 U.S.T. 2410; 1967 U.S.T. LEXIS 613 [hereinafter Outer Space Treaty].

Liability Convention,[25] and the 1976 Registration Convention,[26] were concluded during this period, as was the 1979 Moon Treaty.[27] Thus, the "intimate intertwining" of military and commercial space applications[28] was not a major consideration when the basic space law principles were being established. It is therefore reasonable to question the soundness of legal framework pertaining to the use of space—particularly the military use of space—and, in certain instances, to military activities generally, in light of the current doctrinal and operational confluence of U.S. military and commercial space systems.

The object of this thesis is to highlight some of the legal questions raised by the increasing convergence of military and commercial uses of space and indicate some of the inadequacies of the current law in dealing with this development, by examining two current issues wherein the convergence of military and commercial space activities plays

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[24] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Apr. 22, 1968, U.N. GAOR, 22nd Sess., Supp. No. 16, at 5, U.N. Doc. A/6716 (1968), 19 U.S.T. 7570, 1968 U.S.T. LEXIS 584 [hereinafter Rescue Agreement].

[25] Convention on International Liability for Damaged Caused by Space Objects, Mar. 29, 1972, U.N. GAOR, 26th Sess., Supp. No. 29, at 25, U.N. Doc. A/8429 (1972), 24 U.S.T. 2389, 1972 U.S.T. LEXIS 262 [hereinafter Liability Convention].

[26] Convention on the Registration of Objects Launched into Outer Space, Jan., 14, 1975, U.N. GAOR, 29th Sess., Supp. No. 31, at 16, U.N. Doc. A/9631 (1975), 28 U.S.T. 695, 1975 U.S.T. LEXIS 552 [hereinafter Registration Convention].

[27] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, U.N. GAOR, 34th Sess., Supp. No. 46, at 77, U.N. Doc. A/34/46 (1980), 18 I.L.M. 1434 [hereinafter Moon Treaty]. The Moon Treaty entered into force among its signatories in 1984, yet, it has not been ratified by the United States or any other major space power and so is viewed as having "no real significance in establishing international space law." Glenn H. Reynolds, *The Moon Treaty: Prospects for the Future*, 11 SPACE POLICY 115 (1995); *see* OUTER SPACE: PROBLEMS OF LAW AND POLICY 116 (Glenn H Reynolds & Robert P. Merges, eds., 2d ed. 1997) ("[A]bsent adoption by the major space powers, the Moon treaty is unlikely to play a major role in the future") [hereinafter Reynolds & Merges]; *and* Kurt Anderson Baca, *Property Rights in Outer Space*, 58 J. AIR L. & COM. 1041, 1069 (1993) (stating that the Moon Treaty is not binding as a treaty and "the claim that it represents customary law is probably not credible"); *cf.* Michael Bourbonniere & Loius Haeck, *Jus in Bello Spatiale*, 25 AIR & SPACE L. 2, 4 (2000) (includes the Moon Treaty in the *six* multilateral treaties that make up space law); *and* BRUCE A. HURWITZ, THE LEGALITY OF SPACE MILITARIZATION 2 (Elsevier Science Publishing Co. 1986) ("[S]pace law... is composed of *five* treaties... [including] the 1979 Moon Treaty"); *and* David Everett Marko, *A Kinder Gentler Moon Treaty: A Critical Review of the Current Moon Treaty and a Proposed Alternative*, 8 J. NAT. RESOURCES & ENVTL. L. 293 (1993) ("[The Moon Treaty is] one of the five stars in the constellation of space law.").

[28] *See supra* text accompanying note 4.

a pivotal role. Part I will address the application of the principle of self-defense in space, specifically with regard to the legality of the use of conventional force in response to cyber-attack on commercial space assets. Part II will explore the application of the concept of the use of space for "peaceful purposes," focusing on the permissibility of military use of the International Space Station. Of course, these matters are not exhaustive of the issues raised by the convergence of military and commercial space activities nor are they intended to be; rather, they merely represent examples of the types of issues that are likely to rise to the forefront of debate in the immediate future.

PART I

Self-Defense in Cyberspace: The Legality of the Use of Conventional Force in Response to "Cyber-Attack" on Commercial Space Systems

> An attack on elements of U.S. space systems during a crisis or conflict should not be considered an improbable act. If the U.S. is to avoid a "Space Pearl Harbor" it needs to take seriously the possibility of an attack on U.S. space systems. The nation's leaders must assure that the vulnerability of the United States is reduced and that the consequences of a surprise attack on U.S. space assets are limited in their effects.
>
> REPORT OF THE SPACE COMMISSION (JANUARY 11, 2001)[29]

The United States is detecting the probes and scans of "hackers" against DoD networks and computer systems with increasing frequency.[30] In 1999-2000, U.S. military services reported more than 1,300 serious "cyber attacks," and in May 2001, the National Security Agency disclosed that a series of sophisticated attempts to break into Pentagon computers (code-named "Moonlight Maze") originating from a Russian e-mail address, has continued for more than three years.[31] Testifying before Congress, John Serabian, the U.S. Central Intelligence Agency's information operations issue manager, said that the United States had identified "several countries" that are "pursuing government-sponsored offensive cyber programs" and went on to describe the theory behind the cyber-threat, as follows:

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[29] *See* SPACE COMM'N REPORT, *supra* note 1, Executive Summary, at 8-9.

[30] In 1999 the number of detected probes and scans against DoD systems was just over 22,000; in the first eleven months of 2000, the number had grown to 26,500. SPACE COMM'N REPORT, *supra* note 1, at 23.

[31] Vernon Loeb, *NSA Adviser Says Cyber-Assaults on Pentagon Persist with Few Clues*, WASH. POST, May 7, 2001, at A2; *see also Hackers Target Pentagon Computers: Cyber 'War' Over Access Under Way*, CNN, Mar. 5, 1999, *available at* http://www.cnn.com/TECH/computing/9903/05/pentagon.hackers/index.html.

> [These countries] realize that, in conventional military confrontation with the United States, they will not prevail... [They] perceive that cyber attacks, launched from within or outside the U.S., represent the kind of asymmetric option they will need to level the playing field during an armed crisis against the U.S.[32]

"Cyber-attack" is an attack on or through "cyberspace"—*i.e.*, the "Global Information Structure."[33] While the term "cyber-attack" may have slightly different meanings in different contexts, it is generally another word for what is described in military jargon as "Information Warfare" (IW) or "Information Operations"—

> Those actions taken to affect an adversary's information and information systems while defending one's own information and information systems. (JP1-02) Information operations also include actions taken in a noncombat or ambiguous situation to protect one's own information and information systems as well as those taken to influence target information and information systems... [T]he actions associated with information operations are wide-ranging—from physical destruction to psychological operations to computer network defense.[34]

Although the 1996 National Space Policy directed that steps be taken to protect satellites from cyber-attacks, commercial satellite operators have generally not seen a need to do this, due to the high cost and the lack of demand from customers for protective measures.[35] Hence, U.S. commercial satellites are vulnerable to cyber-attack, and the political, economic and military value of space systems makes them attractive targets.[36]

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[32] J. McCarthy, *China, Russia Develop Cyber Attack Capability*, IDG NEWS SERV., Feb. 28, 2000, *available at* http://www.idg.net/go.cgi?id=13818.

[33] *See* NATIONAL DEFENSE PANEL, TRANSFORMING NATIONAL DEFENSE: NATIONAL SECURITY IN THE 21ST CENTURY, at 90 (1997), *available at* http://www.dtic.mil/ndp/FullDoc2.pdf [hereinafter NDP REPORT].

[34] U.S. JOINT CHIEFS OF STAFF, JOINT VISION 2020 (AMERICA'S MILITARY: PREPARING FOR TOMORROW), at 28-29 (2000), *available at* http://www.dtic.mil/jv2020/jvpub2.htm [hereinafter JOINT VISION 2020]; *see also* USAF FACT SHEET 95-20 (1995) (defining "Information Warfare" as "any action to deny, exploit, corrupt or destroy the enemy's information and it's functions while protecting Air Force assets against those actions and exploiting its own military information operations.").

[35] *See* SPACE COMM'N REPORT, *supra* note 1, at 28.

[36] *See id.*, Executive Summary, at 12.

The growing interdependence between U.S. civilian and military space systems further increases the likelihood that cyber-attacks might be launched against American commercial satellites, if for no other reason than military action directed against U.S. space capabilities will have to target the nation's broader space infrastructure to be successful.[37] In addition, to potential foreign adversaries seeking to avoid a direct military confrontation with the U.S. forces, the commercial sector represents the "soft underbelly" of American space power, which can be attacked through cyberspace in such a way as to make determining the origin of the attack very difficult.[38]

Because the United States is more dependent on space for its security and well-being than any other nation,[39] it is in the national interests to develop a strategy to deter and defend against cyber-attack on U.S. commercial space systems. Already, U.S. military analysts have called for new investments in technology to enable DoD to not only defend its systems against the increasing risks of cyber attack, but to also discern the origin of such attacks, so it can deliver a commensurate response.[40] Yet, this is not the entirety of the issue; for establishing a strategy for deterrence is not a purely technical question. It also requires a clearer understanding of the legal regime of self-defense with regard to cyber-attack, particularly when it comes to the notion of responding to cyber-attack with conventional force.[41]

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[37] *See* Sean P. Kanuck, *Information Warfare: New Challenges for Public International Law*, 37 HARV. INT'L L.J. 272, 283-285 (1996).

[38] *See* James Adams, *Virtual Defense*, 80 FOREIGN AFF. J. 98, 105 (2001).

[39] SPACE COMM'N REPORT, *supra* note 1, at 18.

[40] *See* U.S. DEPARTMENT OF DEFENSE, DEPARTMENT OF DEFENSE SPACE TECHNOLOGY GUIDE, Forward at ii (2000), *available at* http://sun00781.dn.net/spp/military/stg.htm [hereinafter DoD TECH. GUIDE]; *see also* NDP REPORT, *supra* note 33, at 38.

[41] *See* Adams, *supra* note 38, at 110.

Part I of this thesis will address this issue; looking first at U.S. policy concerning the defense of commercial space systems and then at the legal norms governing States' use of force in self-defense as they apply to cyber-attack.

A. U.S. Policy on the Defense of National Commercial Space Systems

The policy of maintaining the outward separation of military and commercial space activities, which predominated over the U.S. space program for the first 25 years of the space age (1957-1982), was aimed at obtaining political and legal international sanction for military space activities, namely satellite reconnaissance.[42] Nevertheless, throughout most of this same period, the United States showed restraint in the development of "space weapons" (*i.e.*, weapons for use in or from space), specifically antisatellite (ASAT) weapons.[43] American self-restraint in this regard was based upon the belief that the United States was much more dependent on reconnaissance from space then was its Cold War adversary, the Soviet Union, due to the "closed" nature of Soviet society, and that, as a consequence, the United States could not adequately deter Soviet interference with U.S. satellites by threat of reciprocal action.[44] American policy-makers thus concluded that developing ASAT weapons would only serve to encourage the

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[42] *See supra* pp. 2-4.

[43] The U.S. developed two "crude" ASAT systems during this time: Project 505 or "Nike Zeus" (1963-67), a modified Anti-Ballistic Missile (ABM) missile, and Project 437 or "Thor" (1964-75), a converted Intermediate Range Ballistic Missile (IRBM); however, both had "limited capabilities and severe operational constraints." Most notably, both systems used nuclear warheads to destroy their targets, which meant that their use would have not only contravened the Limited-Test-Ban Treaty, *supra* note 22, but would have also threatened U.S. satellites in the vicinity of the explosion—these factors greatly reduced the usability of these systems and their credibility as deterrents, as well. *See* STARES, *supra* note 6, at 80-82, 117-128; *see also* SPIRES, *supra* note 3, at 188; *and* William J. Perry et al., *Anti-Satellite Weapons and U.S. Military Space Policy: An Introduction*, *in* SEEKING STABILITY IN SPACE: ANTI-SATELLITE WEAPONS AND THE EVOLVING SPACE REGIME 1, 7-9 (Joseph S. Nye, Jr., & James A. Shear, eds., 1987); *cf.* Michael Krepon, *Lost in Space: The Misguided Drive Toward Anti-Satellite Weapons*, 80 FOREIGN REL. J. 2, 3-4 (2001).

[44] *See* STARES, *supra* note 6, at 51; *see also* sources cited *supra* notes 10-12.

Soviets to do the same and, thereby, increase the risk of an attack on vital U.S. space assets.[45] This was the essence of U.S. policy on the defense of its space systems until the late-1970s.

The U.S policy toward defense of space systems and, in particular, toward antisatellite weapons began to change during the Ford administration. Although the Soviet Union had first begun testing a satellite interceptor or "killer satellite" against targets in space in 1968, the sudden cessation of those tests in 1971, and the climate of détente between the two superpowers that prevailed in the early 1970s lent support to the U.S. policy of restraint.[46] Surely, with the United States and the Soviet Union signing both the Anti-Ballistic Missile Treaty[47] *and* the first SALT (Strategic Arms Limitation Talks) agreement[48] in May 1972, it would have been reasonable to conclude that the Soviets had accepted the U.S. approach *in toto*—the two treaties contain identical provisions which tacitly recognize the legality of reconnaissance satellites as a means of verifying treaty compliance, and prohibit any "interference" with their function.[49]

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[45] *See* sources cited *supra* note 12.

[46] *See* STARES, *supra* note 6, at 165, *generally* at 135-156 (discussing the Soviet's ASAT weapon program).

[47] Treaty on the Limitation of Anti-Ballistic Missile Systems, May 26, 1972, U.S.-U.S.S.R., 23 U.S.T. 3435, 1972 U.S.T. LEXIS 74 (ratified by the United States on Sep. 30, 1972; entered into force on Oct. 3, 1972) [hereinafter ABM Treaty]; *see also* Protocol to the Treaty of May 26, 1972, Jul. 3, 1974, U.S.-U.S.S.R., 27 U.S.T. 1645, 1974 U.S.T. LEXIS 277 (ratified by the United States on Mar. 19, 1976; entered into force on May 24, 1976).

[48] Interim Agreement between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Arms, May. 26 1972, U.S.-U.S.S.R., 23 U.S.T. 3462, 1972 U.S.T. LEXIS 75 (entered into force on May 24, 1976) [hereinafter SALT I].

[49] *See* ABM Treaty, art. XII, para. 1 & 2; *and* SALT I, art. V, para. 1 & 2. "The meaning of the non-interference clauses was never made explicit at the time." STARES, *supra* note 6, at 166-68. Stares notes two other notable agreements signed in the détente era, which are relevant to ASAT activities: First is the Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War between the USA and USSR, Sep. 30, 1971, U.S.-U.S.S.R., 22 U.S.T. 1590, 1971 U.S.T. LEXIS 38, or "Accident Measures" Agreement, which provides: "Parties undertake to notify each other immediately... in the event of signs of interference with [early missile warning] systems or with related communication facilities" (Article 3). Second is the Agreement between the United States of America and the Union of Soviet Socialist Republics on Measures to Improve the USA-USSR Direct Communications Link, Sep. 30, 1971, U.S.-U.S.S.R., 22 U.S.T. 1598,

However, the suspicious "blinding" of three U.S. satellites by an intense beam of radiation emanating from the western part of the Soviet Union in the autumn of 1975, and the resumption of Soviet ASAT tests in February 1976 (after a four-year hiatus), abruptly dispelled the hope among U.S. leaders that America's unilateral restraint in the development of antisatellite weapons would be reciprocated.[50] Accordingly, on January 18, 1977 (just two days before leaving office), President Ford signed National Security Decision Memorandum No. 345 (NSDM-345), directing DoD to develop an operational ASAT capability,[51] while continuing to study arms control options for antisatellite weapons.[52] Though implementation of NSDM 345 was left for the incoming Carter administration, the decision nevertheless stands as "the primary enabling act for the current U.S. ASAT program."[53]

The concept of developing a credible U.S. ASAT capability, while simultaneously pursuing limits on antisatellite weapons, became the basis of the Carter administration's "two-track" policy.[54] The argument behind the policy was both logical and persuasive: The prospect of a U.S. ASAT capability would serve as a "bargaining chip" that would

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1971 U.S.T. LEXIS 39, or "Hot-Line Modernization" Agreement, which incorporated the use *Molniya* and *Intelsat* satellites into the "Hot-line" created by a 1963 treaty in the aftermath of the *Cuban Missile Crisis*, whereby both parties agree "to take all possible measures to assure the continuous and reliable operation of the communications circuits and the system terminals of the Direct Communications Line."

[50] *See* STARES, *supra* note 6, at 169, 178-79.

[51] As of Oct. 1, 1970, DoD moved Program 437 to "stand-by" status as a cost saving measure, with most of the missiles and personnel being withdrawn from Johnson Island in the Pacific, to Vandenberg Air Force Base in California. As a result, the system's reaction time went from 24-36 hours to 30 days, which was effectively the end of the system, although it technically remained "operational" until it was officially de-activated on Apr. 1, 1975. *See* CURTIS PEEBLES, GUARDIANS: STRATEGIC RECONNAISSANCE SATELLITES 92-94 (Presidio Press 1987); *see also* STARES, *supra* note 6, at 127; *and* SPIRES, *supra* note 3, at 188.

[52] National Security Decision Memorandum No. 345, U.S. Anti-Satellite Capabilities (Jan. 18, 1977) (NSDM-345 is still classified in full), *discussed in* STARES, *supra* note 6, at 171, 178-79.

[53] STARES, *supra* note 6, at 179.

[54] *See generally Id.*, at 180-200.

provide the Soviet Union with real incentive to negotiate and give the United States leverage once talks began, and, in the event negotiations failed, the United States would acquire the capability to deal with military threats in space.[55] Yet despite an expressed willingness on the part of the U.S. to exchange further ASAT restraint in return for reciprocal action from the Soviet Union, tests of Soviet ASAT systems continued unabated throughout the Carter presidency.[56] Not surprisingly, negotiations for comprehensive limits on ASAT weapons were futile, reflecting the varying levels of commitment of interested constituencies on both sides, and were eventually abandoned in the turmoil following the Soviet invasion of Afghanistan in December 1979.[57]

President Carter's reputation as a nuclear weapons "disarmer" notwithstanding, the changing perception of the Soviet threat compelled him to take measures to improve the U.S. defensive posture.[58] On May 11, 1978, Carter issued a Presidential Directive (PD/NSC-37), which set out his National Space Policy.[59] It included the following among the "basic principles" governing the conduct of the U.S. space program:

> Rejection of any claims to sovereignty over outer space or over celestial bodies, or any portion thereof, and rejection of any limitations on the fundamental right to acquire data from space.

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[55] *Id.*, at 183.

[56] *See* Announcement of Administrative Review (Jun. 20, 1978), PUB. PAPERS, JIMMY CARTER, JANUARY 1 TO JUNE 30, 1978, at 1137 (1978) ("The United States finds itself under increasing pressure to field an anti-satellite capability of its own in response to Soviet activities in this area. By exercising mutual restraint, the United States and the Soviet Union have an opportunity at this early juncture to stop an unhealthy arms competition in space before the competition develops a momentum of its own.") [hereinafter NSC Admin. Review]; *see also* STARES, *supra* note 6, at 181, 186-192; *and* SPIRES, *supra* note 3, at 190.

[57] *See* STARES, *supra* note 6, at 192-200.

[58] SPIRES, *supra* note 3, at 189.

[59] PD/NSC-37, *supra* note 14, at 2 (portions of PD/NSC-37 are still classified); *see also*, NSC Admin. Review, *supra* note 56, at 1136 ("The United States will pursue Activities in space in support of its right of self-defense *and thereby strengthen national security, the deterrence of attack, and arms control agreements*." (emphasis added)), *construed in* STARES, *supra* note 6, at 185-86.

> The space systems of any nation are national property and have the right of passage through and operations in space without interference. Purposeful interference with operational space systems shall be viewed as an infringement upon sovereign rights.
>
> The United States will pursue activities in space in support of its right of self-defense.

PD/NSC-37 clearly comprised a firmer, more assertive approach toward national defense of space systems then existed previously, as well as an unequivocal affirmation of the application of the right of self-defense in outer space generally.[60] Furthermore, although details of the national security components of PD/NSC-37 are still classified, the public version of the Directive called for DoD to "identify and integrate, as appropriate, civil and commercial resources into military operations during national emergencies," as a means of enhancing the survivability and redundancy of U.S. space systems.[61] Therefore, while perhaps not intended as such, PD/NSC-37 can also be viewed as the genesis for the open recognition and extensive utilization of the military capabilities of commercial space systems that is seen today.[62]

In 1981, the first year of the Reagan presidency, the new administration initiated a comprehensive space policy review, the results of which were contained in National Security Decision Directive No. 42 (NSDD 42), issued on July 4, 1982.[63] Although this Directive replaced a number of the previous administration's space policy statements, including NSDD-37, its key declarations were basically the same:

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[60] *See* discussion *infra* Part I.C.1., pp. 44–47.

[61] NSC Admin. Review, *supra* note 56, at 1137; *see also* STARES, *supra* note 6, at 211.

[62] *See* sources cited *supra* notes 4-5, and accompanying text.

[63] NSDD 42, *supra* note 14, at 2-3 (portions of NSDD 42 are still classified).

> The United States rejects any claims to sovereignty by any nation over outer space or celestial bodies, or any portion thereof, and rejects any limitations on the fundamental right to acquire data from space.
>
> The United States considers the space systems of any nation to be national property with the right of passage through the operations in space without interference. Purposeful interference with space systems shall be viewed as infringement upon sovereign rights.
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> The United States will pursue activities in space in support of its right of self-defense.

Where Reagan's space policy differed from Carter's was on the question of arms control. Under the Reagan policy the United States would "continue to *study* space arms control options" and "*consider* verifiable and equitable arms control measures that would ban or otherwise limit testing and deployment of specific weapons systems,"[64] however, the nation would no longer actively seek an agreement with the Soviet Union for comprehensive limits on antisatellite weapons, as was the case under Carter.[65] In fact, the Reagan administration outrightly rejected any notion of the U.S. ASAT capability as a "bargaining chip," adopting, instead, the mantra of "ASAT deterrence"—*i.e.*, "the belief that the threat of U.S. ASAT retaliation *could* deter the Soviet Union from using its own satellite interceptor."[66]

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[64] *Id.*, at 3 (emphasis added).

[65] NSC Admin. Review, *supra* note 56, at 1137; *see also* STARES, *supra* note 6, at 218 ("[The Reagan administration's statement that the U.S. would continue to 'study' and 'consider' arms control options]... was a lot different from stating, as Carter had, that ASAT arms control was *per se* desirable."), 230 ("While NSDD 42 had not been entirely dismissive of ASAT arms control, it was clear from the administration's response to the Soviet proposal [1981] that it had no intention of pursuing it in the immediate future.").

[66] STARES, *supra* note 6, at 219 (emphasis added); *see also* White House Fact Sheet Outlining United States Space Policy, 18 WEEKLY COMP. PRES. DOC. 872 (Jul. 4, 1982) ("The United States will proceed with development of an antisatellite (ASAT) capability, with operational deployment as a goal. The primary purposes of a United States ASAT capability are to deter threats to space systems of the United States and its allies and, within such limits imposed by international law, to deny any adversary the use of space-based systems that provide support to hostile military forces.").

Just a few days after NSDD 42 was signed, "ASAT deterrence" made its way into U.S. military doctrine with the release of the 1982 DoD space policy, which heralded the development of an "ASAT capability" for the primary purpose of "deter[ing] threats to the space systems of the United States and its allies."[67] Nevertheless, the main weakness of the theory of "ASAT deterrence" remained, as it had always been, the fact that a "tit for tat with satellites" did not make sense from an American perspective, because of the great asymmetry in the value of the satellites to the two superpowers.[68] Consequently, on February 4, 1987, DoD adopted a new space policy[69] that theoretically sought to address this dilemma. Under this latest policy, DoD would "develop and deploy a robust and comprehensive anti-satellite capability... at the earliest possible date."[70] In addition, the policy set down a doctrine of "Space System Protection"—

> DoD space systems will be designed, developed and operated to ensure the survivability and endurability of their critical functions at designated levels of conflict. DoD will develop and operate space systems which balance capability and survivability to deter attacks by creating a dilemma for adversary attack planners by responding to these attacks with both space and terrestrial force responses.[71]

The new DoD policy thus bolstered "ASAT deterrence" by substituting the "tit for tat with satellites" for an array of potential military responses to an attack on U.S. space systems, to include "terrestrial force," which could, for example, entail the use of conventional force against the attacker's satellite ground stations, command and communications nodes, or launch systems.[72]

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[67] *See* STARES, *supra* note 6, at 218.

[68] *Id.*, at 219.

[69] Department of Defense Space Policy, Unclassified (Mar. 10, 1987), *available at* http://sun00781.dn.net/spp/military/docops/defense/ 87memo.htm [hereinafter DoD Space Policy (1987)]. The official version of the policy was signed by Secretary of Defense Weinberger on Feb. 4, 1987, and remains classified.

[70] *Id.*, at 5.

[71] *Id.*

The Reagan philosophy of "ASAT deterrence," and the corresponding goal of developing and deploying an antisatellite capability, were seemingly well entrenched as fixtures of U.S. space policy with the introduction of National Space Policy Directive No.1 (NSPD 1) in 1989:

> The United States will conduct those activities in space that are necessary to national defense. Space activities will contribute to national security objectives by (1) deterring, or if necessary, defending against enemy attack; (2) assuring that forces of hostile nations cannot prevent our own use of space; (3) negating, if necessary, hostile space systems; and (4) enhancing operations of United States and Allied forces.
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> Space Control: The DoD will develop, operate, and maintain enduring space systems to ensure its freedom of action in space. This requires an integrated combination of antisatellite, survivability, and surveillance capabilities... The United States will develop and deploy a comprehensive [ASAT] capability with programs as required and with initial operations capability at the earliest possible date.[73]

However, the force of NSPD 1 was severely diminished by the fact that, in 1988, concerns over cost overruns and the ongoing arms race with the Soviet Union, prompted Congress to ban further testing of the Miniature Homing Vehicle (MHV)—an air-launched heat-seeking antisatellite weapon, which had been in development since 1977 and was intended to provide the United States with an operational ASAT capability.[74] The U.S. Air Force subsequently cancelled the program and, thus, the United States remained without a dedicated antisatellite system in operation.

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[72] "Terrestrial forces" include air, land, and sea forces. *See* TECHNOLOGY ASSESSMENT BOARD, 99TH CONG., REPORT ON ANTI-SATELLITE WEAPONS, COUNTERMEASURES, AND ARMS CONTROL, SUMMARY 14 (1985).

[73] NSPD 1, *supra* note 14.

[74] SPIRES, *supra* note 3, at 261; *see also* Paul B. Stares, *The Threat to U.S. Space Systems*, *in* THE SEARCH FOR SECURITY IN SPACE 38, 50-52 (Kenneth N. Luongo & W. Thomas Wander eds., 1989) ("For fiscal 1985, Congress mandated that no more than three tests against a target in space could take place, and then only after the president had certified that the United States was endeavoring in good faith to negotiate an ASAT arms control agreement with the Soviet Union. The next year it prohibited all testing against objects in space, a ban it later extended into fiscal 1987.").

With the end of the Cold War and subsequent breakup of the Soviet Union, the Reagan-era rationale of pursuing an ASAT capability to deter Soviet ASAT attacks no longer applied.[75] Even so, the Gulf War had provided U.S. leaders with a convincing demonstration of the value of satellite reconnaissance and the importance of denying it to one's enemies, hence, American ASAT weapons development continued.[76] However, there was still considerable debate over the necessity, feasibility, and cost-effectiveness of such weapons; consequently, through the mid-1990s, the United States' antisatellite program remained a "technology base" program only, with the limited objective of developing technologies as security against potential future threats.[77]

The nation's policy on space system defense exhibited a similar ambivalence during this period. Installed in 1996, the new "National Space Policy"[78] dropped the call for deployment of an antisatellite system (and, indeed, any mention of the word anti-satellite altogether)—instead, DoD would simply "maintain the capability to execute... space control." The document further provided:

> National security space activities shall contribute to U.S. national security by... providing support for the United States' inherent right of self-defense...

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[75] *See* Krepon, *supra* note 43, at 4-5 (discussing the Reagan administration's support of antisatellite weapons).

[76] SPIRES, *supra* note 3, at 261; *see also* William B. Scott, *ASAT Test Stalled by Funding Dispute*, AVIATION WEEK & SPACE TECHNOLOGY, Jul. 1, 1996, at 59 (discussing the Army's kinetic energy anti-satellite); *and* William J. Broad, *In Era of Satellites, Army Plots Way to Destroy Them*, N.Y. Times, Mar. 4, 1997, at C1, C8 ("Congress has... financed the [Kinetic Energy Anti-Satellite Program] at a significant level for two years and is expected to continue to do so, citing a growing need for the military to be able to blind unfriendly eyes in orbit... [S]aid Senator Robert C. Smith... 'If Saddam Hussein had [satellite reconnaissance] technology during the gulf war [sic], he could have done a lot of damage.'").

[77] SPIRES, *supra* note 3, at 261-62.

[78] National Space Policy (1996), *supra* note 14.

> The United States will conduct those activities in space that are necessary to national defense. Space activities will contribute to national security objectives by (1) deterring, or if necessary, defending against enemy attack; (2) assuring that forces of hostile nations cannot prevent our own use of space; (3) negating, if necessary, hostile space systems; and (4) enhancing operations of United States and Allied forces.
>
> ***
>
> [T]he United States will develop, operate and maintain space control capabilities to ensure freedom of action in space and, if directed, deny such freedom of action to adversaries. These capabilities may also be enhanced by diplomatic, legal or military measures to preclude an adversary's hostile use of space systems and services. The U.S. will maintain and modernize space surveillance and associated battle management command, control, communications, computers, and intelligence to effectively detect, track, categorize, monitor, and characterize threats to U.S. and friendly space systems and contribute to the protection of U.S. military activities.

While the phrase "space control capabilities [and] military measures" is arguably a euphemism for "space and terrestrial force," the 1996 policy leaves the question of the use of force in response to attack on U.S. space assets awash in verbiage. By the end of the decade, however, the expanded commercial use of space, and the growing dependence of the military on the commercial space sector to provide essential services, gave rise to renewed concern over the vulnerability of the nation's space systems to attack.[79] So, in 1999, DoD promulgated its current space policy, which clarified the issue:

> Space is a medium like the land, sea, and air within which military activities shall be conducted to achieve U.S. national security objectives. The ability to access and utilize space is a vital national interest because many of the activities conducted in the medium are critical *to U.S. national security and economic well-being*...

[79] *See* SPACE COMM'N REPORT, *supra* note 1, Executive Summary, at 8 ("The relative dependence of the U.S. on space makes its space systems potentially attractive targets. Many foreign nations and non-state entities are pursuing space-related activities. Those hostile to the U.S. possess, or can acquire on the global market, the means to deny, disrupt or destroy U.S. space systems by attacking satellites in space."); *see also* JOINT VISION 2020, *supra* note 34, at 30 ('[O]ur ever-increasing dependence on information processes, systems, and technologies adds potential vulnerabilities that must be defended."); *and* NDP REPORT, *supra* note 33, at 38 ("[As] [m]ilitary competitors... seek ways to reduce our current advantages [in space]... business will turn to government for protection... [and] as the 'flag follows trade,' our military will be expected to protect U.S. commercial interests.").

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> Ensuring the freedom of space and protecting U.S. national security interests in the medium are priorities for space and space-related activities. U.S. space systems are national property afforded the right of passage through and operations in space without interference, in accordance with [the National Space Policy (1996)]... Purposeful interference with U.S. space systems will be viewed as an infringement on our sovereign rights. *The U.S. may take all appropriate self-defense measures, including... the use of force, to respond to such an infringement on U.S. rights.*[80]

Thus, under the new DoD policy, it is now clear that United States construes the "inherent right of self-defense" as not only allowing the use of military force in response to attacks on the nation's military space systems, but in response to attacks against U.S. commercial interests and investments in space as well.[81]

The advent of the cyber-attack threat introduces a new dynamic to the concept of satellite defense that U.S. policymakers must now address. The concept of a deterrence regime is once more gaining currency, not just for outer space, but for "cyberspace" too.[82] Military planners have advocated increased technology investments to give U.S. forces the ability to determine the nature and origin of a cyber-attack, so that they can take steps to mitigate its effect and attack the source.[83] Yet, the legality of the use of force in response to cyber-attack on commercial space systems remains open to question.[84] Resolving this issue requires an evaluation of the cyber-attack threat within the context of the law governing resort to armed conflict generally—the *jus ad bellum*.

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[80] DoDD 3100.10, *supra* note 4, para. 4.1-4.2, at 6 (emphasis added).

[81] *See* USSPACECOM 2020, *supra* note 4, at 4 ("[In the 21st century]... space forces will ... protect military and commercial national interests and investment in the space medium due to their increasing importance.").

[82] Adams, *supra* note 38, at 104.

[83] *See* NDP Report, *supra* note 33, at 38; *see also* sources cited *supra* note 40.

[84] *See Id.*, at 110.

B. The Law Governing Resort to Armed Conflict (*Jus Ad Bellum*)

1. Historical Background

Modern *jus ad bellum*—which corresponds with the era of the Covenant of the League of Nations (1919) and the Charter of the United Nations (1945)—is distinguished by the establishment of the illegality of resort to war by States as "the basic norm."[85] Prior to this, the *jus ad bellum* was characterized by a strong presumption of the legality of war as "an instrument of self-interest, and as a form of self-help," which dated back to antiquity.[86] This is not to say that the resort to war was unregulated; to the contrary, virtually every advanced civilization has had rules governing the initiation of war.[87] Indeed, "[a]s early as the Egyptian and Summarian wars of the second millennium B.C., there were rules defining the circumstances under which war might be initiated."[88] The Greeks and Romans likewise instituted laws that "specified that an enemy nation could only be attacked if it violated a treaty, injured an ambassador, desecrated holy places, or attacked an ally."[89] In addition to requiring proper cause, Greco-Roman doctrine required submission of an official demand for satisfaction and a formal declaration of war before the commencement of warfare could be considered legally sanctioned.[90]

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[85] IAN BROWNLIE, INTERNATIONAL LAW AND THE USE OF FORCE BY STATES 1 (Oxford Univ. Press 1963).

[86] *See id.*

[87] *See id.*, at 3; *and* 1 THE LAW OF WAR: A DOCUMENTARY HISTORY 3 (Leon Friedman ed., Random House 1972) [hereinafter LAW OF WAR].

[88] LAW OF WAR, *supra* note 87, at 3; *see also e.g.*, BROWNLIE, *supra* note 85, at 3 ("In ancient India a ruler would not in general go to war merely for territorial aggrandizement and expeditions would only be mounted after deliberation and on grave issues.... The Babylonian Talmud drew a distinction between voluntary wars waged with the object of extending territory and obligatory wars conducted against an [attacking] enemy.").

[89] LAW OF WAR, *supra* note 87, at 5; *cf.* ANTHONY C. AREND & ROBERT J. BECK, INTERNATIONAL LAW & THE USE OF FORCE 12-13 (Routledge 1993) (discussing the writings of Aristotle on the permissible ends of a *morally* just war).

[90] *See* LAW OF WAR, *supra* note 87, at 5; *see also* BROWNLIE, *supra* note 85, at 4 ("'[I]n Greece, no war was undertaken without the belligerents alleging a definite cause considered by them as a valid and suffi-

The advent of Christianity marked the beginning of an era in which the question of war was dealt with from a *moral* perspective.[91] In the late Roman Empire, Christian religious doctrine had become widespread and enmeshed with the secular power of Rome; therefore, Christian theologians and canonists were compelled to reconcile the pacifist and anti-militaristic principles of the early Church with the needs of the emerging Christian State.[92] "[Thus] there originated with St. Ambrose (A.D. 340-397) the conception of the Roman Empire as the basis of the just peace, and the first signs of the justice of war."[93] This concept was subsequently "elaborated and given authority in the Christian world by St. Augustine (A.D. 354-430)."[94] Underlying Augustine's construct of the "just war" was the notion that the "right of war" (*jus belli*) was *limited*, in so far as there were just and unjust wars, and unjust wars were forbidden.[95] Three things were necessary for a war to be considered just: first, war could only be waged by authority of a

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cient justification therefore, and without there previously demanding reparation for injuries done or claims unsatisfied....' The Roman approach was... that no war was just unless entered upon after an official demand for satisfaction had been submitted or warning given and a formal declaration made.")(footnotes omitted); *and* AREND & BECK, *supra* note 89, at 13 ("In *De Res Publica*... [Cicero] advanced a *legal* argument, contending that war could be lawful if there were just cause and if the necessary procedural conditions were met.").

[91] *See* AREND & BECK, *supra* note 89, at 14; *see also* Jose-Luis Fernandez-Flores, *Use of Force and International Community*, 111 MIL. L. REV. 1, 3 (1986).

[92] *See* BROWNLIE, *supra* note 85, at 5; *and* LAW OF WAR, *supra* note 87, at 6; *see also* AREND & BECK, *supra* note 89, at 13; *and* Fernandez-Flores, *supra* note 91, at 3 ("On the one hand, authors like Tertulian [A.D. 160–240] and Lactantius [died *c.* A.D. 330] declared themselves in favor of absolute non-violence and accordingly stated that all wars were unjust. The former also maintained that the existence of armed forces was inconsistent with the Christian faith, and he was accused of heresy. On the other hand, no authoritative text rejected outright the possibility of Christians taking part in a war. In fact, many Christians served in the Roman legions and were nevertheless still considered saints."); *cf.* Chris af Jochnick & Roger Normand, *Legitimation of Violence: A Critical History of the Laws of War*, 35 HARV. INT'L L.J. 49, 60 n.39 (1994) ("As the Church grew to exercise state power in Europe, it abandoned its early commitment to pacifism.").

[93] Fernandez-Flores, *supra* note 91, at 4; *see also* BROWNLIE, *supra* note 85, at 5.

[94] BROWNLIE, *supra* note 85, at 5 ("St. Augustine condemned conquest and defined just wars in somewhat vague terms. Thus in one work the following appears: 'Just wars are usually defined as those which avenge injuries, when the nation or city against which warlike action is to be directed has neglected either to punish wrongs committed by its own citizens or to restore what has been unjustly taken by it. Further that kind of war is undoubtedly just which God Himself ordains.'").

[95] Fernandez-Flores, *supra* note 91, at 4.

sovereign; secondly, just cause was required (*i.e.*, some fault on the part of those who were attacked); and thirdly, war had to be undertaken with rightful intentions (*i.e.*, with a genuine desire for justice, as opposed to hate or revenge).[96] The *just war doctrine* (as it is known) would serve as the basis for *jus ad bellum* through the end of the Middle Ages.[97]

By the late-fifteenth century, however, the feudal political structure owing allegiance to the Pope and Emperor had begun to give way to a system of sovereign national States.[98] At this time, a group of prominent scholastics, jurists and theologians, began to reexamine the laws of war from a "juridical-secular" point of view, "shifting the main argument from the justice or injustice of war... to the lawfulness or unlawfulness of war."[99] They concluded that, by virtue of the sovereign authority vested in the State, any sovereign nation could *lawfully* declare war; and further, that the exclusive power of the sovereign ruler to decide on the necessity of war was such, that war was justified so long as the ruler, acting in good faith, judged it to be so (*even if* objectively justice lay with the other party!).[100] The obvious consequence of this theory (described as "probabilism")[101]

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[96] *See* LAW OF WAR, *supra* note 87, at 6-7; *see also* BROWNLIE, *supra* note 85, at 6 (quoting St. Thomas Aquinas (*c.* 1225-74) in *Summa Theologica*, on the teachings of St. Augustine); *and* AREND & BECK, *supra* note 89, at 14; *cf.* M.H. KEEN, THE LAWS OF WAR IN THE LATE MIDDLE AGES 66 (Univ. of Toronto Press 1965) (discussing the work of Raymond of Pennaforte, who applied the opinions of Augustine in *Summa de Poenitentia* (1603) and identified *five* prerequisites for a just war).

[97] *See* BROWNLIE, *supra* note 85, at 5-18; *and* AREND & BECK, *supra* note 89, at 15-19; *see also* LAW OF WAR, *supra* note 87, at 6-15; Fernandez-Flores, *supra* note 91, at 4 ("The doctrine of Saint Augustine basically shaped all of the medieval doctrines."); *cf.* af Jochnick & Normand, *supra* note 92, at 61 ("The laws of war remained tied to religious particularism until the Enlightenment.").

[98] *See* BROWNLIE, *supra* note 85, at 10-13; *see also* AREND & BECK, *supra* note 89, at 15-17 (discussing the emergence of the state system and the doctrine of sovereignty).

[99] Fernandez-Flores, *supra* note 91, at 5 ("[Publicists] detheologized the notion of just war."); *see also* LAW OF WAR, *supra* note 87, at 11; *and* af Jochnick & Normand, *supra* note 92, at 61 ("[T]he 'publicists' helped shift the source of legal authority from God to reason), 61 n.44 ("The early publicists... continued to use the 'just war' framework but universalized its principles.").

[100] *See generally* BROWNLIE, *supra* note 85, at 7-13; *and* Fernandez-Flores, *supra* note 91, at 5-6.

was to deprive the *just war doctrine* of any limiting effect on the right of the State to make war.[102]

Probabilism dominated the theory of *jus ad bellum* into the seventeenth century and was eventually woven into the doctrine of positivism that prevailed throughout the Age of Enlightenment.[103] "Positivism asserted that since States could be bound by no higher law, the only law that could exist was that which they created by their consent... through treaties, customs, and general principles."[104] In effect, this meant that under international law States enjoyed a sovereign right to go to war, a right that was essentially unrestricted.[105] Moreover, as a consequence of these developments, the *just war doctrine* was basically relegated to "the realms of morality and propaganda."[106]

The "unbridled ferocity" of modern warfare[107] and the increased risk posed to the civilian population of the "nation-at-arms" in the nineteenth century, led to the first international conferences aimed at codifying the laws and customs governing wartime

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[101] "This theory has been described as 'probabilism'... [because] of its relation to casuistic method." BROWNLIE, *supra* note 85, at 11.

[102] *See* BROWNLIE, *supra* note 85, at 12; *see also* Fernandez-Flores, *supra* note 91, at 6 ("[W]ar was turned into a juridical institution in conformity with natural law but devoid of moral considerations.... In short, there were no restrictions at all on war.").

[103] *See* BROWNLIE, *supra* note 85, at 10-18; *see also* AREND & BECK, *supra* note 89, at 15-17.

[104] AREND & BECK, *supra* note 89, at 16.

[105] *Id.*, at 17 ("The only real qualification of this right to institute war that was accepted by states during this period was the requirement that war be declared. Hence, a state simply declared war and it was lawful.") (footnotes omitted).

[106] BROWNLIE, *supra* note 85, at 14 ("[During] [t]he period 1648 to 1815... in deference to public opinion governments frequently took pains to advance reasons for declaring war which would give the action some colour of righteousness."); *cf.* AREND & BECK, *supra* note 89, at 16-17 (the "emergence of the state system" and "the doctrine of sovereignty" served to "supplant the just war concept as the predominant *legal* approach to the *jus ad bellum*.").

[107] JEAN PICTET, DEVELOPMENT AND PRINCIPLES OF INTERNATIONAL HUMANITARIAN LAW 24 (Nijhoff Publishers ed. & trans., 1985) (1982), *quoted in* af Jochnick & Normand, *supra* note 92, at 63.

conduct (*jus in bello*).[108] But these early attempts to create laws governing the conduct of war could not to overcome "the enduring power of military necessity," and the resulting regulations "inevitably collapsed into deliberate vagueness."[109] Meanwhile, the *jus ad bellum* remained characterized by the unlimited right to wage war as an attribute of the sovereign State.[110] However, in the latter part of the period, new trends favoring peaceful settlement of disputes began to emerge, including the view of war as "a judicial procedure," wherein war was "a means of last resort" available only after recourse to peaceful means of settlement had failed.[111] Attempts by the Hague Peace Conferences of 1899 and 1907 to restrict the freedom of States to resort to war reflected this view.

The First Peace Conference sought to institutionalize procedures for the peaceful settlement of disputes in the Convention for the Pacific Settlement of International Disputes (1899).[112] Under the treaty, States agreed "to use their best efforts to insure the pacific settlement of international differences"[113] and, further, that, circumstances permitting, they would submit disagreements "to the good offices or mediation of one or more

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[108] af Jochnick & Normand, *supra* note 92, at 63, 66-68; *see* Declaration Renouncing the Use, in Time of War, of Explosive Projectiles under 400 Grams Weight (Saint Petersburg Declaration) (1868), and International Declaration Concerning the Laws and Customs of War (Brussels Declaration) (1874), *reprinted in* THE LAWS OF ARMED CONFLICTS, at 25-34, 101-103 (Dietrich Schindler & Jiri Toman eds., 1988).

[109] af Jochnick & Normand, *supra* note 92, at 68.

[110] *See* BROWNLIE, *supra* note 85, *passim*; *see also* AREND & BECK, *supra* note 89, at 17, 19.

[111] BROWNLIE, *supra* note 85, at 19, 21 ("In state practice this sometimes appeared as a substantial though perhaps somewhat formal qualification of the right to resort to war.").

[112] Convention for the Pacific Settlement of International Disputes, Jul. 29, 1899, 32 Stat. 1779, T.S. 392, 1 Bevans 230, 1899 U.S.T. LEXIS 30. The Convention was ratified by the United States on Apr. 7, 1900, with the following reservation (maintained at ratification): "Nothing contained in this convention shall be so construed as to require the United States of America to depart from its traditional policy of not intruding upon, interfering with, or entangling itself in the political questions of policy or internal administration of any foreign state; nor shall anything contained in the said convention be construed to imply a relinquishment by the United States of America of its traditional attitude toward purely American questions."

[113] *Id.*, art. I.

friendly Powers" before resorting to armed conflict.[114] Other noteworthy aspects of the 1899 Convention included recommendations for the use of "International Commissions of Inquiry" to resolve disputes "arising from differences of opinion on points of fact"[115] and the establishment of a system for arbitration of international legal disputes.[116]

The Second International Peace Conference (1907) produced three more treaties. The Convention for the Pacific Settlement of International Disputes (Hague I) of 1907[117] revised the 1899 Convention by expounding upon the means and methods for the peaceful settlement of disputes, and led to the conclusion of numerous bilateral treaties which attempted to give effect to its provisions.[118] Next, the illegality of "forcible self-help by means short of war"[119] was advanced by the Convention Respecting the Limitation of the Employment of Force for the Recovery of Contract Debts (Hague II), also known as the

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[114] *Id.*, art. II.

[115] *Id.*, art. IX-XIV (Title III).

[116] *Id.*, art. XV-LXI (Title IV).

[117] Convention for the Pacific Settlement of International Disputes, Oct. 18, 1907, 36 Stat. 2199, T.S. 536, 1 Bevans 577, 1907 U.S.T. LEXIS 26 [hereinafter Hague I (1907)]. The United States ratified Hague I (1907) on Feb. 23, 1909, subject to the following understanding and declarations: (1) "[T]he United States approves this convention with the understanding that recourse to the permanent court for the settlement of differences can be had only by agreement thereto through general or special treaties of arbitration heretofore or hereafter concluded between the parties in dispute; and the United States now exercises the option contained in Article 53 of said convention, to exclude the formulation of the 'compromis' by the permanent court, and hereby excludes from the competence of the permanent court the power to frame the 'compromis' required by general or special treaties of arbitration concluded or hereafter to be concluded by the United States, and further expressly declares that the 'compromis' required by any treaty of arbitration to which the United States may be a party shall be settled only by agreement between the contracting parties, unless such treaty shall expressly provide otherwise"; and (2) "[T]he United States renews the reservation made in 1899 on the subject of Article 48 of the Convention for the pacific settlement of international disputes." For the language of the 1899 reservation, *see supra* text accompanying note 55.

[118] "An important development [in this regard] was the conclusion by the United States in 1913 and 1914 of a series of 'Treaties for the Advancement of Peace,' generally known as the Bryan Treaties." BROWNLIE, *supra* note 85, at 23. "[The] Bryan Treaties of 1913-14, prohibited declarations of war or the opening of hostilities until an arbitral commission had examined the merits of the dispute." INGRID DETTER DE LUPIS, THE LAW OF WAR 54 (Cambridge Univ. Press 1987).

[119] BROWNLIE, *supra* note 85, at 225; *see generally* PERCY BORDWELL, THE LAW OF WAR BETWEEN BELLIGERENTS 197-98 (Callaghan & Co. 1908).

Porter Convention.[120] Finally, the Convention Relative to the Opening of Hostilities (Hague III)[121] sought to preserve peace by ensuring that war did not commence without warning.[122]

Still, the Hague treaties are of questionable legal and practical significance. Under Hague I (1907), good offices and mediation were to be employed *only* so far as circumstances allowed,[123] and, in any case, had no binding force.[124] What's more, acceptance of mediation was not to "have the effect of interrupting, delaying, or hindering, mobilization or other measures of preparation for war"; nor would it cause the interruption on-going military operations.[125] The obligation to refrain from use of force for the recovery of contract debts under Hague II (1907) was likewise limited—*i.e.*, it did not apply when the debtor State refused or neglected to reply to an offer of arbitration, or after accepting the offer, prevented settlement, or, after the arbitration, failed to submit to the award.[126] Finally, even the requirement for a declaration of war under Hague III

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[120] Convention Respecting the Limitation of the Employment of Force for the Recovery of Contract Debts, Oct. 18, 1907, 36 Stat. 2241, T.S. 537, 1 Bevans 607, 1907 U.S.T. LEXIS 27 [hereinafter Hague II (1907)]. The United States ratified Hague II (1907) on Feb. 23, 1909, with the following understanding: "The United States approves this convention with the understanding that recourse to the permanent court for the settlement of the differences referred to in said convention can be had only by agreement thereto through general or special treaties of arbitration heretofore or hereafter concluded between the parties in dispute." *See* BROWNLIE, *supra* note 85, at 225-26.

[121] Convention Relative to the Opening of Hostilities, Oct. 18, 1907, 36 Stat. 2259, T.S. 538, 1 Bevans 619 1907 U.S.T. LEXIS 28 [hereinafter Hague III (1907)]. The United States ratified Hague III (1907) on Feb. 23, 1909.

[122] *See* BORDWELL, *supra* note 119, at 197-98; *see also* JULIUS STONE, LEGAL CONTROLS OF INTERNATIONAL CONFLICT 307 n.55 (Rinehart & Co. 1954) ("Only ten of the 117 sets of war-like relations between 1800 and 1870 were preceded by formal declarations; and in colonial wars... the proportion was even less.").

[123] Hague I (1907), art. III & VI.

[124] *Id.*, art. VI.

[125] *Id.*, art. VII.

[126] *See* Hague II (1907), art. I; *see also* BROWNLIE, *supra* note 85, at 225.

(1907) was of dubious value, for although Hague III was "based upon the principle that neither belligerent should be taken by surprise,"[127] a declaration satisfying the Convention could take "any form" and "be almost instantaneous with hostilities."[128]

In short, while the Hague treaties reflected the increasing favor shown to peaceful means of settling disputes,[129] as well as movement toward the modern view of war as not simply a private duel between States, but a matter of international concern, they did not alter the view of war as "a normal mode of enforcing a State's legal rights."[130] Consequently, in the period prior to 1914, the State's right to resort to war, as a form of self-help, remained unrestricted by customary international law.[131] The drawbacks of this system became all too obvious with the onset of the First World War.

2. *Modern Jus Ad Bellum*

a. League of Nations Covenant (1919)—The First World War (1914-1918) wrought immense destruction, exacting a staggering toll on human life; in fact, twice as many people were killed during World War I than had been killed in all wars combined

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[127] BORDWELL, *supra* note 119, at 198 (quoting REPORT OF THE AMERICAN DELEGATION 34 (1907)).

[128] STONE, *supra* note 122, at 307-308 ("[T]he Convention [also] does not affect the case of a State electing to treat peace-time reprisals as an act of war by the State resorting to them."); *see also* AREND & BECK, *supra* note 89, at 17 (defining "reprisal" as "an action that a State undertakes to redress an injury suffered during time of peace."); *and* BORDWELL, *supra* note 119, at 198-99 ("While the importance to prospective belligerents may be open to doubt, it is clear that... [the Convention] does safeguard in a very high degree the rights of neutrals and specifies authoritatively the exact moment when the duty of neutrality begins. It is for this reason that the American delegation supported the project and signed the convention." (quoting REPORT OF THE AMERICAN DELEGATION 34 (1907)); *but see* STONE, *supra* note 122, at 308 ("[Hague III] was on the whole respected during the First World War. Between the two wars, and in the Second World War, practice was less consistent.") (footnotes omitted).

[129] *See* BROWNLIE, *supra* note 85, at 22.

[130] *See* STONE, *supra* note 122, at 297.

[131] *See* sources cited *supra* note 110.

from 1790-1913.[132] Not surprisingly, the goal of the delegates to the Paris Peace Conference assembled in Versailles in the spring of 1919 was to ensure that such a war could never happen again.[133] Established as part of the Treaty of Versailles (1919),[134] the League of Nations Covenant (Articles I-XXVI) thus represented the first serious attempt to restrain the right of States to resort to war.[135]

Under the League of Nations Covenant, signatories agreed to submit any dispute that was likely to "rupture" international peace to arbitration or, alternatively, to the League Council for consideration.[136] Members of the League further agreed that once a decision on the matter was issued, either in the form of an arbiter's award or the unanimous recommendations of the Council, they would not resort to war against any party that complied with the terms of the award decision or the recommendations in the Council's report.[137] Even where a party did not comply with the decision or recommendations, the Covenant imposed a "cooling off" period whereby Members agreed not to resort to war for at least three months after the decision or report was issued.[138] Resort to war by a Member in violation of the Covenant's provisions for the peaceful settlement of disputes subjected the violator to collective sanctions.[139]

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[132] AREND & BECK, *supra* note 89, at 19.

[133] *Id.*, at 19.

[134] Treaty of Versailles, Jun. 28, 1919, 2 Bevans 43, 1919 U.S.T. LEXIS 7. Entered into force as between the contracting parties on Jan. 10, 1920 (the United States was not a party).

[135] *See* STONE, *supra* note 122, at 299.

[136] LEAGUE OF NATIONS COVENANT, art. XII. Under Article XV, any dispute that was not submitted to arbitration had to be submitted to the Council for consideration.

[137] *Id.*, art. XIII & XV. Under Article XII, decisions of arbiter's were to be issued within "a reasonable time," while the report of the Council was to be issued within six months after the submission of the dispute.

[138] *Id.*, art. XII.

[139] *Id.*, art. XVI.

While not imposing an outright ban on war,[140] the Covenant altered the *jus ad bellum* in two important ways. First, the imposition of procedural restraints on the liberty of State's to resort to war was itself a significant derogation from customary law, which had for centuries maintained the unrestricted right to wage war.[141] Second, the notion that resort to war in contradiction of the Covenant's provisions subjected the violator to international sanction,[142] helped foster a presumption against the legality of war as a means of self-help.[143]

At the same time, the practical force of the Covenant was diminished to the extent that there were "gaps" in its provisions, by which Members could continue to legally resort to war or employ forcible means short of war. For example, the Covenant left open the possibility of Members resorting to war against a party that did not comply with the decision once the three-month "cooling off" period had expired, and placed no restrictions on the Members resorting to war in cases where no decision on their case could be reached.[144] Furthermore, since the Covenant's prescriptions referred only to

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[140] Article X provided, in part: "Members of the League undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League." While the provision appears to constitute a general prohibition of "aggression," the consensus among scholars is that such an interpretation was contradicted by other provisions which allowed recourse to war (*e.g.*, Article XV) and that the Covenant did not outlaw war *per se*. *See, e.g.*, STONE, *supra* note 122, at 299-300 ("[T]he Covenant imposed on the liberty to resort to war certain restraints... of a procedural nature... [It] was not, however, a complete prohibition."); *and* BROWNLIE, *supra* note 85, at 56 ("[The Covenant] must be interpreted... on the assumption that the right to go to war recognized by the customary law still existed."), 66 ("The general presumption was that war was still a right of sovereign states although signatories to the Covenant were bound by that instrument to submit to certain procedures of peaceful settlement."); *see also* DETTER DE LUPIS, *supra* note 118, at 54-55 ("War was not outlawed by the Covenant... [It] restricted the right of the members of the [League of Nations] to resort to war."); *and* AREND & BECK, *supra* note 89, at 21-22.

[141] *See* BROWNLIE, *supra* note 85, at 56; *see also supra* pp. 24-26.

[142] LEAGUE OF NATIONS COVENANT, art. XVI.

[143] *See* BROWNLIE, *supra* note 85, at 57-58 ("The Covenant nourished the view that the use of force was illegal not only when directed to conquest and unjustified acquisition but also as a means of enforcing rights. Self-help was restricted; war was no longer to be the 'litigation of Nations.'").

[144] LEAGUE OF NATIONS COVENANT, art. XII, XV. In cases where a decision could be reached, "Members reserve[d] to themselves the right to take such action as they shall consider necessary for the maintenance of right and peace." LEAGUE OF NATIONS COVENANT, art. XV.

"war," they arguably did not apply to the use of force outside the context of a formal "state of war."[145]

b. Kellogg-Briand Pact (1928)—Attempts to clarify and expand the *jus ad bellum* continued in earnest in the period after the League of Nations Covenant was instituted. Almost immediately, League Members undertook to close the "gaps" in the provisions of the Covenant through supplementary agreements, such as the 1923 Draft Treaty of Mutual Assistance[146] and the 1924 Protocol for the Pacific Settlement of International Disputes (the Geneva Protocol);[147] however, neither of these treaties was successful. Similar efforts followed at both the regional and international levels, but these met with only minimal success.[148] Finally, in 1928, there came a "decisive turning point in the development away from the freedom to wage war and towards a universal and general prohibition of war,"[149] with the adoption of the Kellogg-Briand Pact for the Renunciation of War as an Instrument of National Policy.[150]

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[145] "[U]ses of force short of war would be regulated by the same regime that existed during the positivist period." AREND & BECK, *supra* note 89, at 22; *see also* BROWNLIE, *supra* note 85, at 38–40 (discussing the definition and significance of a "state of war").

[146] Treaty of Mutual Assistance (Draft), LEAGUE OF NATIONS O.J. Spec. Supp. 7, at 16 (1923). The treaty defined "aggressive war" as an international crime (art. I), but did not place any restrictions on the resort to war beyond those imposed by the Covenant. Rather, it clarified the fact that war could in fact be used to enforce settlement decisions reached in accordance with the term of Covenant, wherein it stated: "A war shall not be considered as a war of aggression if waged by a State which is a party to a dispute and has accepted [the decision]... against [a party] which has not accepted it."

[147] Protocol for the Pacific Settlement of International Disputes, LEAGUE OF NATIONS O.J. Spec. Supp. 23, at 498 (1924). The Protocol made "war of aggression" an international crime (art. II), and prohibited the resort to war except in self-defense or in the case of collective enforcement measures, but never entered into force.

[148] *E.g.*, Locarno Treaties of 1925—The Treaties of Locarno were a series of agreements entered into by Belgium, Czechoslovakia, France, Germany, Britain, Italy, and Poland in Locarno, Switzerland, in 1925, which were intended to promote peace and security in Western Europe within the framework of the League of Nations. Under the first of the Locarno treaties, France, Germany, and Belgium agreed not to attack, invade or resort to war against each other, subject to exceptions for self-defense, collective enforcement measures under Article XVI of the Covenant, and certain actions under Article XV, paragraph 7, of the Covenant. But the treaties involving Poland and Czechoslovakia did not offer the same assurances to the countries on Germany's eastern borders. Plus, there was no Locarno treaty pertaining to Eastern Europe. *See* BROWNLIE, *supra* note 85, at 70-74 (discussing the 1925 Locarno Treaties and other developments).

The Kellogg-Briand Pact provided:

> Article I. The High Contracting Parties solemnly declare in the names of their respective peoples that they condemn recourse to war for the solution of international controversies, and renounce it as an instrument of national policy in their relations with one another.
>
> Article II. The High Contracting Parties agree that the settlement or solution of all disputes or conflicts of whatever nature or of whatever origin they may be, which may arise among them, shall never be sought except by pacific means.

As is clear from the text, unlike the League of Nations Covenant, which permitted recourse to war under certain circumstances, the Kellogg-Briand Pact was, *on its face*, an unqualified renunciation of war (Article I), coupled with an affirmative duty to resolve disputes by peaceful means (Article II). Moreover, unlike the other similar treaties that preceded it (*e.g.*, the Geneva Protocol), the Kellogg-Briand Pact was accepted by virtually every State then in existence and incorporated into general customary international law.[151] Thus, with the adoption of Pact there was, "for the first time, a general prohibition on war... subject only to the right of self-defense."[152]

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[149] THE CHARTER OF THE UNITED NATIONS: A COMMENTARY 110 (Bruno Simma ed., 1994) [hereinafter COMMENTARY]; *see also* YORAM DINSTEIN, WAR, AGGRESSION AND SELF-DEFENSE 81 (Grotius Publ'ns Ltd. 1988) (describing the Kellogg-Briand Pact as "a watershed... in the history of the regulation of the use of inter-States force").

[150] The Renunciation of War as an Instrument of National Policy (Kellogg-Briand Peace Pact or Pact of Paris), Aug. 27, 1928, 46 Stat. 2343, T.S. 796, 2 Bevans 732, 1928 U.S.T. LEXIS 6 [hereinafter the Kellogg-Briand Pact]. The United States ratified the Kellogg-Briand Pact on Jan. 17, 1929.

[151] *See* BROWNLIE, *supra* note 85, at 75; *see also* AREND & BECK, *supra* note 89, at 23; *and* COMMENTARY, *supra* note 149, at 110-11 ("Only a number of Latin American States remained outside of the Pact, but they became bound by the Saavedra-Lamas Treaty [of 1933]... which... [was] worded almost identically to the Kellogg-Briand Pact... and covered their relations with third states."); *cf.* STONE, *supra* note 122, at 300 (The Pact "came into force for virtually all States in the world, [but] still left the customary liberty to resort to war unaffected in [certain] respects."). The Kellogg-Briand Pact is still in force. *See* BROWNLIE, *supra* note 85, at 75, 113-14; *and* AREND & BECK, *supra* note 89, at 22; *cf.* COMMENTARY, *supra* note 149, at 111 (the provisions of the Pact are still valid today as part of general customary international law).

[152] COMMENTARY, *supra* note 149, at 110. The treaty contained no reference to self-defense, but "signature was made conditional on acceptance by signatories of reservations of the right of self-defense set out in the diplomatic exchanges prior to signature of the treaty." BROWNLIE, *supra* note 85, at 81; *see also* IDENTIC NOTES OF THE GOVERNMENT OF THE UNITED STATES TO THE GOVERNMENTS OF AUSTRALIA, BELGIUM, CANADA, CZECHOSLOVAKIA, FRANCE, GERMANY, GREAT BRITAIN, INDIA, THE IRISH FREE STATE, ITALY,

This is not to suggest that the Kellogg-Briand Pact was a sort of panacea, for it also had its shortcomings. Perhaps the most glaring weakness of the Pact was that it outlawed only "war," and thereby not only permitted unrestricted recourse to measures short of war, but also left room for States to circumvent application of the Pact by engaging in war-like activities under some other name.[153] Beyond this, there were other deficiencies and ambiguities in the language of the Pact that also made its prohibition of war less than complete. For example, under Article I, signatories to the Pact renounced war as "an instrument of national policy." By implication then, war carried-out under authority of an international organization (*e.g.*, under Article XVI of the Covenant), or otherwise to enforce international obligations (*e.g.*, a collective action taken against signatories violating the Pact), was exempted from the prohibition.[154] That is, "[i]nasmuch as Article I of the Pact forbade war only as an instrument of *national* policy, war remained lawful as an instrument of *international* policy."[155] In addition, since the signatories renounced war only "in their relations with one another," resort to war was still lawful as an instrument of national policy in relations with non-signatories.[156]

JAPAN, NEW ZEALAND, POLAND, SOUTH AFRICA (Jun. 23, 1928), *reprinted in* 22 AM. J. INT'L. L., Supp., 109 (1928) ("There is nothing in the [Kellogg-Briand Pact] which restricts or impairs in any way the right of self defense. That right is inherent in every sovereign state and is implicit in every treaty."). The treaty, however, was silent with regard to what actions gave rise to this right.

[153] *See* STONE, *supra* note 122, at 300; *see also* AREND & BECK, *supra* note 89, at 23; *and* COMMENTARY, *supra* note 149, at 111; *but see* BROWNLIE, *supra* note 85, at 76-80, 84-88 (discussing the meaning of "war" as evidenced by state practice after adoption of the Pact. Prof. Brownlie cites several instances in which breaches of the Pact were alleged by various States in absence of a formal state of war).

[154] Although the Kellogg-Briand prohibition of war was not linked to a system of sanctions, *vis-à-vis* the League of Nations Covenant (art. XVI), the preamble to the Pact declared that any State that resorted to war in violation of its provisions would "be denied the benefits furnished by... [the] Treaty." *See* STONE, *supra* note 122, at 300; *and* BROWNLIE, *supra* note 85, at 89-91; *and* COMMENTARY, *supra* note 149, at 111; *cf.* AREND & BECK, *supra* note 89, at 23-24 (arguing that use of the term "national policy" in the prohibition left open the possibility that other motivations for the recourse to war—*e.g.*, wars in pursuit of religious, ideological and similar (not strictly national) goals—might be legal).

[155] DINSTEIN, *supra* note 149, at 82 (emphasis added).

[156] *See* STONE, *supra* note 122, at 300; *and* DINSTEIN, *supra* note 149, at 83. In practice, however, the Pact effectively had universal application. *See supra* text accompanying note 151.

In the end, the Kellogg-Briand Pact did little, if anything, to prevent the spread of hostilities in the decade leading up to the Second World War.[157] However, as has been the case throughout history, it seems this had more to do with the "the enduring power of military necessity," than it did with any so-called "gaps" in the *jus ad bellum*.[158] In any event, failure of the Pact to prevent war notwithstanding, it still had a considerable effect on State practice,[159] and formed the basis for a rule of customary international law that prohibited the use of force as a instrument of national policy, except in cases of self-defense.[160] This rule became "the heart" of the United Nations Charter.[161]

*c. **Charter of the United Nations (1945)***—The United Nations Charter was adopted at the United Nations Conference of International Organization in San Francisco in June 1945.[162] With the death toll of the Second World War surpassing that of the First World War by five-fold,[163] delegates to the U.N. Conference gravely expressed their determination "to save succeeding generations from the scourge of war, which twice in [their] lifetime [had] brought untold sorrow to mankind."[164] To this end, the Charter

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[157] *See* STONE, *supra* note 122, at 300; *and* AREND & BECK, *supra* note 89, at 24.

[158] *See* BROWNLIE, *supra* note 85, at 75-80.

[159] *Id.*

[160] *Id.*, 110-111; *see also* AREND & BECK, *supra* note 89, at 24-25.

[161] *See* Louis Henkin, Editorial Comment, *The Reports of the Death of Article 2(4) are Greatly Exaggerated*, 65 AM. J. INT'L. L. 544 (1971) (discussing the significance of Article 2(4) of the U.N. Charter), *quoted in* COMMENTARY, *supra* note 149, at 111.

[162] Charter of the United Nations, Jun. 26, 1945, 59 Stat. 1031, T.S. 993, 3 Bevans 1153, 1945 U.S.T. LEXIS 199 [hereinafter U.N. CHARTER]. Ratified by the United States on Aug. 8 1945, entered into force on Oct. 24, 1945.

[163] "It has been estimated that World War I caused 10 million deaths, of which 500,000 were civilians, while World War II caused 50 million deaths, of which 24 million were civilians." Howard S. Levie, *When Battle Rages, How Can Law Protect?*, 7 14TH HAMMARSKJOLD FORUM (John Carey ed., 1971), *reprinted in* LEVIE ON THE LAW OF WAR, 70 NAVAL WAR COLLEGE INTERNATIONAL LAW STUDIES 129, 148 (Michael N. Schmitt & Leslie C. Green eds., 1998).

[164] U.N. CHARTER, Preamble.

established the United Nations, the foremost purpose of which is set forth in Article 1(1), as follows:

> To maintain international peace and security, and to that end: to take effective and collective measures for the prevention and removal of threats to the peace, and for the suppression of acts of aggression or other breaches of the peace.

In addition to creating the organs of the United Nations, the Charter also consolidates and reinforces certain customary norms related to the behavior of States, especially with respect to the use of force.[165] Two provisions of Article 2 stand out in this regard. The first is Article 2(3), which reaffirms the duty of States to resolve international disputes by peaceful means.[166] But, by far, the most important provision of the Charter along these lines is the general prohibition on the use of force in Article 2(4), which states:

> All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.

Article 2(4) thus rectifies the major flaw of the Kellogg-Briand Pact;[167] it not only outlaws "war," as did the Kellogg-Briand Pact, but any use of *armed force* (or even the threat of such force).[168] Hence, even uses of force "short of war" are prohibited.[169] The

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[165] *See* AREND & BECK, *supra* note 89, at 29-30; *and* BROWNLIE, *supra* note 85, at 112-13.

[166] U.N. CHARTER, art. 2, para. 3, states: "All Members shall settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered."

[167] "When the Charter of the United Nations was drafted in San Francisco, in 1945, one of its aims was redressing the shortcomings of the Kellogg-Briand Pact." DINSTEIN, *supra* note 149, at 83.

[168] *See* COMMENTARY, *supra* note 149, at 112, and sources cited ("[T]he scope of the fundamental notion of 'force' is not undisputed. The term does not cover any possible kind of force, but is, according to the correct and prevailing view, limited to armed force."); *see also* DINSTEIN, *supra* note 149, at 84 ("[S]tudied in context, the term 'force' in Article 2(4) must denote armed force."); *and* Bert V.A. Röling, *The Ban on the Use of Force and the U.N. Charter*, *in* THE CURRENT LEGAL REGULATION OF THE USE OF FORCE 1, 1 (A. Cassese ed., 1986) ("There are many differences of opinion... [but] it seems obvious to the present writer that the 'force' referred to in Art. 2(4) is military force."); *but cf.* BROWNLIE, *supra* note 85, at 361-62 ("There can be little doubt that 'use of force' is commonly understood to imply... an 'armed attack,' by the organized military, naval, or air forces of a state; ... [or] a government act[ing] through 'militia,' 'security forces,' or 'police forces'... [or] by means of... 'unofficial' agents, including armed bands, and 'volunteers,' or... groups of insurgents on the territory of another state... [Nevertheless] *it is correct to*

Charter also rejects Kellogg-Briand's ambiguous "national policy" formula, as well as any language limiting application of the prohibition on the use of force to treaty signatories. Article 2(4) forbids the use of force by U.N. Members against any State—Member or non-Member—and for whatever reason, *unless* it falls within one of two major exceptions explicitly granted by the Charter: (1) enforcement actions authorized by the U.N. Security Council; or (2) the right of individual and collective self-defense.[170]

The exception to the general prohibition of the use of force for Security Council enforcement actions has roots in three separate provisions, which are part of the Charter's system of collective sanctions.[171] First, Article 24 gives the Security Council primary responsibility for maintaining international peace and security. Second, Article 39 grants the Security Council the corresponding power to "determine the existence of any threat to the peace, breach of the peace, or act of aggression," and decide what measures shall be taken "to maintain or restore power international peace and security." Finally, Article 42 provides that in certain cases, such "measures" may include the use of force.[172]

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assume that paragraph 4 applies to force other than armed force, [albeit] it is doubtful if it applies to economic measures of a coercive nature.") (footnotes omitted) (emphasis added).

[169] *See* AREND & BECK, *supra* note 89, at 31, and sources cited; *see also* DINSTEIN, *supra* note 149, at 84 ("The use of force in international relations, proscribed in the Article, includes war. But the prohibition transcends war and covers also forcible measures short of war.").

[170] *See* COMMENTARY, *supra* note 149, at 117-118; *see also* DINSTEIN, *supra* note 149, at 86. The Charter contains two additional exceptions to its prohibition of the use of force that have been overcome by events since 1945, and are thus no longer significant. First is the exception under Article 53 for measures against "enemy states" of the Second World War pursuant to Article 107 or regional arrangements directed against the renewal of aggressive policy by such states. Since all former "enemy states" are today U.N. members and are, thus, characterized as peace-loving per Article 4 of the Charter, this exception is obsolete. Second is the exception under Article 106, which allows the five permanent members of the Security Council to take joint military action on behalf of the U.N. "[p]ending the coming into force of such special arrangements referred to in Article 43." To date, no Article 43 agreements have been concluded, but contemporary conditions make any action under Article 106 *highly* unlikely, so this exception like-wise has no practical significance. *See* COMMENTARY, *supra* note 149, at 119; *and* AREND & BECK, *supra* note 89, at 30-33.

[171] U.N. CHARTER, arts. 29-51; For a detailed discussion of the U.N. system for collective conciliation and peace enforcement, *see* STONE, *supra* note 122, at 185-200.

[172] Forcible measures under this exception may be carried out by U.N. forces, or by those of some or all of its members. *See* U.N. CHARTER, arts. 42, 48, and 25.

However, Security Council decisions under Article 39 are subject to the veto of any one of the five permanent members,[173] and, in practice, achieving unanimity among the permanent members on such issues has proven nearly impossible; consequently, this exception has rarely been invoked.[174]

The second and more significant exception to the Charter's prohibition of the use of force is the right of individual and collective self-defense embodied in Article 51, which states:

> Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken the measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defense 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.

Notably, the language of Article 51 (safeguarding the right of self-defense "if an armed attack occurs") does not coincide with the language of Article 2(4) (prohibiting

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[173] U.N. CHARTER, art. 27, para. 3.

[174] Prior to 1990, the *only* example of the Security Council authorizing the use of force was in 1966, when the Council decided that the situation in Rhodesia constituted a threat to the peace, and authorized the government of the United Kingdom to use force to prevent ships carrying oil for Rhodesia in violation of an embargo from accessing ports in Mozambique. COMMENTARY, *supra* note 149, at 120, citing S.C. Res. 221 (Apr. 9, 1966), *reprinted in* 60 AM. J. INT'L. L. 925 (1966) (Resolution 221 was adopted by a 10 to 0 vote, with 5 abstentions: Bulgaria, France, Mali, U.S.S.R., and Uruguay). In 1990, in the Council adopted Resolution 665, authorizing member states cooperating with the government of Kuwait "to use such measures... as may be necessary... to ensure strict implementation" of the U.N. embargo of Iraq, which the Council had ordered in response to its invasion of Kuwait. SC Res. 665 (Aug. 25, 1990), *reprinted in* 29 I.L.M. 1329, 1330 (1990) (adopted by a 13 to 0 vote of the Security Council, with Cuba and Yemen abstaining). "This resolution was understood to authorize states to use naval force to halt the shipping in question." Oscar Schachter, *United Nations Law in the Gulf Conflict*, 85 AM. J. INT'L. L. 452, 454 (1991) [hereinafter *Gulf Conflict*]; *compare* SC Res. 678 (Nov. 29, 1990), *reprinted in* 29 I.L.M. 1565 (1990) (adopted by a vote of 12-2-1, with Cuba and Yemen opposed and China abstaining) (authorizing member states cooperating with the government of Kuwait "to use all necessary means... to restore international peace and security in the area," if Iraq did not unconditionally withdraw its forces from Kuwait on or before Jan. 15, 1991); *and* Schachter, *Gulf Conflict*, at 459 ("Resolution 678 was treated as the legal basis of... military action that brought about the defeat of Iraq... and its withdrawal from Kuwait... [but] [t]he precise basis for Resolution 678 was uncertain. The Resolution itself declared that the Council was acting under chapter VII, but it did not specify which article of chapter VII."); *see also* STONE, *supra* note 122, at 303 (noting that concurrence of the permanent members of the Security Council necessary for decisions under Article 39 is rare).

"the threat or use of force"). To the extent that the notion of "armed attack" has a narrower meaning than the phrase "use or threat of force,"[175] Article 51 may be strictly read as not merely barring States from resorting to self-defense to respond to mere threats of force, but as also forbidding States from exerting forcible self-defense in response to any other unlawful force directed against it by another State short of an actual armed attack.[176] Under this interpretation, also known as the "restrictionist" view, Article 51 of the Charter requires States to renounce forcible self-defense unless and until an armed attack *actually* occurs.[177]

However, the notion that Article 51 permits forcible self-defense *only* in cases of armed attack is controversial, particularly inasmuch as the restrictionist view prohibits "anticipatory self-defense." Under customary international law prior to the Charter, a State could lawfully take action to defend itself in anticipation of an imminent attack, provided two conditions were met: first, such forceful action had to be *necessary*, in other words attack was imminent and there were no peaceful means to prevent it, and second, the force employed had to be *proportionate* to the threat.[178] But under the restrictionist

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[175] *See* COMMENTARY, *supra* note 149, at 669, 663 n.11 ("This represents the dominant view."); *see also* BROWNLIE, *supra* note 85, at 365 ("It is not to be assumed... that every unlawful use of force will involve an armed attack in the tactical or military sense of the phrase."); *but compare supra* note 168 and accompanying text.

[176] *See* Military and Paramilitary Activities (Nicar. v. U.S.), 1986 I.C.J. 14, at 103, para. 195 (June 27) (the court suggests that "a mere frontier incident," like the incursion of an armed patrol into another state's territory, would not be classified as an armed attack) [hereinafter *Nicaragua v. U.S.*]; *see also* COMMENTARY, *supra* note 149, at 663-64, 669; *and* DINSTEIN, *supra* note 149, at 172-76 ("Recourse to self defense under the Article is not vindicated by any violation of international law short of an armed attack."); *contra* C.H.M. Waldock, *The Regulation of the Use of Force by Individual States in International Law*, 81 RECUEIL DES COURS 451, 496-97 (1952) ("It would be a misreading of the whole intention of Article 51 to interpret it by mere implication as forbidding self-defense in resistance to an illegal use of force not constituting an 'armed attack.'").

[177] AREND & BECK, *supra* note 89, at 73; *see also* TIMOTHY L.H. MCCORMACK, SELF-DEFENSE IN INTERNATIONAL LAW 138-139 (St. Martin's Press 1996).

[178] *See* D.W. BOWETT, SELF-DEFENSE IN INTERNATIONAL LAW 188-89 (Manchester Univ. Press 1958) ("[T]he right [of self-defense] has, under traditional international law, always been 'anticipatory,' that is to say its exercise was valid against imminent as well as actual attacks and dangers."); *and* AREND & BECK, *supra* note 89, at 72.

interpretation of the Charter, Article 51 "supercedes and replaces the traditional right of self-defense"[179] and, therefore, does not permit anticipatory action.[180] Yet, the drafting history of the Charter lends support to the notion that "the use of arms in legitimate self-defense [as it existed prior to the Charter] remains admitted and unimpaired" by Article 51.[181] Therefore, a strong case can be made that the Charter reserves the customary right of self-defense, "this right being considerably broader than that stated in Article 51,"[182] and that the right of self-defense embodied in the Charter includes the ambit of rights afforded States under customary international law.[183]

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[179] COMMENTARY, *supra* note 149, at 678; *see also* BROWNLIE, *supra* note 85, at 275; *cf. Nicaragua v. U.S.*, *supra* note 176, para. 193-95, at 102-4 (the court recognized the existence of a right of self defense under customary law, but deemed the content and scope of this right to correspond almost completely to the right of self-defense under Article 51 of the Charter); *and* DINSTEIN, *supra* note 149, at 91 ("The liberty to venture into war, and generally employ inter-State force is obsolete. Nowadays, the prohibition on the use of inter-State force, as articulated in Article 2(4) of the Charter, has become an integral part of customary international law.").

[180] *See* BROWNLIE, *supra* note 85, at 278; *and* AREND & BECK, *supra* note 89, at 73.

[181] *See* BOWETT, *supra* note 178, at 182 (quoting Report of the Rapporteur of Committee I to Commission I, *in* 6 UNITED NATIONS CONFERENCE ON INTERNATIONAL ORGANIZATION 459 (Jun. 13, 1945)); *see also* Oscar Schachter, *The Right of States to Use Armed Force*, 82 MICH. L. REV. 1620, 1633-34 (1984) [hereinafter *Use of Force*].

[182] BROWNLIE, *supra* note 85, at 272, 269-75 (discussing the relationship between Article 51 and the customary right of self-defense under), 298-301 (discussing the customary right of intervention and the U.N. Charter); *see also* COMMENTARY, *supra* note 149, at 666-667; *and* DINSTEIN, *supra* note 149, at 172-76.

[183] *See Nicaragua v. U.S.*, *supra* note 176, para. 173, at 347-48 (Schwebel, J., dissenting) ("I do not agree with a construction of the United Nations Charter which would read Article 51 as if it were worded... 'if, and only if, an armed attack occurs...' I do not agree that the terms or intent of Article 51 eliminate the right of self-defense under customary international law, or confine its entire scope to the express terms of Article 51."); Schachter in *Use of Force*, *supra* note 181, at 1634 ("[I]t is not clear that Article 51 was intended to eliminate the customary right of self-defense and it should not be given that effect."); *and* Myres S. McDougal, Editorial Comment, *The Soviet-Cuban Quarantine and Self-Defense*, 57 AM. J. INT'L L. 597, 600 (1963) ("[N]othing in the 'plain and natural meaning' of the words of the Charter requires an interpretation that Article 51 restricts the customary right of self-defense. The proponents of such an interpretation substitute for the words 'if an armed attack occurs' the very different words 'if, and only if, an armed attack occurs.'"); *see also* STONE, *supra* note 122, at 243-45 ("The form of Article 51 as a reservation rather than grant is critical. Within the limits of Article 51 the license of self-defense is reserved... Beyond these limits self-defense by all States still depends on customary international law."); *and* BOWETT, *supra* note 178, at 185-92, *questioned in* DINSTEIN, *supra* note 149, at 174; *and* BROWNLIE, *supra* note 85, at 269.

State practice in the period since the adoption of the Charter in 1945 clearly does not conform to the restrictionists' narrow reading of the right of self-defense set down in Article 51.[184] Furthermore, in recent debates in the Security Council on this issue, delegates have referred to the 1842 formulation of the right of anticipatory self-defense by U.S. Secretary of State Daniel Webster, which requires a showing of the existence of "[the] necessity of self-defense, instant, overwhelming, and leaving no choice of means, and no moment for deliberation," as an accepted statement of customary law.[185] State practice and these official statements may be taken as evidence of "the continued validity of an 'inherent' right to use armed force in self defense *prior* to an actual attack... where such attack is imminent 'leaving no moment for deliberation.'"[186]

In addition to the controversy over the conditions precedent to the legal exercise of the right of self-defense, there is also disagreement among international lawyers concerning what "measures," when taken by the Security Council, preempt the right of self-defense. Arguably, the main object of the United Nations Charter is to "render the unilateral use of force, even in self defense, subject to control by the Organization."[187] Article 51 expressly makes self-defense claims subject to the Security Council's authority, reserving the right of States to act in self-defense only *"until* the Security

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[184] *See* COMMENTARY, *supra* note 149, at 678 ("State practice has so far prevented a narrow reading of... Article 51 from becoming established in customary international law."); *and* AREND & BECK, *supra* note 89, at 72-79.

[185] U.N. SCOR, 36th Sess., 2285-88th mtg., U.N. Docs. S/PV2285-88 (1981), *cited in* Schachter, *Use of Force*, *supra* note 181, at 1635; *see generally* AREND & BECK, *supra* note 89, at 77-79.

[186] Schachter, *Use of Force*, *supra* note 181, at 1635 (emphasis added); *see also* COMMENTARY, *supra* note 149, at 678; *cf.* AREND & BECK, *supra* note 89, at 79 ("[T]hough there may not be an established consensus in support of the permissibility of anticipatory defense... it would seem impossible to prove the existence of an authoritative and controlling norm prohibiting the use of force for preemptive self-defense."); *contra* LOUIS HENKIN, HOW NATIONS BEHAVE 141-42 (2nd ed. 1979) (concerning the argument given in support of anticipatory defense: "[T]he argument is unfounded, its reasoning is fallacious, its doctrine pernicious.").

[187] BROWNLIE, *supra* note 85, at 273.

Council has taken the measures necessary to maintain international peace and security" (emphasis added). Consequently, the Council may, at least in theory, order a claimant to cease military action *even if* the action was legitimate self-defense.[188] Yet the question then arises whether the right of individual or collective self-defense ceases if the measures take by the Council fall short of a resolution terminating or suspending the right of self-defense; for instance, if the Council fails to give its retrospective seal of approval to the exercise of self-defense.[189] Reason dictates that this question must be answered in the negative, for as Oscar Schachter so well articulated,

> [i]t does not make sense to conclude that failure of the Council to endorse action by a state should bar that action when it is otherwise permitted by the Charter and international law. A veto can obviously prevent a Council decision and therefore block the Council from prohibiting action. But a veto of a resolution that would approve or authorize otherwise permissible action cannot have the legal effect of precluding that action.[190]

The same must hold true for all other "necessary measures" adopted by the Security Council in response to an armed attack on a State that do not conclusively terminate or suspend self-defensive measures.[191] Otherwise, a Security Council decision

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[188] "However, a decision of that character would need the unanimous concurrence of the permanent members; hence, it could not be adopted over the objection of one or more of those members." Schachter, *Gulf Conflict*, *supra* note 174, at 459. *cf.* DINSTEIN, *supra* note 149, at 195 ("Once a Member State is instructed in a *conclusive* manner to refrain from any further use of force, it must comply with the Council's directive.") (emphasis added).

[189] *See* Mary Ellen O'Connell, *Enforcing the Prohibition on the Use of Force: The UN's Response to Iraq's Invasion of Kuwait*, 15 S. ILL. U. L.J. 453, 478 (1991) (suggesting that if a proposed resolution authorizing force such as Resolution 678—the legal basis of military action against Iraq in 1991—had been vetoed, collective self-defense action would have been barred).

[190] Schachter, *Gulf Conflict*, *supra* note 174, at 459 n.23.

[191] "A reasonable construction of the provision in Article 51 would recognize that the Council has the authority to adopt a measure that would require armed action to cease even if that action was undertaken in self-defense. However, this would not mean that *any* measure would preempt self-defense." Schachter, *Gulf Conflict*, *supra* note 174, at 458; *see also* DINSTEIN, *supra* note 149, at 197 ("It is not enough (under Article 51) for the Security Council to adopt just any resolution, in order to divest Member States of the right to continue to resort to force in self-defense against armed attack. The only resolution that will engender that result is a legally binding decision, whereby the cessation of the (real or imagined) defensive action becomes imperative."); *but see* COMMENTARY, *supra* note 149, at 676-77.

ordering the invader to withdraw and cease hostilities (a necessary measure) would strip the victim of its right to defend itself even where the order is not complied with. As Schachter correctly points out, "[t]his would be an implausible—indeed, absurd—interpretation."[192]

Mankind's efforts to "chain the dog of war"[193] have spanned the course of recorded time, but it was only with the adoption of the U.N. Charter in 1945, that the transformation of the *jus ad bellum* into the "*jus contra bellum*" was achieved.[194] Under Article 2(4), States renounce the right to use force in their mutual relations—"the use of force becomes a delict, exactly as it is under national law."[195] Chapter VII of the Charter vests exclusive authority over the use of force in the U.N. organization, including the power, under Article 42, to use collective force in response to this delict, though the Charter's promise of "collective security" has yet to be fully realized in practice.[196] However, "Article 51 of the Charter clearly licenses *at least one kind* of resort to force by an individual member State: namely, the use of armed force to repel an attack."[197] Accordingly, the lawfulness of the use of conventional force in response to cyber-attack hinges, in part, on whether cyber-attack constitutes use of force in violation of Article 2(4) of the Charter or, more precisely, an "armed-attack," as a matter of law.

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[192] Schachter, *Gulf Conflict*, *supra* note 174, at 458.

[193] Adapted from FRANCIS D. WORMUTH & EDWIN B. FIRMAGE, TO CHAIN THE DOG OF WAR (2d ed., Univ. of Illinois Press 1989).

[194] Michael E. Howard, *Temperamenta Belli: Can War Be Controlled?*, *in* RESTRAINTS ON WAR: STUDIES IN THE LIMITATION OF ARMED CONFLICT 1, 11 (Michael E. Howard ed., 1979).

[195] Jean Combacau, *The Exception of Self-Defense in U.N. Practice*, *in* THE CURRENT LEGAL REGULATION OF THE USE OF FORCE 9, 9 (A. Cassese ed., 1986).

[196] *See supra* pp. 37-38; *see also* AREND & BECK, *supra* note 89, at 73.

[197] Bert V.A. Röling, *supra* note 168, at 3.

C. Cyber-Attack and Self-Defense

1. Application of the Right of Self-Defense in Outer Space

The 1967 Outer Space Treaty, sometimes referred to as "the constitution of outer space," represents "the primary basis for legal order in the space environment."[198] It provides in Article III that:

> 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.[199]

While it is universally agreed that the foregoing provision makes the general principles of international law (*lex generalis*)—including rules of customary law—and the United Nations Charter applicable to outer space,[200] it is not universally accepted that this includes the right to use force in self-defense.[201] Having said this, however, the dominant view is that the application of international law in outer space in effect means that States may exercise their right of self-defense against activities of other States.[202] The United

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[198] CARL Q. CHRISTOL, THE MODERN INTERNATIONAL LAW OF OUTER SPACE 20 (Pergamon Press 1982).

[199] Outer Space Treaty, *supra* note 23, art. III.

[200] *See* Ivan A. Vlasic, *Space Law and the Military Applications of Space Technology*, *in* PERSPECTIVES ON INTERNATIONAL LAW 385, 394 (N. Jasentuliyana ed., 1995) [hereinafter PERSPECTIVES ON INT'L L.]; *and* BESS C.M. REIJNEN, THE UNITED NATIONS SPACE TREATIES ANALYSED 102 (Editions Frontières 1992).

[201] *See* Vlasic *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 394; *and* HURWITZ, *supra* note 27, at 71 (citing M. Chandrasekharan, Editorial Comment, *The Space Treaty*, 7 INDIAN J. INT'L L. 61, 63 (1967)).

[202] "Under present treaty rules and/or customary law, as demonstrated in practice, national statements, and United Nations resolutions... [i]nternational law including the United Nations Charter where appropriate, applies to acts in outer space. This expressly includes the right of self defense." S. HOUSTON LAY & HOWARD J. TAUBENFELD, STUDY ON THE LAW RELATING TO ACTIVITIES OF MAN IN SPACE 73 (1970); *see also* HURWITZ, *supra* note 27, at 72 (the Legal Sub-Committee of the U.N. Committee for the Peaceful Uses of Outer Space (COPUOS) has rejected the view that the right of self-defense is not applicable in regards to outer space); *and* GENNADII ZHUKOV, INTERNATIONAL SPACE LAW 89 (Progress Publishers 1976) (states can lawfully use force in or through outer space in the process of self-defense); J.E.S. FAWCETT, INTERNATIONAL LAW AND THE USE OF OUTER SPACE 39 (Manchester Univ. Press 1968) (No provision of the Charter or rule of customary law imposes "any upper limit above the surface of the Earth on the legitimate exercise of the right of self-defense.").

States has supported this view since the inception of the Outer Space Treaty,[203] and it remains part of current U.S. space policy.[204]

Precisely what measures States may take to defend their satellites consistent with the "*corpus juris spatialis*" is subject to controversy since, in so far as they entail projection of force *in*, *through*, or *from* space, they give rise to questions about the meaning and scope of Article IV of the Outer Space Treaty.[205] Article IV states:

> States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.
>
> The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for *peaceful purposes*. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.[206]

The disagreement over the meaning of the term "peaceful purposes" and the military use of space will be taken up in greater detail below.[207] For now, it is sufficient to note that there is today a consensus within the United Nations that the "peaceful," as

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[203] CHRISTOL, *supra* note 198, at 37.

[204] *See* National Space Policy (1996), *supra* note 14 ("National security space activities shall contribute to U.S. national security by... providing support for the United States' inherent right of self-defense... The United States considers the space systems of any nation to be national property with the right of passage through and operations in space without interference. Purposeful interference with space systems shall be viewed as an infringement on sovereign rights."); *see also supra* pp. 20-21 (quoting DODD 3100.10, *supra* note 4, para. 4.1-4.2, at 6); *and* SPACE COMM'N REPORT, *supra* note 1, at 37 ("It is important to note... that by specifically extending the principles of the U.N. Charter to space, the Outer Space Treaty (Article III) provides for the right of individual and collective self-defense, including "anticipatory self-defense.").

[205] *See* HURWITZ, *supra* note 27, at 75; *and* D. Goedhuis, Legal Implications of the Present and Projected Military Uses of Outer Space, *in* MAINTAINING OUTER SPACE FOR PEACEFUL PURPOSES 253, 260-64 (Nandasiri Jasentuliyana ed., 1984) (Proceedings of a Symposium held in The Hague, Mar. 1984) [hereinafter PEACEFUL PURPOSES].

[206] Outer Space Treaty, *supra* note 23, art. IV (emphasis added).

[207] *See* discussion *infra* Part II.B.1., pp. 97-101.

employed in the Outer Space Treaty, more specifically equates to "non-aggressive."[208] So while Article IV prohibits States from stationing weapons of mass destruction or nuclear weapons in outer space, or engaging in aggressive military activities on the Moon or celestial bodies, it does not, in any way, invalidate the inherent right of national self-defense pursuant to customary law and Article 51 of the U.N. Charter.[209]

Article 2(4) of the United Nations Charter makes it unlawful for any State to interfere in a hostile manner with the space assets of another State.[210] Additionally, under the Outer Space Treaty, the State on whose national registry a satellite is carried retains "jurisdiction" over the satellite in space.[211] Inasmuch as "jurisdiction" may be viewed as equivalent to "sovereignty" in this context,[212] "[t]he right of a State to defend objects under its sovereignty on earth logically extends to outer space."[213] In this sense, the right of self-defense in space is thus analogous to protection of vessels on the high seas,[214] which Professor Brownlie aptly describes as follows:

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[208] Richard A. Morgan, *Military Use of Commercial Communication Satellites: A New Look at the Outer Space Treaty and "Peaceful Purposes,"* 60 J. AIR L. & COM. 237, 303 (1994).

[209] *See* CHRISTOL, *supra* note 198, at 37; *and* sources cited *supra* note 202.

[210] *See* Vlasic, *supra* note 200, at 394; *and* Philip D. O'Neill, Jr., *The Development of International Law Governing the Military Use of Outer Space*, *in* NATIONAL INTERESTS, *supra* note 12, at 169, 177; *see also* Manfred Lachs, Preserving the Space Environment (Opening Address to the Symposium on the Conditions Essential for Maintaining Outer Space for Peaceful Uses, Mar. 12, 1984), *in* PEACEFUL PURPOSES, *supra* note 205, at 5, 7.

[211] Outer Space Treaty, *supra* note 23, art. VIII.

[212] "'Jurisdiction' is not synonymous with 'sovereignty,' since the latter is permanent while the former may change as, for example, in the case of a ship in a foreign port. However, in the unique case of outer space, where there are no 'foreign ports,' the difference between 'jurisdiction' and sovereignty' *may*, at least as regards the right of self-defense, be insignificant." HURWITZ, *supra* note 27, at 74 n.84.

[213] *Id.*, at 74 (quoting DELBERT D. SMITH, SPACE STATIONS: INTERNATIONAL LAW AND POLICY 105 (Westview Press 1979)); *see also* O'Neill, *supra* note 210, *in* NATIONAL INTERESTS, *supra* note 12, at 177; *and* LAY & TAUBENFELD, *supra* note 202, at 72-73 ("The right of self-defense is common to all systems of law... It is certainly no surprise that nations feel obliged to look to their own defenses with respect to outer space activities by others.").

[214] *See* BIN CHENG, *International Law and High Altitude Flights: Balloons, Rockets, and Man-made Satellites*, 6 INST. COMP. L.Q. 487 (1957), *reprinted in* STUDIES IN INTERNATIONAL SPACE LAW 14, 20-21

> [V]essels on the open sea may use force proportionate to the threat offered to repel attack by other vessels, or by aircraft. This right must rest on general principles whether the analogy of vessel and state territory is accepted or not. *Nor can there be any doubt that the armed forces of the flag state may use reasonable force to defend vessels from attack* whether by pirates or forces acting with or without the authority of any State.[215]

Therefore, just as the right of the State to forcefully defend vessels attacked on the high seas extends to all vessels registered in the State (*i.e.*, regardless of whether the vessel that is the target of the attack is a State or private instrumentality), the State's right to defend satellites in space applies equally to all satellites carried on its national registry, including commercial satellites.[216]

From the foregoing discussion it is reasonable to conclude that—pursuant to the inherent right of self-defense, which is affirmed under Article 51 of the U.N. Charter—the "flag state," or more appropriately in the case of satellites, the "State of registry,"[217] may use armed force to defend those satellites carried on its national registry (including commercial satellites) against attack by another State.[218] However, since the right of self-defense can only be exercised against an armed attack or its imminent threat, the question remains whether "cyber-attack" constitutes an "armed attack."

(Clarendon Press 1997) [hereinafter STUDIES IN SPACE LAW]; *and* HURWITZ, *supra* note 27, at 73 ("[T]he 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.") (quoting *Church v. Hubbart*, 6 U.S. 187 (1804), *quoted in* Howard J. Taubenfeld, *Regime for Outer Space*, 56 NW. U. L. REV. 129, 142 (1961)); MYERS S. MCDOUGAL, ET AL., LAW AND THE PUBLIC ORDER IN OUTER SPACE 525 (Yale Univ. Press 1963); JOHN COBB COOPER, Fundamental Questions of Outer Space Law (Address Delivered at the University of Leiden, Oct. 10, 1960), *in* EXPLORATIONS IN AEROSPACE LAW 286, 295-96 (Ivan A. Vlasic ed., 1968) [hereinafter AEROSPACE LAW]; *and* LAY & TAUBENFELD, *supra* note 202, at 73 (citing C. Ward, *Projecting the Law of the Sea Into the Law of Outer Space*, JAG J. (Navy) 4 (March 1957)).

[215] BROWNLIE, *supra* note 85, at 305 (emphasis added).

[216] *See* DINSTEIN, *supra* note 149, at 186 (the use of force by a State against a private vessel or aircraft registered in another State but attacked beyond the national boundaries qualifies as an armed attack against the State of registry).

[217] "A State Party to the Treaty on whose registry an object launched into outer space is carried." Outer Space Treaty, *supra* note 23, art. IV; *see also* Registration Convention, *supra* note 26, art. I(c).

[218] HURWITZ, *supra* note 27, at 75; *see also* Vlasic, *supra* note 200, at 394.

2. *Cyber-Attack as an "Armed Attack"*

Under Article 51 of the United Nations Charter, the inherent right of self-defense is expressly linked to an armed attack.[219] Yet, as the International Court of Justice (ICJ) noted in the case of *Nicaragua v. United States*, "a definition of the 'armed attack' which, if found to exist, authorizes the exercise of the 'inherent right' of self-defense, is not provided in the Charter, and is not part of treaty law."[220] Consequently, it is necessary to look elsewhere to determine whether cyber-attack constitutes an "armed attack" justifying self-defense within the framework of Article 51.

The dictionary definition of "armed" is "furnished with weapons" or "marked by armed [i.e., military] forces," while "attack" means "to set upon forcefully or with physical force, to affect or act on injuriously, or to make an onslaught upon, or an action that is offensive [as opposed to defensive] or belligerent and antagonistic."[221] Armed attack thus clearly implies the use of arms or military force and has an offensive, destructive and illegal nature.[222] Also noteworthy in this regard is the "Definition of Aggression" adopted by the U.N. General Assembly through Resolution 3314 (Article 1):

> Aggression is 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, as set out in this Definition.[223]

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[219] *See supra* pp. 38-41.

[220] *Nicaragua v. U.S.*, *supra* note 176, para. 176, at 94.

[221] MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 63, 74 (10th ed. 1997).

[222] *See* J.N. SINGH, USE OF FORCE UNDER INTERNATIONAL LAW 15 (Harnam Publ'ns 1984).

[223] Definition of aggression, G.A. Res. 3314, U.N. GAOR, 29th Sess., Supp. No. 31, at 142, U.N. Doc. A/9631 (1975), *reprinted in* 69 AM. J. INT'L L. 480 (1975) (Adopted without a vote at the 2319th plenary meeting, Dec. 14, 1974) [hereinafter *Definition of Aggression*].

Article 3 of the resolution contains an enumeration of specific acts that amount to acts of aggression "regardless of a declaration of war," which include:

> (b) Bombardment by the armed forces of a State against the territory of another State or the use of any weapons by a State against the territory of another State; [and]
>
> (g) The sending by or on behalf of a State of armed bands, groups, irregulars or mercenaries, which carry out acts of armed force against another State of such gravity as to amount to the acts listed above, or its substantial involvement therein.

The text of Resolution 3314 makes clear the fact that it is intended to serve as a guide to the Security Council in determining the existence of aggression under Article 39 and not as a definition of "armed attack."[224] Nevertheless, if armed attack is understood to be a type of aggression that justifies self-defense under Article 51 of the Charter, *i.e.*, "*une agression armée*" (or "aggression which is armed"),[225] then the resolution's definition of aggression and the specific acts of aggression enumerated in Article 3 are at least illustrative of the types of circumstances wherein recourse to self-defense is vindicated.[226] That is, insofar as a cyber-attack on a State's commercial satellites is (1) commensurate with the use of armed force by a State against the sovereignty of another State[227] (or perhaps, more specifically, with the use of weapons by a State against the territory of another State);[228] (2) not justified as either self-defense or collective security;[229] *and* (3) not *de minimus* in scope or effect,[230] it can reasonably be inferred that it will constitute an "armed attack" within the meaning of Article 51.

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[224] *Id.*, Preamble, para. 2 and 4, & art. 6; *see also* COMMENTARY, *supra* note 149, at 668-69; *and* DINSTEIN, *supra* note 149, at 120.

[225] DINSTEIN, *supra* note 149, at 173.

[226] *Cf.* COMMENTARY, *supra* note 149, at 668 (asserting that "aggression" as defined in Resolution 3314 does not coincide with the notion of "armed attack" under Article 51 of the Charter).

[227] *Definition of Aggression*, *supra* note 223, art. 1.

[228] *Id.*, art. 3(b).

[229] *Id.*, art. 6.

As to whether cyber-attack is commensurate with the use of armed force, Professor Brownlie's discussion of "the use of weapons that do not involve explosive effect" merits consideration.[231] Brownlie proposes that weapons (such as biological and chemical weapons), which do not employ the force of shock waves and heat associated with more orthodox weapons, may nevertheless be assimilated to the use of force on two grounds: "In the first place the agencies concerned are commonly referred to as "weapons" and forms of "warfare"... [and] the second consideration [is] the fact that these weapons are employed for the destruction of life and property."[232] By analogy, "cyber-attack" is likewise viewed as a weapon[233] within the arsenal of "Information Warfare."[234] What's more, regardless of whether a satellite is struck by an ASAT weapon (be it a nuclear burst, kinetic weapon or high-energy particle beam) or a computer virus, the effect is the same—crippling of the satellite and/or its function. Under this formulation then, cyber-attack on satellites would similarly equate to the use of armed force.

Although cyber-attack can, by any objective measure, be likened to an "armed attack," the fact remains, there today exists no generally recognized definition of what constitutes an "armed attack."[235] Consequently, when the justification of self-defense is

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[230] *Id.*, art. 2.

[231] *See* BROWNLIE, *supra* note 85, at 362.

[232] *Id.*

[233] *See* JOINT VISION 2020, *supra* note 34, at 29 (defining "Information Operations" as a "weapon"); *see also* NDP REPORT, *supra* note 33, at 90 (defining "Cyber Assault" as "an attack through cyberspace").

[234] *See* Robert G. Hanseman, *The Realities and Legalities of Information Warfare*, 42 A.F. L. REV. 173, 175 (1997) ("Cyberwar, Netwar, and others terms are used [to describe use of Information Warfare]."); *see also* sources cited *supra* note 34.

[235] COMMENTARY, *supra* note 149, at 669 ("The *Nicaragua* judgment... has not brought any clarification in this respect."); *cf.* BROWNLIE, *supra* note 85, at 366 ("A requirement stated by some writers is that the use of force must attain a certain gravity and that 'frontier incidents' are excluded."); *and Nicaragua v. U.S.*, *supra* note 176, para. 195, at 103 ("[t]here appears now to be general agreement on the nature of the acts which can be treated as constituting armed attacks. In particular, it may be considered to be agreed

raised the question becomes one of fact; *i.e.*, are the measures taken in self-defense *necessary* and *proportionate* in relation to the apparent threat?[236] In general, the determination of whether those conditions are met is initially left to the State resorting to self-defense.[237] This does not mean that any unilateral use of force may be declared to occur in response to an armed attack, and thus justified as self-defense pursuant to Article 51.[238] For, at least in theory, the Security Council is empowered by the Charter to, if it so decides, order termination of the self-defense measures.[239]

3. Use of Conventional Force in Response to Cyber-Attack

Once it is established that the right of self-defense is legally available, the challenge then becomes how to exercise self-defense. It has been argued that a coordinated U.S. national defense strategy for cyber-space must include effective deterrence, which in turn may need to embrace the use of conventional force in response to cyber- attack.[240] International law does not dictate the particular type of action which has to be taken by a state exercising its right of self-defense; however, the choice of instrumentality, the degree with which it can be used, and the consequences of such use, will all be influenced by the law governing the means and methods of war—*jus in bello*

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that an armed attack must be understood as including not merely action by regular armed forces across an international border, but also "the sending by or on behalf of a State of armed bands, groups, irregulars or mercenaries, which carry out acts of armed force against another State of such gravity as to amount to" (inter alia) an actual armed attack conducted by regular forces, "or its substantial involvement therein." This description, contained in... the Definition of Aggression annexed to Generally Assembly Resolution 3314 (XXIX), may be taken to reflect customary international law.").

[236] *Nicaragua v. U.S.*, *supra* note 176, para. 194, at 103, *cited in* Schachter, *Gulf Conflict*, *supra* note 174, at 458; *see also* BROWNLIE, *supra* note 85, at 366.

[237] *See* Schachter, *Gulf Conflict*, *supra* note 174, at 458.

[238] *See* COMMENTARY, *supra* note 149, at 669.

[239] U.N. CHARTER, art. 39 & 41; *see also* Schachter, *Gulf Conflict*, *supra* note 174, at 458.

[240] *See* Adams, *supra* note 38, at 108-10.

or "law of armed conflict."[241] Though this thesis will not attempt an extensive discussion of the law of armed conflict,[242] a brief discussion of the basic legal requirements that must be complied with while exercising self-defense is important to understanding whether and to what extent conventional force may be used to respond to cyber-attack on commercial satellite systems.

a. Necessity & Proportionality—As mentioned previously, a state exercising its right of self-defense must comply with the principles of necessity and proportionality.[243] "Necessity" means just that—forceful action is *necessary* to defend against an attack.[244] Though the requirement of necessity is not controversial as a general proposition,

> its application calls for assessments of intentions and conditions bearing upon the likelihood of attack [in the case of "anticipatory" self-defense] or, if an attack has already taken place, of the likelihood that peaceful means may be effective to restore peace and remove the attackers.[245]

In this way, "necessity" relates back to the view of armed force "a means of last resort," whereby the resort to force is to be considered legally available only after recourse to peaceful means of settlement have failed.[246] In the case where an attack has already occurred, however, the State being attacked must be considered under conditions of necessity, regardless of the possibilities for peaceful settlement, since to argue otherwise would, in effect, nullify the right of self-defense.[247] Therefore, as a rule, when

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[241] SINGH, *supra* note 217, at 21-22.

[242] For detailed discussion of the *jus in bello* and its applicability to outer space, *see* Robert A. Ramey, *Armed Conflict on the Final Frontier: The Law of War in Space*, 48 A.F. L. REV. 1 (2000), *and* sources cited therein.

[243] *See* sources cited *supra* note 236; *see also* Schachter in *Use of Force*, *supra* note 181, at 1635-38; *and* SINGH, *supra* note 217, at 22-23.

[244] AREND & BECK, *supra* note 89, at 72.

[245] Schachter in *Use of Force*, *supra* note 181, at 1635; *cf.* BROWNLIE, *supra* note 85, at 259 ("[Necessity] ... involves [the] determination of the certainty of attack which is extremely difficult to make and necessitates an attempt to ascertain the intention of a government.").

[246] *See* Schachter in *Use of Force*, *supra* note 181, at 1635; *cf. supra* p. 26 and note 111.

[247] Schachter in *Use of Force*, *supra* note 181, at 1635.

an attack occurs against a State, armed force may be used to repel the attack without further justification, and notwithstanding the State's obligation to seek peaceful settlement under Article 2(3) of the U.N. Charter.[248]

Proportionality is closely linked to necessity as an element of self-defense.[249] The concept of proportionality reflects the ultimate purpose of self-defense, which is *not* punishment or reprisal, but rather to repel or prevent an armed attack or its imminent threat.[250] So as not to be deemed illegally disproportionate, "[a]cts done in self defense must not exceed in manner or aim the necessity provoking them."[251] Proportionality is thus often demonstrated in governments' responses to isolated frontier incursions or naval incidents; by and large, "the defending State under attack limits itself to force proportionate to the attack; it does not bomb cities or launch an invasion."[252] Geography can also play a significant role in determining proportionality, since "an isolated attack in one place... would not normally warrant a defensive action deep into the territory of the attacking state."[253]

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[248] *Id.*, at 1636; *see also supra* p. 36 and note 166.

[249] *See* Schachter in *Use of Force*, *supra* note 181, at 1637; *see also* Judith Gail Gardam, *Proportionality and Force in International Law*, 87 AM. J. INT'L L. 391, 403 (1993); *and* D.W. Greig, *Reciprocity, Proportionality, and the Law of Treaties*, 34 VA. J. INT'L L. 295, 305 (1994).

[250] SINGH, *supra* note 217, at 22.

[251] Schachter in *Use of Force*, *supra* note 181, at 1637; *see also* Gardam, *supra* note 249, at 405 ("The legitimacy of... [military] actions... is a question of degree, with civilian casualties a particularly relevant factor in assessing proportionality.").

[252] Schachter in *Use of Force*, *supra* note 181, at 1637; *see also* DINSTEIN, *supra* note 149, at 181 ("An armed attack, justifying self-defense as a response under Article 51 does not have to take the shape of a massive military operation. "low intensity" fighting, conducted on a relatively small scale, may also be deemed an armed attack.") (citing *Nicaragua v. U.S.*, *supra* note 176, para. 195, at 103).

[253] Schachter in *Use of Force*, *supra* note 181, at 1638.

However, the proportionality of a defensive response ultimately depends upon the specific circumstances of the situation occasioning the claim of self-defense. A "State subjected to an armed attack is entitled to resort to self-defense measures against the aggressor, regardless of the geographical point where the attack was delivered."[254] This is true, even if the location of the attack is "beyond the boundaries of all States," such as "when missiles fired by... [the aggressor State's] armed forces destroy a satellite put in orbit in outer space by [the defending State]."[255] Hence, "where a series of attacks in one area leads to the conclusion that self-defense requires a counterattack against the 'source' of the attack on a scale that would deter future attacks," the attacked State can legally respond "beyond the immediate area of the attack," especially if the attacked State has reason to expect attacks from that source to continue.[256]

b. The Rules of Warfare (Jus In Bello)—In addition to satisfying the threshold requirements for self-defense (necessity and proportionality), States are also bound to observe the laws of warfare, which are customary as well as conventional in nature.[257] The basic notion underlying all such rules is that "the right of belligerents to adopt means of injuring the enemy is not unlimited."[258] From this basic maxim are derived the principles of proportionality and discrimination.[259] Proportionality can mean one of two

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[254] DINSTEIN, *supra* note 149, at 184.

[255] *Id.*

[256] Schachter in *Use of Force*, *supra* note 181, at 1638.

[257] "[S]ome of the most important instruments which contain such laws" include: "[t]he Declaration of Paris, 1856, the Geneva Convention, 1864, the Declaration of St. Petersburg, 1868, the Hague Conventions of 1899 and 1907, the Geneva Gas and Bacteriological Warfare Protocol, 1925, and the four Geneva Red Cross Conventions, 1949." SINGH, *supra* note 217, at 23; *see also* THE LAW OF ARMED CONFLICTS, *supra* note 108.

[258] DOCUMENTS ON THE LAWS OF WAR 4 (Adam Roberts & Richard Guelff eds., 1989).

[259] *Id.*, at 5.

things: (1) proportionality of a belligerent response to a grievance, or (2) proportionality in relation to the adversary's military actions or the anticipated military value of one's own actions.[260] Discrimination, on the other hand, is about care in the selection of methods, weaponry, and targets, and includes the idea of the immunity of non-combatants.[261]

In practice, military manuals on the laws of war generally emphasize three customary principles, which incorporate the overarching principles of proportionality and discrimination: (1) military necessity, (2) humanity, and (3) chivalry.[262] These three principles have been defined as follows:

> 1. Only that degree and kind of force, not otherwise prohibited by the law of armed conflict, required for the partial or complete submission of the enemy with a minimum expenditure of time, life, and physical resources may be applied.
>
> 2. The employment of any kind or degree of force not required for the purpose of the partial or complete submission of the enemy with a minimum expenditure of time, life, and physical resources is prohibited.
>
> 3. Dishonorable (treacherous) means, dishonorable expedients, and dishonorable conduct during armed conflict are forbidden.[263]

This is obviously just a précis of some basic principles of the *jus in bello*. Indeed, the body of law governing the weapons and methods of warfare is vast and includes not only customary international law and multilateral treaties on the laws of war, but also regional and bilateral agreements on the laws of war, various arms control and disarmament agreements, general human rights agreements, and unilateral declarations

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[260] *Id.* (Proportionality is "a link between *jus ad bellum* and *jus in bello*"); *see also supra* pp. 52-54 and sources cited.

[261] DOCUMENTS ON THE LAWS OF WAR, *supra* note 258, at 5.

[262] *Id.*

[263] *Id.* (quoting U.S. DEPT. OF THE NAVY, OFFICE OF THE CHIEF OF NAVAL OPERATIONS, THE COMMANDER'S HANDBOOK ON THE LAW OF NAVAL OPERATIONS, NWP-9, at 5-1 (1987)).

made by States, as well as national laws and regulations relating to the laws of war. Suffice it to say, these laws will be applicable to the State's defensive action in varying degrees, depending once again on the circumstances of the situation, and therefore must be taken into account when determining how to exercise self-defense.

*c. **Reporting to the Security Council***—Apart from the practical restraints on the use of force in self-defense imposed by the laws of war, Article 51 of the Charter also prescribes the procedural requirement that "[m]easures taken by members in the exercise of [the] right of self defense shall be immediately reported to the Security Council." What significance the reporting obligation has to the State's right of self-defense, if any, is not clear. In the *Nicaragua* case, the ICJ essentially held that because the customary right of self-defense exists independent of the Charter, the failure to observe the reporting requirement did not breach any obligation governing States' exercise of the right.[264] Yet, the Court simultaneously observed that failure to observe the requirement was inconsistent with a valid claim of self-defense.[265] Under the terms of the Charter, however, non-performance of the reporting obligation in no way prejudices a State's invocation of the right of self-defense; to read it otherwise is a "gross misinterpretation."[266] So, in the end, the most that can be said about satisfying the Article 51 reporting requirement is that it is but one of many factors bearing on the legitimacy of a States' claim to self defense.[267]

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[264] *Nicaragua v. U.S.*, *supra* note 176, para. 235, at 121.

[265] *Id.*, at 121-22, para. 235.

[266] DINSTEIN, *supra* note 149, at 199.

[267] *Id.* ("[I]nstantaneous transmittal of a report is no guarantee that the Council will accept it. Conversely, the failure to file a report at an early stage should not prove an irremediable defect.").

D. Summary

The strength of American conventional forces and the U.S. military's already extensive and growing use of commercial space technology, makes the possibility of cyber-attack on U.S commercial space systems ever more likely.[268] At the same time, protecting commercial space systems becomes more difficult as they continue their global expansion.[269] Therefore, given the importance of commercial space activity and its ever-growing effect on U.S. national security, it is in the interests of the United States, and any other state similarly dependent on its space assets, to establish an effective deterrence regime for cyber-space.[270]

Current U.S. policy provides for deterring and, if necessary, defending against purposeful interference with U.S. space systems using "all appropriate self-defense measures, including... the use of force."[271] However, when it comes to deterring cyber-attack against commercial space systems, the United States is arguably in a position similar to the one it was in at the beginning of the space age with regard to ASAT weapons. In other words, the asymmetry between U.S. dependence upon space and that of many potential adversaries is such that the U.S. may not be able to deter interference with U.S. commercial satellites by threat of reciprocal action.

The preceding analysis suggests that the "*corpus juris spatialis*" and the law governing resort to force in self-defense under Article 51 of the United Nations Charter

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[268] *See* Adams. *supra* note 38, at 99.

[269] USSPACECOM 2020, *supra* note 4, at 10.

[270] *See* Adams. *supra* note 38, *passim*.

[271] DoDD 3100.10, *supra* note 4, para. 4.1-4.2, at 6; quoted *supra* pp. 20-21.

allow for the measured and proportional use of conventional force response to cyber-attack on commercial satellites, provided such actions are carried out in accordance with the applicable rules of war. Within the bounds of international law, U.S. policy can therefore be understood to authorize conventional force as a self-defensive measure in response to a cyber-attack on U.S. commercial space systems. Such an approach enhances the credibility of the U.S. policy of deterrence by neutralizing the asymmetrical advantage an attacking State may enjoy by virtue of its lack of reliance on space.

Two other major space powers, namely China and Russia, have expressed interest in some form of international effort to place curbs on the use of cyber-attack.[272] However, achieving effective arms control for cyber-attack would be extremely difficult, if not impossible, because of the problems associated with identifying the perpetrators of such attacks. For example, although the attacks on Pentagon computers in the "Moon-light Maze" case were traced to a Russian e-mail address,[273] investigators could not completely rule out the possibility that the attacks were coming from elsewhere and were simply being channeled through Russia. The problem is further complicated by the fact that the perpetrators of cyber-attacks are not limited to the traditional concept of uniformed military adversaries;[274] therefore, an attack launched against an AT&T satellite from the territory of a "rogue nation" may be an armed attack by a hostile government or simply the work of a mischievous hacker. Indeed, it is not always possible to determine that an attack has even taken place—"[h]ostile actions against space systems...

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[272] *See* J. McCarthy, *supra* note 32.

[273] *See supra* p. 8.

[274] JOINT VISION 2020, *supra* note 34, at 29 ("'Nontraditional' adversaries who engage in 'nontraditional' conflict are of particular importance in the information domain... The perpetrators of such attacks are not limited to the traditional concept of a uniformed military adversary.").

can be explained as computer or software failure, even though either might be the result of malicious acts."[275] Thus, given the stealthy nature of cyber-attack, it is doubtful that even a "No-First-Use" type of agreement among States[276] would have any practical significance.

Multilateralism can certainly play an important role in curtailing the activities of "nontraditional adversaries,"[277] which likewise threaten international peace and security, and there is, in fact, movement in this direction. For instance, the Council of Europe has already tabled a Draft Convention on Cyber Crime;[278] Russia too has made a formal proposal, via the Secretary General of the United Nations, for "the development of 'an international legal regime' to combat information crime and terrorism."[279] However, there is a fine line between so-called "nontraditional adversaries" and armed bands that are actually acting on behalf of a hostile State—the latter being considered to be an armed attack.[280] Therefore, while these multilateral measures should be applauded, they

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[275] SPACE COMM'N REPORT, *supra* note 1, at 23.

[276] *See generally* NAGENDRA SINGH & EDWARD MCWHINNEY, NUCLEAR WEAPONS AND CONTEMPORARY INTERNATIONAL LAW 318-319 (M. Nijhoff 1989) (discussing the development in the 1960s of a proposed "No-First-Use" rule for nuclear weapons).

[277] *See supra* text accompanying note 274.

[278] *See* Common Position of 27 May 1999 adopted by the Council on the basis of Article 34 of the Treaty on European Union, on negotiations relating to the Draft Treaty on Cyber Crime held in the Council of Europe, 1999 O.J. (L 142) 1-2 ; text of the Draft Treaty on Cyber Crime *available at* http://conventions.coe.int/treaty/EN/cadreprojects.htm.

[279] *See* McCarthy, *supra* note 32.

[280] *See* DINSTEIN, *supra* note 149, at 188-90; *see also supra* note 235 and accompanying text; *and compare Nicaragua v. U.S.*, *supra* note 176, at 542 (Jennings, J., dissenting) ("It may readily be agreed that the mere provisions of arms cannot be said to amount to an armed attack. But the provision of arms may, nevertheless, be a very important element in what might be thought to amount to armed attack, where it is coupled with other kinds of involvement. Accordingly, it seems to me to say that provision of arms, coupled with 'logistical and other support' is not armed attack is going much too far. Logistical support may itself be crucial. According to the dictionary, logistics covers the 'art of moving, lodging, and supplying troops and equipment'... If there is added to all this 'other support,' it becomes difficult to understand what is, short of direct attack by a State's own forces, that may not be done apparently without a lawful response in the form of... self defense.").

do not displace the need for a deterrence regime for cyber-space, which, because of the problem of asymmetry, must include the threat of a conventional force response to be effective.

PART II

"Space Force Alpha"—The Permissibility of Military Use of the International Space Station

> Man has certain qualitative capabilities which machines cannot duplicate. He is unique in his ability to make on the spot judgments... Thus by including man in military space systems, we significantly increase the flexibility of the systems, as well as increase the probability of mission success.[281]

In the early 1960s, the U.S. Air Force undertook development of a military space station—called the Manned Orbiting Laboratory (MOL)—on the basis that then existing NASA-managed projects, namely Gemini, did not provide necessary data on potential military capabilities in space.[282] By the end of the decade, however, the high cost of the continuing war in Vietnam, the onset of détente with the Soviets, and the recognition that the main military objectives of the MOL (*i.e.*, reconnaissance and satellite detection and inspection) could be performed by less costly unmanned satellite systems, spelled the end of the project.[283] And so, with the cancellation of the Air Force's MOL in June 1969, manned spaceflight in the United States became the exclusive province of NASA.[284]

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[281] General James Ferguson (USAF), the Deputy Chief of Staff for Research and Development, in congressional testimony on the Air Force's ten year space plan, issued in September 1961, which included a manned military capability in space. *Quoted in* R.F. FUTRELL, IDEAS, CONCEPTS, DOCTRINE: A HISTORY OF BASIC THINKING IN THE UNITED STATES AIR FORCE 1907-1964, at 431 (Air Univ. Press 1971).

[282] The U.S. Air Force conducted a series of "piggy-back" experiments as part of NASA's Gemini program and, in fact, drew protest from the Soviet Union over military experiments done onboard Gemini V (August 1965). The MOL was actually based on a modified Gemini capsule. *See* SPIRES, *supra* note 3, at 120-133; *and* STARES, *supra* note 6, at 79, 97-99, 130-31; *see generally* BARTON C. HACKER & JAMES M. GRIMWOOD, ON THE SHOULDERS OF TITANS: A HISTORY OF PROJECT GEMINI 259 (NASA Special Publication No. 4203, 1977), *available at* http://www.hq.nasa.gov/office/pao/History/SP-4203/toc.htm (discussing the nature of the military experiments conducted aboard Gemini V); *and* LAY & TAUBENFELD, *supra* note 202, at 26 n.101 (discussing photographs taken from Gemini V and Soviet objections to the mission as a "spy flight").

[283] *See* SPIRES, *supra* note 3, at 132-33; *and* STARES, *supra* note 6, at 159-60.

[284] The data and equipment from the MOL project was transferred to NASA for use in what became its Skylab space station operation. SPIRES, *supra* note 3, at 133.

After cancellation of the MOL program, the concept of a military space station garnered remarkably little enthusiasm among American military leaders.[285] A number of factors contributed to the U.S. military's malaise in this regard, including budgetary considerations, the government's "desire to minimize the visibility and notoriety of [its] military presence in space," and, perhaps most notably, the lack of any "compelling arguments that having crews in orbit gives a State any particular useful military or strategic advantage."[286] Still, in 1983, a DoD study on the relation of military space activities to space stations noted that—

> DoD [has]... concluded that there are currently no identifiable DoD mission requirements that could be uniquely satisfied by a manned space station. Further, no current DoD requirements were found where a manned space station would appear to provide a significant improvement to DoD over alternative methods of performing a given task. Over, time, however, this situation may change. Therefore we are devoting considerable attention to developing a better understanding of the potential future uses for the role of man in space.[287]

Moreover, the concept of "Military Personnel-in-Space" remains, to this day, a part of official DoD policy:

> Military Personnel-in-Space. The unique capabilities that can be derived from the presence of humans in space may be utilized to the extent feasible and practical to perform in-space research, development, testing, and evaluation as well as enhance existing and future national security space missions. This may include exploration of military roles for humans in space focusing on unique or cost-effective contributions to operational missions.[288]

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[285] DOYLE, *supra* note 19, at 77.

[286] DOYLE, *supra* note 19, at 76-77; *see* STARES, *supra* note 6, at 242 ("With the cancellation of... [the] MOL, many in the Air Force believed that they had made their pitch and failed. This in turn reduced the incentives to try again and reinforced the bias towards the traditional mission of the Air Force, namely flying.").

[287] Eilene Galloway, The Relevance of General Multilateral Space Conventions to Space Stations, *in* SPACE STATIONS: LEGAL ASPECTS OF SCIENTIFIC AND COMMERCIAL USE IN A FRAMEWORK OF TRANSATLANTIC COOPERATION, 5 STUDIES IN AIR AND SPACE LAW 33, 36 (Karl-Heiz Böckstiegal ed. 1985) (Proceedings of an International Colloquium held in Hamburg, Oct. 3-4, 1984) (quoting *Military Activities and a Space Station*, *in* SPACE STATION: POLICY, PLANNING AND UTILIZATION (Proceedings of the AIAA/NASA Symposium on the Space Station at Arlington, Virginia, Jul. 18-20, 1983)) [hereinafter SPACE STATIONS].

[288] DoDD 3100.10, *supra* note 4, para. 4.11, at 13; *compare* DoD Space Policy (1987), *supra* note 69, at 2 ("DoD supports the potential use of military man-in-space. DoD will ensure that the unique capabilities

Thus, the "coolness" of the U.S. military toward the notion of stationing personnel in space notwithstanding, crewed spaceflight continues to have significant military implications, primarily because "the capacity to place personnel in orbit... allows for the active management by the crew on orbit of various technological capabilities that can be used for military applications."[289] Furthermore, "[i]t is not necessary for a state to launch a military crew into Earth orbit in order to obtain militarily useful information from a crewed mission."[290] For example, in the case of remote sensing or photoreconnaissance,

> [d]epending upon the sensing or photographic equipment onboard a space mission, even a civil crew... could obtain and deliver highly valuable military information... [and,] [w]ithout access to flight telemetry and flight data products it would be impossible to know to what extent the crewed mission was or was not involved in information gathering of a military nature or of military value.[291]

Plans currently being formulated by the United States and the other Partner States for the commercialization of the International Space Station (ISS), designated "Alpha,"[292] present a similar, though clearly distinct scenario. That is, the possibility of genuinely commercial activities with direct military application being carried out by or on-behalf of

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that can be derived from the presence of military man-in-space shall be utilized to the extent feasible to perform in-space research and development, and to enhance existing and future missions in the interest of national security. DoD will actively explore roles for military man-in-space focusing on unique or cost-effective contributions to operational missions.").

[289] DOYLE, *supra* note 19, at 78-79.

[290] *Id.*, at 79.

[291] *Id.*

[292] *See* Commercialization of the Space Station, 42 U.S.C. § 14711 (2001) ("[A] priority goal of constructing the International Space Station is the economic development of Earth orbital space... [to include] the fullest possible engagement of commercial providers and participation of commercial users."); *see also* John M. Logsdon, *Commercializing the International Space Station: current US thinking*, 14 SPACE POLICY 239 (1998) ("[C]ommercial utilization of the space station is a key element of [NASA's] overall commercialization strategy; *see generally* Peter B. de Selding, *ISS Partners Set Boundaries: Governments Try to Limit Competition for Commercialization*, SPACE NEWS, Jun. 11, 2001, at 1, 35.

private industry onboard the International Space Station. The question of the permissibility of such activities is obviously of particular interest to the 15 Partner States (the United States, Russia, Canada, Japan, and the eleven member states of the ESA[293]) that are party to the 1998 Intergovernmental Agreement (IGA 1998), which established the ISS partnership.[294] However, this issue also merits the interest of the broader international community due to the fact that it brings to bear broader concerns about the legality of the military use of space within the context of the "*corpus juris spatialis*."

The remainder of this thesis examines the question of the permissibility of military use of the International Space Station. Part II will proceed first with an overview of the current law of outer space applicable to ISS activities; thereafter, it will focus in on application of the term "peaceful purposes" with respect to the military uses of space, drawing upon examples of the military's use of other commercial space systems to shed light on how the law is being applied in practice.

A. The Law Governing ISS Activities

The development and construction of an International Space Station (ISS) began in the mid-1980s, with the U.S. plan to place a permanently inhabited civil space station (known as "Space Station Freedom") into low-earth orbit, through a partnership with

[293] Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, Spain and the United Kingdom.

[294] Agreement among the government of Canada, governments of Member States of the European Space Agency, the government of Japan, the government of the Russian Federation, and the government of the United States of America concerning Cooperation on the Civil International Space Station, Jan. 29, 1998, 1998 U.S.T. LEXIS 212, Hein's No. KAV 5119 [hereinafter 1998 IGA], *reprinted in* 4 UNITED STATES SPACE LAW: NATIONAL & INTERNATIONAL REGULATION, § II.A.22(f) (May 1998) [hereinafter U.S. SPACE LAW].

Canada, Japan, and a number of European countries.[295] The "Space Station Freedom" initiative eventually culminated in the establishment of the 1988 Intergovernmental Agreement (1988 IGA), between the United States, the state partners of the European Space Agency (ESA),[296] Japan and Canada.[297] Under the 1988 IGA, the United States (NASA) would produce a "core U.S. Space Station," which would then be enhanced with elements produced by the ESA, the Government of Japan (GOJ), and Canada Space Agency (CSA), to create an "international Space Station complex."[298] In addition to emphasizing the "civil" character of the space station, the 1988 IGA also specified that the station was to be used "for peaceful purposes, in accordance with international law," in order to "enhance the scientific, technological, and commercial use of space."[299]

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[295] *See* Rochus Moenter, *The International Space Station Legal Framework and Current Status*, 64 J. AIR L. & COM 1033 (1999); *see also* Act of Oct. 30, 1987, Pub. L. No. 100-147, § 106(a) & (e), 101 Stat. 863 (1987) [hereinafter Act of Oct. 30, 1987].

[296] At the time, the ESA had nine European partners: Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain and the United Kingdom.

[297] Agreement among the United States of America, governments of Member States of the European Space Agency, the government of Japan, and the government of Canada, on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, Sep. 29, 1988, as between the U.S., the ESA partner states, and Canada, Hein's No. KAV 2383, with respect to Japan, Hein's No. KAV 2382 [hereinafter 1988 IGA], *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.22 (Jan. 1989).

[298] 1988 IGA, *supra* note 297, art. 1, para. 2. In conjunction with the 1988 IGA, three bilateral Memoranda of Understanding (MOUs) were executed between NASA and the space agencies of the other signatories of the agreement, setting out the details of the cooperative effort. *See* Memorandum of Understanding Between the United States National Aeronautics and Space Administration and the European Space Agency on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, Sep. 29, 1988, *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.22(a) (Jan. 1989); *and* Memorandum of Understanding Between the United States National Aeronautics and Space Administration and the Ministry of State for Science and Technology [MOSST] of Canada on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, Sep. 29, 1988, *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.22(b) (Jan. 1989) (upon establishment of the Canadian Space Agency (CSA) on March 1, 1989, it assumed responsibility for execution of the Canadian Space Station Program from MOSST); *and* Memorandum of Understanding Between the United States National Aeronautics and Space Administration and the Government of Japan on Cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, Mar. 14, 1988, *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.22(c) (May 1990).

[299] 1988 IGA, *supra* note 297, art. 1, para. 1.

The dramatic changes in the world political climate in the early 1990s led to the Russian Federation being extended an invitation to join the ISS project in December 1993.[300] In addition to possible "political" considerations,[301] Russian involvement in the program was expected to bring significant cost savings, experience in space station management and prolonged human spaceflight, and access to reliable heavy-lift launch vehicles.[302] Formal negotiations on a protocol to amend the 1988 IGA to add the Russian Federation to the ISS partnership commenced in April 1994,[303] and on June 23, 1994, NASA and the Russian Space Agency (RSA) reached an interim agreement on Russian participation in "the Space Station Program" pending the conclusion of a protocol to the 1988 IGA.[304] Although Russia became a full partner in the ISS in July 1996, renegotiation of the terms of the 1988 IGA continued, until finally, after almost five years of negotiating, the representatives of the United States, Russia, Canada, Japan, and the eleven member states of the ESA, signed the Intergovernmental Agreement of 1998 (1998 IGA) on January 29, 1998.[305]

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[300] The invitation to the Government of the Russian Federation to become a Partner in the Space Station was extended on Dec. 6, 1993, and accepted on Dec. 17, 1993. 1998 IGA, *supra* note 294, Preamble; *see also* Moenter, *supra* note 295, at 1034; *and* Jesse B. Ashe, III, *Space Station Alpha: International Shining Star or Legal Black Hole?*, 9 TEMP. INT'L & COMP. L.J. 333, 333 (1995).

[301] "Critics suggest that the station is politically driven to reward the Russians for backing out of missile technology sales to developing countries." Ashe, *supra* note 300, at 335 (citing John M. Logsdon & Alain Dupas, *Lessons to be Learned from Space Station Saga*, AVIATION WK. & SPACE TECH., Mar. 7, 1994, at 52); *accord see* Frank Morring, Jr., *Tito Trip Strains ISS Partnership*, AVIATION WK. & SPACE TECH., May 14, 2001, at 79 (quoting statements of U.S. Senator Milkuski indicating Russia had reneged on its "deal" with the U.S. concerning cooperation on the ISS project by continuing to sell missile "technology and know-how" to Iran).

[302] *See* Ashe, *supra* note 300, at 334-35; *see also* Moenter, *supra* note 295, at 1034.

[303] *See* U.S.-Russian Joint Commission on Economic and Technological Cooperation—Joint Statement on Space Station Cooperation, Jun. 23, 1994, U.S.-U.S.S.R., *in* 4 U.S. SPACE LAW, *supra* note 294, § II.B. Russian Federation, at 16-17 (Oct 1994).

[304] Interim Agreement Between the National Aeronautic and Space Administration of the United States and the Russian Space Agency for the Conduct of Activities Leading to a Russian Partnership in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station, Jun. 23, 1994, U.S.-U.S.S.R., not printed (available from the Office of Treaty Affairs, Department of State), *in* 4 U.S. SPACE LAW, *supra* note 294, § II.B. Russian Federation (cont.) (Sep. 1995).

[305] Moenter, *supra* note 295, at 1034.

1. The Intergovernmental Agreement of 1998

Upon entering into force on March 27, 2001, the 1998 IGA replaced the 1988 agreement.[306] Like its predecessor, the object of the 1998 Space Station Agreement

> is to establish a long-term international cooperative framework among the Partners, on the basis of genuine partnership, for the detailed design, development, operation and utilization of a permanently inhabited civil international Space Station.[307]

The express purpose of the Space Station likewise remained unchanged under the 1998 agreement; *i.e.*, the ISS is to be a "civil space station" used for "peaceful purposes," in order to "enhance the scientific, technological, and commercial use of outer space."[308] However, under the new agreement the Russian and American space station programs are merged;[309] therefore, the ISS is no longer to be based on a "core U.S. Space Station." Instead, the 1998 agreement provides for the United States and Russia to co-produce the "foundational elements" of the facility, which will then be significantly enhanced by additional elements produced by "the European Partner," Japan, and Canada, to create "an integrated international Space Station."[310]

*a. **Management of the ISS***—Although the 1998 IGA gives the United States "the lead role" in overall management of the International Space Station,[311] the agreement provides for participation of all five Partners in the management of the integrated

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[306] 1998 IGA, *supra* note 294, art. 25, para. 4. The 1988 IGA had only entered into force for the United States and Japan. *See* Moenter, *supra* note 295, at 1035.

[307] 1998 IGA, *supra* note 294, art. 1, para. 1; *compare* 1988 IGA, *supra* note 297, art. 1, para. 1.

[308] 1998 IGA, *supra* note 294, art. 1, para. 1; *see also* art. 14, para. 1 ("The Space Station together with its additions of evolutionary capability shall remain a civil station, and its operation and utilization shall be for peaceful purposes, in accordance with international law.").

[309] *See* Moenter, *supra* note 295, at 1034.

[310] 1998 IGA, *supra* note 294, art. 1, para. 2.

[311] *Id.*, art. 1, para. 2, & art. 7, para. 2.

facility,[312] with "decision-making by consensus" being the goal.[313] This multilateral management function is performed by the ISS Multilateral Coordination Board (MCB), which is comprised of representatives of NASA, ESA, CSA, RSA and Japan's Science and Technology Agency (STA), with the NASA representative serving as Chairman.[314]

The MCB meets periodically, or at the request of any Partner, to coordinate on matters "affecting the safe, efficient and effective utilization" of the Space Station.[315] In cases where consensus cannot be reached on a matter within the MCB's purview, the Chairman may unilaterally render a decision.[316] However, the decision of the MCB Chairman does not affect the right of any Partner to submit the matter for consultations;[317] moreover, pending resolution of the issue through consultations, a partner has the right not to implement the Chairman's decision with respect to its space station elements.[318] The MCB Chairman may not, however, issue a unilateral decision where the lack of consensus relates to a matter outside the MCB's purview, *e.g.*, "an issue *not* primarily technical or programmatic in nature, including such issues with a political

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[312] The IGA makes a distinction between "Partner States" and "Partners"—there are *fifteen* Partner States but only *five* Partners in the project because the eleven European States are grouped, for purposes of conducting this cooperation, under the umbrella designation of the "European Partner." André Farand, Legal Environment for Exploitation of the International Space Station (Presentation to the International Symposium at Strasbourg, France, May 26-28, 1999), *in* INTERNATIONAL SPACE STATION: THE NEXT MARKET PLACE 141, 142 (G. Haskell & M. Rycroft eds., 2000).

[313] *Id.*, art. 1, para. 3, & art. 7, para. 1.

[314] *See*, Memorandum of Understanding Between the National Aeronautic and Space Administration of the United States of America and the European Space Agency concerning Cooperation on the Civil International Space Station, Jan. 29, 1998, art. 8.1.b, *in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.22(g) (May 1998) [hereinafter NASA-ESA MOU].

[315] *Id.*

[316] *Id.*; *and* 1998 IGA, *supra* note 294, art. 7, para. 1 ("Mechanisms for decision-making... where it is not possible to reach a consensus are specified in the MOUs.").

[317] NASA-ESA MOU, *supra* note 314, art. 8.1.b & art. 18; 1998 IGA, *supra* note 294, art. 23, para. 1 ("Partners... may consult with each other on any matter arising out of Space Station cooperation.").

[318] NASA-ESA MOU, *supra* note 314, art. 8.1.b.

aspect." Rather, resolution of such matters is to be pursued through consultation among the designated officials of the Partners concerned.[319]

In addition to the formal procedures for multilateral management of the Space Station set forth in the MOUs, Article 23 of the 1998 IGA gives Partners (acting through their Cooperating Agencies) the right to request consultations with each other on "any matter arising out of Space Station cooperation" and exhorts the Partner of whom consultations are requested to "accede to such request promptly."[320] Partners are further directed to use their "best efforts" to settle disagreements, either through the MOU procedures for multilateral management or consultation.[321] If an issue cannot be resolved through consultations, Article 23 authorizes, but does not require, Partners to submit the matter to "an agreed form of dispute resolution such as conciliation, mediation, or arbitration."[322]

b. Utilization of the ISS—The basic principles for utilization of the Space Station are laid down in Article 9.1 of the 1998 IGA:

> Utilization rights are derived from Partner provision of user elements, infrastructure elements, or both. Any Partner that provides Space Station user elements shall retain use of those elements, except as otherwise provided for in this paragraph. Partners which provide resources to operate and use the Space Station, which are derived from their Space Station infrastructure elements, shall receive in exchange a fixed share of the use of certain user elements."[323]

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[319] *Id.*, art. 8.1.b. & art. 18 (under Article 18 of the MOU, questions concerning the interpretation or implementation of the MOUs entered into in conjunction with the 1998 IGA are likewise to be resolved through consultations).

[320] 1998 IGA, *supra* note 294, art. 23, para. 1-2.

[321] *Id.*, art. 23, para. 2.

[322] *Id.*, art. 23, para. 4.

[323] *Id.*, art. 9, para. 1.

Simply stated, under Article 9.1 each Partner retains the use of the "user elements" that it provides, *plus*, a Partner receives share of the use of "user elements" provided by the other Partners in exchange for providing "infrastructure elements" that supply resources necessary for space station operations as a whole.[324] Accordingly, each Partner's share of the use of the "user elements" (or "user accommodations") of the Space Station is expressed in fixed percentage in the MOU, as follows:

- NASA retains the use of 97.7% of the user accommodations on its laboratory modules and 97.7% of the use of its accommodation sites for external payloads, and receives the use of 46.7% of the user accommodations on the European pressurized laboratory and 46.7% of the user accommodations on the Japanese Experiment Module (JEM);

- RSA retains the use of 100% of the user accommodations on its laboratory modules and 100% of the use of its accommodation sites for external payloads;

- ESA retains the use of 51% of the user accommodations on its laboratory module;

- the GOJ retains the use of 51% of the user accommodations on its laboratory module; and

- CSA will have the equivalent of 2.3% of the Space Station user accommodations provided by NASA, ESA and the GOJ.[325]

Within these limits, each Partner determines for itself how to best utilize its respective allocation,[326] and, under Article 9.3, each Partner is generally free to use and/or select users for its allocation for any purpose which is not inconsistent with the

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[324] *See Id.*

[325] *See* NASA-ESA MOU, *supra* note 314, art. 8.3.a. In order to avoid a debate on the relative value of the utilization and infrastructure elements supplied by Russia as a proportion of the Space Station as a whole, it was decided that Russia would keep 100% of utilization of its own modules in recognition of the fact that the infrastructure element supplied to the Station by Russia for its own benefit and that of the other Partners would enable Russia to accumulate 100% of the utilization rights in its own modules. This allowed the four founding Partners to retain the percentages agreed to for sharing of resources with respect to the original elements (U.S.A.: 76.6%, Japan: 12.8%; Europe: 8.3%; Canada: 2.3%). Farand, *supra* note 312, at 147.

[326] 1998 IGA, *supra* note 294, art. 7, para. 3.

terms of the IGA.[327] However, there are two significant limitations on the freedom of ISS Partners in this regard. First, Article 9.3(a) prohibits use of a user element by a non-Partner or a private entity under the jurisdiction of a non-Partner without prior notification to and timely consensus of all of the Partners.[328] Second, Article 9.3(b) provides that the decision as to whether a contemplated use of an element of the Space Station is for "peaceful purposes" shall be made by the Partner that is providing the element in question.[329] In the context of the present discussion, this second caveat is clearly the most important, because it clearly places the decision of whether a particular use of the Space Station is for "peaceful purposes" outside the scope of the ISS "consensus management" regime.

c. ***Jurisdictional Framework***—While the Outer Space Treaty bars the extra-terrestrial extension of State sovereignty,[330] certain functional aspects of sovereignty nevertheless do apply in outer space.[331] Accordingly, the 1998 IGA allocates jurisdiction and control of the individual elements of the ISS to the Partner that provides the element based on the customary international legal principles of territoriality and nationality.[332]

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[327] *Id.*, art. 9, para. 3. Article 9, paragraph 4, provides that "[i]n its use of the Space Station, each Partner... is to avoid causing serious adverse effects on the use of the Space Station by the other Partners."

[328] *Id.*, art. 9, para. 3(a). Notably, the notice and consensus requirements do not apply to use of the ISS by a private entity under the jurisdiction of a fellow Partner state, *à la* Russia's sale of a 6-day flight onboard the Space Station Alpha to American Dennis Tito (Apr. 30-May 5, 2001) over the objections of the United States and the other Partners—though, in the end, the Russians did request and receive an "exemption" to the requirement for MCB coordination for the Tito flight. *See* Morring, *supra* note 301, at 79.

[329] *Id.*, art. 9, para. 3(b).

[330] Outer Space Treaty, *supra* note 23, art. II.

[331] *Id.*, art. VIII; *see, e.g.*, *supra* pp. 44-47 (discussing application of the right of self-defense in outer space).

[332] *See* Mary B. McCord, *Responding to the Space Station Agreement: The Extension of U.S. Law into Space*, 77 GEO. L.J. 1933, 1938-39 (1989) (discussing the similar jurisdictional framework of the 1988 IGA) ("The territoriality principle allows a state to exercise jurisdiction with respect to acts occurring in whole or in part within its territory, or acts having or intended to have a substantial effect within its territory. The nationality principle allows a state to prescribe law with respect to the activities, status, interests, or relations of its na-

Under Article 5 of the agreement, each Partner registers the Space Station elements it provides as space objects, in accordance with the 1976 Registration Convention.[333] Article 5 further provides that—

> each Partner shall retain jurisdiction and control over the elements it registers... and over personnel in or on the Space Station who are its nationals. The exercise of such jurisdiction and control shall be subject to any relevant provisions of this Agreement, the MOUs, and the implementing arrangements, including relevant procedural mechanisms established herein.[334]

The 1998 IGA, thus, allows each Partner to treat the Space Station elements carried on its registry as extensions of its territory for jurisdictional purposes and ensures that its national laws can apply to elements and personnel that it provides to the project.[335]

d. Applicability of International Law—The Preamble to the 1998 IGA specifically refers to the four multilateral treaties that give force to the fundamental principles of public international space law, namely the 1967 Outer Space Treaty,[336] the 1968 Rescue Agreement,[337] the 1972 Liability Convention,[338] and the 1976 Registration Convention,[339] and Article 1 generally decrees that the "design, development, operation and utilization"

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tional, both within and without its territory." (citing RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 402(2)-(3) (1986)) (footnotes omitted); *see also* Farand, *supra* note 312, at 141 ("The general rule is that a State can exercise its control and jurisdiction only in its territory and in its air space; the IGA therefore constitutes the basis on which the signatory States are allowed to extend their national jurisdictions and controls to a facility located in outer space.").

[333] 1998 IGA, *supra* note 294, art. 5, para. 1; Registration Convention, *supra* note 26, art. II.

[334] *Id.*, art. 2, para. 1.

[335] *See* Farand, *supra* note 312, at 141.

[336] *See supra* note 23.

[337] *See supra* note 24.

[338] *See supra* note 25.

[339] *See supra* note 26.

of the ISS shall take place "in accordance with international law."[340] In addition, Article 2 of the agreement expressly provides that space station activities must comply with the treaties governing the use of outer space, as well as with general principles of international law (including customary law), wherein it states:

> The Space Station shall be developed, operated, and utilized in accordance with international law, including the Outer Space Treaty, the Rescue Agreement, the Liability Convention, and the Registration Convention.[341]

Utilization and operation of the ISS must therefore be "seen and interpreted in the light of the aforementioned international agreements, treaties and conventions—the current law of Outer Space."[342]

2. The Law of Outer Space (Corpus Juris Spatialis)

The fundamental principles of public international space law can be found in six multilateral treaties: 1963 Limited-Test-Ban Treaty,[343] 1967 Outer Space Treaty,[344] the 1968 Rescue Agreement,[345] the 1972 Liability Convention,[346] 1976 Registration Convention,[347] and the 1979 Moon Treaty.[348] As previously mentioned, only four of

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[340] 1998 IGA, *supra* note 294, art. 1, para. 1.

[341] *Id.*, art. 2, para. 1.

[342] Moenter, *supra* note 295, at 1038.

[343] *See supra* note 22.

[344] *See supra* note 23.

[345] *See supra* note 24.

[346] *See supra* note 25.

[347] *See supra* note 26.

[348] *See supra* note 27.

these are expressly referred to in the 1998 IGA;[349] however, Articles 1 and 2 of the agreement subject the ISS to international law. Moreover, to the extent that an ISS Partner is a party to any of these treaties, pursuant to Article 5 of the IGA such treaties will govern the elements and personnel that it provides to the project.[350] Therefore, a brief discussion of each of the treaties governing the use of outer space is appropriate.

a. Limited-Test-Ban Treaty (1963)—The Limited-Test-Ban Treaty was the first treaty concerning the legal regulation of the activities of states in the exploration and use of outer space.[351] Although, in fact, the treaty is not concerned with outer space *per se*, but rather addresses activity in outer space as part of a more general subject—*i.e.*, the prevention of global nuclear contamination.[352] It is perhaps for this reason that the treaty is sometimes over-looked as a part of the "*corpus juris spatialis*."[353] In any case, the Limited-Test-Ban Treaty forbids State parties from carrying out the explosion of nuclear devices in the oceans, atmosphere, or outer space.[354] Notably, both the world's two major space and nuclear powers, namely the United States and the Russian Federation, are party to the treaty, together with Great Britain and more than 120 other nations. Still, the treaty's significance is diminished somewhat by the fact that other nuclear powers,

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[349] *See* 1998 IGA, *supra* note 294, Preamble & art. 2, para. 1.

[350] *Id.*, art. 5, para. 2; *see also supra* pp. 71-72 and sources cited.

[351] MAURICE N. ANDEM, INTERNATIONAL LEGAL PROBLEMS IN THE PEACEFUL EXPLORATION AND USE OF OUTER SPACE 43 (Univ. of Lapland Publ'ns 1992).

[352] Limited-Test-Ban Treaty, *supra* note 22, Preamble.

[353] *See, e.g.*, sources cited *supra* note 27.

[354] Limited-Test-Ban Treaty, *supra* note 22, art. I. "A careful reading of this provision shows that nuclear explosions are prohibited in all environments except underground tests carried out within the territorial limits of the parties to the Treaty." Nicholas M. Matte, *The Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water (10 October 1963) and the Peaceful Uses of Outer Space*, 9 ANNALS OF AIR & SPACE L. 391, 401 (1984).

most notably France and China, rejected what they viewed as the "selective rapprochement" of the two Cold War adversaries and continued their altitude nuclear tests.[355] Consequently, as the ICJ decision in the Nuclear Test Case[356] suggests, the treaty's prohibitions cannot be regarded as declaratory of general international law.[357] Nevertheless, the Limited-Test-Ban Treaty stands as the first legally binding document renouncing a military use of outer space[358] and was also the first step towards the "denuclearization of outer space."[359] The provisions of the Limited-Test-Ban Treaty apply to Space Station activities inasmuch as all ISS Partner States, apart from France, are parties to the treaty.[360]

b. Outer Space Treaty (1967)—In 1958, shortly after the launching of Sputnik I, the United Nations General Assembly formed an *ad hoc* Committee on the Peaceful Uses of Outer Space (COPUOS),[361] and, the following year, COPUOS was established as a permanent body.[362] Since its inception, COPUOS has overseen the development of five

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[355] Matte, *supra* note 354, at 405.

[356] Nuclear Test Case (Austl. v. Fr.), 1974 I.C.J. 253 (December 20).

[357] *See* BIN CHENG, *Outer Space: The International Legal Framework—the International Legal Status of Outer Space, Space Objects, and Spacemen* (Lectures delivered at the Institute of Public International Law and International Relations, University of Thessaloniki, Sep. 1979), 10 THESAURUS ACROASIUM 41 (1981), *reprinted in* STUDIES IN SPACE LAW, *supra* note 214, at 383, 408–409.

[358] *See* Reynolds & Merges, *supra* note 27, at 52.

[359] G.S. Raju, Military Use of Outer Space: Towards Better Legal Controls, *in* PEACEFUL PURPOSES, *supra* note 205, at 90, 92.

[360] *See* Galloway *in* SPACE STATIONS, *supra* note 287, at 42.

[361] Question of the peaceful use of outer space, G.A. Res. 1348, U.N. GAOR, 13th Sess., Supp. No. 18, at 5, U.N. Doc. A/4090 (1959) [hereinafter Resolution 1348 (1958)].

[362] International co-operation in the peaceful uses of outer space, G.A. Res. 1472, U.N. GAOR., 14th Sess., Supp. No. 16, at 5, U.N. Doc. A/4354 (1960).

international space treaties, which have all entered into force.[363] The first and, by far, the most significant of these treaties was the 1967 Outer Space Treaty. This agreement is considered to be the foundation for international legal order in outer space[364] and it is binding on all of the ISS Partner States as public international law.[365] The first three articles of the Outer Space Treaty establish the framework for the peaceful exploration and use of outer space, from which the basic elements of space law are derived: the common interest principle (Article I), the freedom principle (Article I), the nonappropriation principle (Article II), and the application of international law and the United Nations Charter to outer space (Article III).[366]

Article I. Like many of the principles set forth in the Outer Space Treaty, the common interest principle had been previously advanced in a variety of forms.[367] By 1951, developments in high altitude rocket flight were such that the launching of earth satellites was imminent; thus, there was increased discussion among legal scholars about

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[363] On the role of COPUOS in the development of international space law, *see* Nandasiri Jasentuliyana, *The Law Making Process in the United Nations*, *in* SPACE LAW: DEVELOPMENT AND SCOPE 33 (Nandasiri Jasentuliyana ed., 1992).

[364] Nandasiri Jasentuliyana, *A Survey of Space Law as Developed by the United Nations*, *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 349, 359. For a detailed historical and legal analysis of the Outer Space Treaty, *see* Paul G. Dembling, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, *in* 1 MANUAL ON SPACE LAW 1 (Nandasiri Jasentuliyana & Roy S.K. Lee eds., 1979).

[365] *See* Moenter, *supra* note 295, at 1038 (citing Bin Cheng, *1967 Outer Space Treaty: Thirtieth Anniversary*, 23 AIR & SPACE LAW 156 (1998)). The Outer Space Treaty currently binds over 100 signatories; yet, the question of whether the legal principles of the treaty have become a part of customary international law and thereby apply to all States remains controversial. *See* Ram S. Jakhu, Application and Implementation of the 1967 Outer Space Treaty (Presentation to the American Institute of Aeronautics and Astronautics (AIAA) Legal Symposium Celebrating the 30th Anniversary of the 1967 Outer Space Treaty (1997)) (copy on file with author).

[366] Jasentuliyana, *supra* note 364, *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 359.

[367] Paul G. Dembling & Daniel M. Arons, *The Evolution of the Outer Space Treaty*, 33 J. AIR L. & COM. 419, 420 (1967).

the notion of an upper boundary in space to the territory of the subjacent State.[368] And so it was, in 1952, when Oscar Schachter predicted that—

> outer space and the celestial bodies would be the common property of all mankind, over which no nation would be permitted to exercise domination' and that 'a legal order would be developed on the principle of free and equal use, with the object of furthering scientific research and investigation.[369]

Subsequently, in 1958, in its first resolution dealing specifically with outer space, United Nations General Assembly expressly recognized the principle of "the common interest of mankind in outer space."[370] This notion was thereafter carried forward into Article I of the Outer Space Treaty,[371] which reads:

> The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.
>
> 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.
>
> There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

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[368] C. WILFRED JENKS, SPACE LAW 97 (Fredrick A. Praeger 1965); *see, e.g.*, JOHN COBB COOPER, High Altitude Flight and National Sovereignty (Address Delivered at the Escuela Libre de Derecho, Mexico City, Jan. 5, 1951), *in* AEROSPACE LAW, *supra* note 214, at 256, 263 ("[I]t is obvious we must agree there is an upper boundary in space to the territory of the subjacent State. Under no possible theory can it be said that a State can exercise sovereign rights in outer space beyond the region of the earth's attraction.").

[369] *Quoted in* JENKS, *supra* note 368, at 97.

[370] Resolution 1348 (1958), *supra* note 361.

[371] *See also* Outer Space Treaty, Preamble. The Preamble to the Outer Space Treaty recalls the language of Resolution 1348 wherein it recognizes "the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes."

The legal significance of the "common interest" principle is subject to debate. One view equates the "common interest" principle to "the equitable sharing of whatever benefits may be gathered from the exploration and use of outer space—equitably, that is, not only between States operating in outer space, but also taking into account those states not so technologically advanced."[372] So, for example, under this theory a State whose economy is not adequate to finance a space program may, nevertheless, rightfully share in the benefits of the use of outer space by registering orbital positions in the geostationary orbit (a limited resource)[373] and then gaining revenue by leasing the positions.[374] The principle of "equitable sharing of the benefits" of the exploration and use of outer space might also be interpreted so as to require international taxation on profits made from the commercial extraction of natural resources from the Moon, Mars and asteroids (once such exploitation becomes possible), or a mandatory transfer of the technology used to exploit these resources to the so-called "space have-nots."[375]

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[372] REIJNEN, *supra* note 200, at 89.

[373] The geostationary satellite orbit is 22,300 miles above the Earth's surface, at which height a satellite revolves around the Earth at the same speed as the ground below and, thus, it appears to remain stationary over a given point on the Earth's surface; it is the only satellite orbit which is specifically deemed to be a "limited natural resource" under Article 33(2) of the Convention of the International Telecommunication Union, Dec. 22, 1992, S. Treaty Doc. No. 104-34 (1996) (as amended through 1994) [hereinafter ITU Convention]. *See* Ram S. Jakhu, *The Legal Status of the Geostationary Orbit*, 7 ANNALS OF AIR & SPACE L. 333, 349-350 (1982); Final Acts of the Additional ITU Plenipotentiary Conference, Geneva, 1992, *available at* http://www.wia.org/pub/ itu-constitution.html.

[374] From 1988-90, Tonga, a tiny Pacific nation, submitted filings for sixteen geostationary satellite orbital (GSO) positions over the Pacific Ocean. The five member nations of the International Telecommunications Satellite Organization (INTELSAT) protested to the International Frequency Registration Board (IFRB), on the ground that the acquisition was for profit only and did not further the IFRB goal of maximizing international communications access. Eventually, a compromise was reached whereby Tonga relinquished all but six of the GSO slots. *See* Jonathan Ira Ezor, *Costs Overhead: Tonga's Claiming of Sixteen Geostationary Orbital Sites and the Implications for U.S. Space Policy*, 24 LAW & POL'Y INT'L BUS. 915 (1993); *see also* Francis Lyall, Expanding Global Communication Services, Discussion Paper Presented at the Workshop of Space Law in the 21st Century (Jul. 1999) (criticizing Tonga's claim to sixteen geostationary orbital sites as a "homestead claim which might or might not eventually produce gold" and "an undesirable abuse of the ITU system") (copy on file with author).

[375] Art Dula, *Free Enterprise and the Proposed Moon Treaty*, 2 HOUS. J. INT'L L. 3, 33 (1979), *reprinted in* Reynolds & Merges, *supra* note 27, at 144; *see also* REIJNEN, *supra* note 200, at 16-17.

In practice, however, the common interest principle has predominantly been interpreted as assuring only "equitable access" to outer space and its benefits for those States having the requisite technology and financial resources.[376] The ITU Convention, for instance, states that radio frequencies and the geostationary orbit "must be used efficiently and economically so that countries or groups of countries may have *equitable access* to both."[377] Similarly, in the case of remote sensing, the U.N. declaration of Principles Relating to Remote Sensing of the Earth from Outer Space (1986)[378] basically repeats the language of Article I, paragraph 1, of the Outer Space Treaty, wherein it provides that—

> [r]emote sensing activities shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic, social, or scientific and technological development, and taking into particular consideration the needs of the developing countries.

But under Principle XII, the sensed State is again only assured of *access* to the remote sensing data, albeit "on a non-discriminatory basis and on reasonable cost terms."[379] In practical terms, this means that (at a minimum) the data will be made available to the sensed State at "market rates," though without any guarantee of uniform pricing.[380]

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[376] *See* REIJNEN, *supra* note 200, at 16.

[377] ITU Convention, *supra* note 373, art. 33(2) (emphasis added).

[378] Principles Relating to Remote Sensing of the Earth from Outer Space, Principle II, U.N. GAOR, 41st Sess., Supp. No. 53, at 115, U.N. Doc. A/41/53 (1986).

[379] *See also* Land Remote Sensing Policy Act of 1992, 15 U.S.C. § 5601 et seq. (1992); *and* Proposed Rules for Licensing of Private Land Remote-Sensing Space Systems, 62 Fed. Reg. 59,317, 59,319 (Nov. 3, 1997) ("Section 202(b)(2) of the 1992 Act requires that all licenses include the condition that the licensee shall make available to the government of any country, including the United States, unenhanced data collected by the system concerning the territory under the jurisdiction of such government on reasonable terms and conditions.").

[380] *See* Joanne Irene Gabrynowicz, *Defining Data Availability for Commercial Remote Sensing Systems*, 23 ANNALS OF AIR & SPACE L. 93, 104 (1998) ("However, if pronounced differences [in pricing] led to *de facto* exclusion of access to data for the sensed State, then the obligation of nondiscriminatory access would be breached.").

Article I of the Outer Space Treaty also establishes the freedom principle, which is a corollary to, and at the same limited by, the common interest principle.[381] Pursuant to Article 1, paragraph 2, three "positive" aspects of the principle of freedom of outer space are established: (1) freedom of access, (2) freedom of exploration, and (3) freedom of use.[382] As in the case of the common interest principle, the freedom principle was also initially put forward in the form of a General Assembly Resolution; first in Resolution 1721, which was adopted on December 20, 1961,[383] and then again in Resolution 1962, which was adopted, on December 13, 1963.[384] Because these resolutions are viewed as having enunciated preexisting legal principles based on the practice of States dating back to the launching of the first satellite,[385] the freedom principle that is incorporated into the Outer Space Treaty is generally considered to be part of customary international law, binding on all States, regardless of whether they are actually a party to the agreement.[386]

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[381] The "common interest" principle in Article I, paragraph 1, requires that exploration and use of outer space be for the common "benefit and interest"; other limitations impose by the Outer Space Treaty on the freedom of use of outer space include the nondiscrimination and equity clause (Article I, para. 2), the nonappropriation clause (Article II), the international law clause (Article III), the proscription on nuclear weapons (Article IV, para. 1), the responsibility and liability clauses (Articles VI and VII), and the consultation, observation, and information clauses (Articles V, IX, and XI). CENTRE FOR RESEARCH OF AIR & SPACE LAW, MCGILL UNIVERSITY, SPACE ACTIVITIES AND EMERGING INTERNATIONAL LAW 270, 272 (Nicolas M. Matte ed., 1984) [hereinafter SPACE ACTIVITIES & INT'L LAW].

[382] *Id.*, at 270.

[383] International Cooperation in the Peaceful Uses of Outer Space, G.A. Res. 1721, *reprinted in* JENKS, *supra* note 368, at 320.

[384] Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, G.A. Res. 1962, U.N. GAOR, 18th Sess., Supp. No. 15, at 15, U.N. Doc. A/5515 (1964).

[385] *See*, ANDEM, *supra* note 351, at 15 ("[D]uring the launching into orbit by the Soviet Union in 1957 of the first artificial earth satellite, Sputnik-1, there was no protest in any form from any state or group of states about any violation of, or infringement on its territorial sovereignty of its air space... [t]herefore... all states established as a precedent the principle of the freedom of flight of space objects of one state over the territory (air space) of another.").

[386] See Ivan A. Vlasic, *The Growth of Space Law 1957-65: Achievements and Issues*, in YEARBOOK OF AIR AND SPACE LAW 1965, at 365, 374-380 (René H. Mankiewicz ed., 1967).

Article II. Closely linked to the concepts of the common interest of mankind and the freedom of exploration and use of outer space is the principle of nonappropriation under Article II of the Outer Space Treaty.[387] It states:

> 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.

This restriction is a logical extension of the fundamental principles pronounced in Article I. For if outer space is to serve the common interest of all of mankind and be free for use and exploration, it cannot be appropriated and, thereby, subjected to exclusive claims of sovereignty by select States.[388] Together, the principles contained in Articles I and II of the Outer Space Treaty establish outer space as a *res communis* under international law;[389] that is to say, "space is owned by no one but is free for use by everyone."[390]

However, the scope of applicability of the nonappropriation principle has at times been disputed, due to the lack of a precise boundary between air space, which is subject to the sovereignty of the subjacent State,[391] and outer space, which under Article II of the Outer Space Treaty is not.[392] To resolve this ambiguity, some (known as "spacialists")

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[387] SPACE ACTIVITIES & INT'L LAW, *supra* note 381, at 275.

[388] *See id.* ("Appropriation is incompatible with both of these principles."); *but see* Declaration of the First Meeting of Equatorial Countries, Dec. 3 1976 (the Bogota Declaration), *reprinted in* 2 MANUAL ON SPACE LAW 383 (Nandasiri Jasentuliyana & Roy S.K. Lee eds., 1979) (under this declaration, the eight equatorial states of Brazil, Columbia, Congo, Ecuador, Indonesia, Kenya, Uganda and Zaire, claim sovereignty over the portions of the geostationary satellite orbit above their territory).

[389] *See* Carl Q. Christol, *Article 2 of the 1967 Principles Treaty Revisited*, 9 ANNALS OF AIR & SPACE L. 217, 217-21 (1984).

[390] Moenter, *supra* note 295, at 1039.

[391] *See* Convention on International Civil Aviation, Dec. 7, 1944, art. 1, 61 Stat. 1180, 3 Bevans 944, 15 U.N.T.S. 295, 1944 U.S.T. LEXIS 146 ("[E]very State has complete and exclusive sovereignty over the air space above its territory.").

[392] *See* Jakhu, *supra* note 373, at 334 (discussing the claim made by equatorial states in the Bogota Declaration (*see supra* note 388) that, in the absence of a lower boundary of outer space, their sovereignty extends to the part of the GSO located over their respective territories).

have argued for the establishment of a legal boundary delineating national air space from outer space.[393] Nevertheless, throughout the space age, the prevailing view has been that there is no real need to establish any boundary between air space and outer space, since the absence of such a boundary has, thus far, not created any major problems, and the utmost freedom of action in the peaceful exploration and use of outer space is both necessary and desirable.[394] According to this latter school of thought, activities in the *aerospace continuum* (made up of air space and outer space) should be governed according to their nature; *i.e.*, aeronautical activities by aeronautical law and space activities by aerospace law.[395] Ergo, advocates of this second approach are referred to as "functionalists."[396]

The dominance of the functionalist approach at the U.N. has, at least to date, forestalled efforts to fix a definite, though seemingly arbitrary boundary between air space and outer space.[397] At the same time, through state practice, the functionalist approach has led to the establishment of "functional" criteria for defining "outer space" and "space objects" which, according to Professor Cheng, can be said to reflect current

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[393] *See* Definition and delimitation of outer space. U.N. Doc. A/AC.105/484, at 22 (1991), *discussed in* REIJNEN, *supra* note 200, at 98; *see also* Approach to the solution of the problems of the delimitation of air space and outer space. U.N. Doc. A/AC.105/C.2/L.121 (1979) (reissued version of Mar. 28, 1979) (working paper prepared by the Soviet Union which defined outer space as the region beyond an altitude of 100 kilometers above sea level), *discussed in* BIN CHENG, *The Legal Regime of Airspace and Outer Space: the Boundary Problem*, 5 ANNALS OF AIR & SPACE L. 323 (1980), *reprinted in* STUDIES IN SPACE LAW, *supra* note 214, at 425, *passim*.

[394] REIJNEN, *supra* note 200, at 98; *see also* CHENG, *supra* note 393, *in* STUDIES IN SPACE LAW, *supra* note 214, at 426-28.

[395] Jakhu, *supra* note 373, at 337-38.

[396] *See Id.*; *see also* BIN CHENG, *International Responsibility and Liability for Launch Activities*, 20 AIR & SPACE L. 297 (1995), *reprinted in* STUDIES IN SPACE LAW, *supra* note 214, at 598, 615.

[397] *See* CHENG, *supra* note 393, *in* STUDIES IN SPACE LAW, *supra* note 214, at 426-27; *see also* Jakhu, *supra* note 373, at 38-39 (discussing the various bases proposed for establishing the height of a boundary between air space and outer space).

international law.[398] First, since no State has ever claimed that a satellite orbiting the earth was infringing its national airspace, "it is possible to say that in international law outer space begins at least from the height above the earth of the lowest perigee of any existing or past artificial satellite that has orbited the earth without encountering any valid protest."[399] Secondly, for purposes of international law, a "space object" can be defined as "an object designed and intended to penetrate into outer space [as previously defined]... whether or not in any orbit, and for whatever length of time"—correspondingly, "[o]bjects which are not designed and intended to enter outer space and which do not penetrate into outer space are not space objects."[400]

Article III. The last of the aforementioned "basic legal elements of space law" established by the Outer Space Treaty is embodied in Article III. As mentioned, Article III makes the general principles of international law and the United Nations Charter applicable to outer space.[401] However, because certain rules of international law and/or provisions of the Charter cannot, by definition, apply to outer space, or are of a nature of *lex specialis* for certain environments, Article III is not "an automatic extension to outer space and celestial bodies of 'international law, including the Charter of the United Nations' *in toto*."[402] Notably, there are those that have gone further and argued that since the Outer Space Treaty does not enumerate exactly which "general principles"

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[398] *See* CHENG, *supra* note 396, *in* STUDIES IN SPACE LAW, *supra* note 214, at 615.

[399] *Id.*

[400] *Id.*

[401] *See supra* p. 44 and note 200; *see also* MANFRED LACHS, THE LAW OF OUTER SPACE: AN EXPERIENCE IN CONTEMPORARY LAW MAKING 14 (Sijthoff Leiden 1972) ("[Article III] obviously implies that in all their activities in regard to and within outer space and on celestial bodies States are subject to the rule of international law.").

[402] LACHS, *supra* note 401, at 15.

apply to outer space, certain fundamental provisions of international law, specifically those concerning the use of force in self-defense, cannot and should not be made applicable to outer space, on the basis that they are inconsistent with the principles of the Outer Space Treaty itself.[403] Yet this is by no means a mainstream view. As was discussed previously, it is generally accepted that Article 2(4) of the Charter applies in outer space, making it unlawful for a State to interfere in a hostile manner with the space assets of another State,[404] and that the exception to the bar on the use of force under Article 51 likewise applies in space, so that a State can legally use force to defend itself against such hostile actions should they nevertheless occur.[405]

Article IV. In addition to the basic elements of space law established in the first three articles of the Outer Space Treaty, Article IV of the treaty "contain[s] the first principles of international law explicit relating to military activities in space."[406] It reads as follows:

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

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[403] Chandrasekharan, *supra* note 201, at 63.

[404] *See* sources cited *supra* note 210.

[405] *See* sources cited *supra* note 202.

[406] Vlasic *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 396.

On its face, paragraph 1 of Article IV appears to bring to fruition the denuclearization of outer space that began with the 1963 Limited Test Ban Treaty—it imposes a general ban on positioning nuclear weapons and other weapons of mass destruction in orbit around the earth, on celestial bodies, or in outer space. From the outset, it is clear that since paragraph 1 of Article IV refers only to weapons of mass destruction, it implicitly permits the presence of other types of weapons in outer space.[407] Additionally, the provision was deliberately worded to permit the earthly use of intercontinental ballistic missiles (ICBMs), which incidentally pass through space, due to the fact that the national defense systems of the two major space powers were both based upon ICBMs.[408] However, the fact that paragraph 1 refers only to "celestial bodies" and "outer space" and not to "outer space, the moon, and other celestial bodies," as in other provisions of the treaty, suggests that the Moon is similarly excluded from its application.[409] While it is unclear whether exclusion of the Moon was intentional or merely poor draftsmanship,[410]

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[407] SPACE ACTIVITIES & INT'L LAW, *supra* note 381, at 292 (noting that most publicists espouse this view); *see, e.g.*, BIN CHENG, *The Commercial Development of Space: the Need for New Treaties* (Adapted from a keynote address delivered at a Seminar on The Cape York Space Port: The Legal and Business Issues, Aug. 17, 1990), 19 J. SPACE L. 17 (1991), *reprinted in* STUDIES IN SPACE LAW, *supra* note 214, at 641, 651; CHRISTOL, *supra* note 198, at 26; Jasentuliyana, *supra* note 408, *in* PEACEFUL PURPOSES, *supra* note 205, at 127; REIJNEN, *supra* note 200, at 98; *cf.* Vlasic *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 397 ("If one chooses to ignore the controversy concerning the 'true' meaning of 'peaceful' in the Outer Space Treaty, it is safe to conclude that the treaty permits the deployment in outer space of anti-satellite weapons, directed energy weapons, or any other kind of weapon, as long as these weapons are not in conflict with the provisions of Article IV of the Outer Space Treaty or some other agreement.").

[408] *See* Raju, *supra* note 358, *in* PEACEFUL PURPOSES, *supra* note 205, at 91; *and* Ivan A. Vlasic, *The Legal Aspects of Peaceful and Non-Peaceful Uses of Outer Space*, in PEACEFUL AND NON-PEACEFUL USES OF SPACE 37, 42 n. 13 (B. Jasani ed., 1991) (citing A. Chayes, et al., *Space Weapons: the Legal Context*, *in* WEAPONS IN SPACE, No. 7, at 193-97) [hereinafter PEACEFUL USES OF SPACE]; *see also* Jasentuliyana, The Moon Treaty, *in* PEACEFUL PURPOSES, *supra* note 205, at 121, 126 ("[A]ny object carrying [nuclear] weapons in sub-orbital flights such as ICBMs is not included within the meaning of paragraph 1 since the phrase "place in orbit" means that an object would have to complete a full orbit around the Earth in order to be covered by the Treaty.").

[409] Jasentuliyana, *supra* note 408, *in* PEACEFUL PURPOSES, *supra* note 205, at 126.

[410] *Compare Id.* (discussing drafting history of Article IV, paragraph 1, which suggests that the exclusion of the Moon from the provision was intentional); *and* Vlasic *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 397 (referring to the omission of the moon from Article IV as an "oversight"); *also* CHRISTOL, *supra* note 198, at 20 ("[I]n most instances the inconsistent and non-uniform use of 'outer-space,' 'the moon,' and 'other celestial bodies' can be laid to time constraints and other exigencies surrounding the drafting process."). The view of U.S. Ambassador to the United Nations, Arthur Goldberg, was that the prohibition in Article IV, paragraph 1, extended to "the Moon or any other celestial body." CHRISTOL, *supra*, at 21.

the question of whether weapons of mass destruction are banned from the Moon, as well as from trajectories to and around it, is nonetheless left open to interpretation.[411]

Paragraph 2 of Article 4, on the other hand, establishes the principle that "the moon and other celestial bodies" shall be used "exclusively for peaceful purposes."[412] Here again, by exclusion, this restriction does not apply to the whole of "outer space, the moon, and other celestial bodies."[413] In this instance, however, the omission of "outer space" from the second paragraph of Article IV was arguably intentional and designed to permit States to be able to carry out certain space activities for military purposes, such as the use of reconnaissance satellites.[414] This interpretation has strong support, not only because the text of provision was agreed upon in the face of concerns raised by some delegates during negotiations that outer space would be excluded from its coverage,[415]

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[411] *See* Jasentuliyana, *supra* note 408, *in* PEACEFUL PURPOSES, *supra* note 205, at 127 ("It is [likewise] not clear from its language whether paragraph 1 applies to trajectories to and orbits around celestial bodies."); *but see* Vlasic *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 397 ("[I]t should not be difficult to prove, relying on the overall spirit of the Treaty, that the prohibition on these weapons applies also to the moon and other celestial bodies.").

[412] Jasentuliyana, *supra* note 408, *in* PEACEFUL PURPOSES, *supra* note 205, at 127.

[413] *See Id.*; *see also* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 651 ("The only provision in the 1967 Treaty which limits the use of any part of outer space to 'exclusively... peaceful purposes' is to be found in the second paragraph of Article IV, but, in very explicit terms, it applies only to 'the moon and other celestial bodies.'"); Vlasic, *supra* note 408, at 42 ("[T]he 'peaceful purposes' clause applies to the moon and other celestial bodies but not to 'outer space.'"); J.E.S. FAWCETT, OUTER SPACE: NEW CHALLENGES TO LAW AND POLICY 15 (Clarendon Press 1984) ("[T]here is no provision that outer space shall be used exclusively for peaceful purposes."); CHRISTOL, *supra* note 198, at 25 (Art. IV, para. 2, does not require use of outer space "per se" for exclusively peaceful purposes); SPACE ACTIVITIES & INT'L LAW, *supra* note 381, at 291 ("[Only] the moon and other celestial bodies were made subject to greater restrictions on military activity pursuant to article IV, paragraph 2."); Raju, *supra* note 358, *in* PEACEFUL PURPOSES, *supra* note 205, at 91 ("Under the second paragraph of Article IV, the states parties to the 1967 treaty are under an obligation to use the Moon and other celestial bodies exclusively for peaceful purposes."); *and* ZHUKOV, *supra* note 202, at 92-93 (the 1967 Treaty does not provide for "the total demilitarization of outer space" as "just the Moon and other celestial bodies" are required "to be used for peaceful purposes *exclusively*").

[414] *See* CHRISTOL, *supra* note 198, at 24-25; *and* Raju, *supra* note 358, *in* PEACEFUL PURPOSES, *supra* note 205, at 91.

[415] *See* CHRISTOL, *supra* note 198, at 24; Jasentuliyana, *supra* note 408, *in* PEACEFUL PURPOSES, *supra* note 205, at 127; *and* Raju, *supra* note 358, *in* PEACEFUL PURPOSES, *supra* note 205, at 92.

but also because, at the time the treaty was entered into, the fact that both the United States and the Soviet Union had already launched satellites into space for military purposes was well known.[416]

While the foregoing theory reflects the view most widely held among States and scholars,[417] there is a second school of thought which takes a broader approach to interpretation of the Outer Space Treaty. "[L]ooking at other pertinent clauses [e.g., the Outer Space Treaty's Preamble and the language of Articles IX and XI], referenced U.N General Assembly resolutions, the U.N. Charter, and international law," this latter theory "concludes that all 'outer space' must be used for peaceful purposes."[418] Under this broad, contextual interpretation, the general maxims found in the U.N. Charter, the Outer Space Treaty, and elsewhere in international law, such as "'common interest of all mankind,' the 'benefit of all peoples,' 'furthering the purposes of the U.N.,' 'use in accordance with international law,' 'maintaining international peace and security,' promoting international cooperation' and 'having regard for the interests of other States,'" also "define the meaning and applicability of the phrase 'peaceful purposes.'"[419]

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[416] *Id.* Before 1961, "[w]ith the exception of the highly classified CIA involvement, the existence of a US satellite reconnaissance program had been openly admitted in Congress." STARES, *supra* note 6, at 62. The Soviet Union, on the other hand, "used to controlling the media—at least at home—and distorting facts, simply denied that it ever engaged in such internationally 'illegal' activity as spying on anyone, especially from outer space, even though it was obviously indulging in it." CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 650; *see also* STARES, *supra* note 6, at 148-49 ("[S]tatements of the significance of military space activities in Soviet planning... emerged on a number of occasions.").

[417] Morgan, *supra* note 208, at 300; *see* sources cited *supra* note 413.

[418] Morgan, *supra* note 208, at 299; *accord.* J.N. SINGH, OUTER SPACE, OUTER SEA, OUTER LAND AND INTERNATIONAL LAW 85-86 (Harnam Publ'ns 1987) ("Outer space, minus celestial bodies, by no justification, can legally be used for purposes other that peaceful... The obligation to explore and use outer space for peaceful purposes exists even independent of the provisions of the Outer Space Treaty."). For a breakdown of U.N. General Assembly Resolutions, Charter provisions, and other sources of international law, including the portions of the Outer Space Treaty Preamble and other articles of the treaty that support this interpretation, *see* Morgan, *supra*, at 301-302 nn.338-40.

[419] Morgan, *supra* note 208, at 302 (footnotes omitted); *see* SINGH, *supra* note 418, at 80-88; *see also* Marko G. Markoff, *Disarmament and "Peaceful Purposes" Provisions in the 1967 Outer Space Treaty*, 4 J. SPACE L. 3, 10-11 (1976) (suggesting that the principle of non-military use of space could arguably be advanced as part and parcel of the "common interest" principle), *cited in* Morgan, *supra*, at 302 n.341.

Of course, under the more restrictive interpretation of the Outer Space Treaty the meaning of "peaceful purposes" in Article IV, paragraph 2, is less significant, since strictly interpreted the provision simply does not apply to outer space. What's more, dating back to the time the treaty was adopted, military activities were not carried out on the Moon and one of the only practical aspects of using a celestial body for military purposes, i.e., the testing of nuclear weapons, was already prohibited by the 1963 Limited-Test-Ban Treaty.[420] However, the adjective "peaceful" in relation to outer space activities is encountered in virtually all U.N. Documents devoted to outer space matters as well as in space law treaties, including most recently the 1998 IGA for the International Space Station, which entered into force in 2001.[421] Once again, the 1998 IGA states that the ISS shall be utilized "for peaceful purposes, in accordance with international law;"[422] thus, the meaning of the phrase "peaceful purposes" is directly relevant to ISS activities. This subject is taken up in subpart B, *infra*.

Articles IX, X, and XI. Resolving international problems through international cooperation constitutes one of the primary objectives of the United Nations.[423] In fact, the Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among Member States in Accordance with the U.N. Charter (Resolution 2625), which was unanimously confirmed by all U.N. member States, proclaims cooperation between States to be an international legal obligation.[424] While the

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[420] Markoff, *supra* note 419, at 5.

[421] Vlasic, *supra* note 408, at 37-38.

[422] 1998 IGA, *supra* note 294, art. 1, para. 1; *see supra* p. 67.

[423] U.N. CHARTER, art. 1, para. 3.

[424] Declaration on Principles of International Law Concerning Friendly Relations and Cooperation Among Member States in Accordance with the U.N. Charter, G.A. Res. 2625, U.N. GAOR, 25th Sess., Supp. No. 28, at 121, U.N. Doc. A/5217 (1970).

"obligation of cooperation" set down in Resolution 2625 pertains exclusively to the U.N. Charter, the principle of international cooperation between States is also made fully applicable to outer space activities by the Outer Space Treaty.[425] Among the provisions of the treaty that expressly promote the principle of international cooperation in the exploration and use of outer space are: Article IX, which emphasizes that States are to be guided by the principle of cooperation and mutual assistance in conducting outer space activities; Article X, which requires States launching objects into space to consider, on the basis of equality, requests by other States to observe the flight of such space objects; and Article XI, which requires that States notify the Secretary-General of the United Nations, and the international community generally, of the nature, conduct, locations, and results of their space activities.[426] These provisions have led to the establishment of official and unofficial tracking stations in almost all States, which together make up a global network of data registration that is available for use by all States and institutions that wish to utilize such observational data.[427]

Article XII. To help ensure that the demilitarization provisions in Article IV are observed, Article XII of the Outer Space Treaty provides:

> All stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other State Parties to the Treaty on the basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

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[425] SPACE ACTIVITIES & INT'L LAW, *supra* note 381, at 348–49 (citing Outer Space Treaty, *supra* note 23, art. I, para. 1).

[426] *Id.*, at 350-51.

[427] REIJNEN, *supra* note 200, at 134.

While the term "reciprocity" perhaps suggests "an interchange of privileges," such an interpretation must be rejected, since it would mean that a State could then legitimately refuse visits simply by making known its intention not to avail itself of this provision, and, thereby, nullify the legal obligation to allow free access.[428] Rather, "reciprocity" in this instance refers to the right of a State to refuse access to its installations to any State that does not comply with its obligation to allow visits to its installations.[429] In fact, the drafting history of the provision reveals that the agreement which led to the inclusion of the words "on the basis of reciprocity" in Article XII was expressly conditioned on this latter interpretation being universally accepted.[430] As in the case of Article IV, paragraph 2, the right to inspection of stations, installations, equipment and space vehicles under Article XII of the Outer Space Treaty applies only to the moon and other celestial bodies, and not to outer space.[431]

Article XIII. Finally, as the last substantive provision of the Outer Space Treaty, Article XIII makes clear the fact that the treaty applies to all activities of State Parties in the exploration and use of outer space, whether carried out individually or, as in the case of the International Space Station, jointly with other States.

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[428] BIN CHENG, *The 1967 Outer Space Treaty*, 95 JOURNAL DU DROIT INTERNATIONAL 532 (1968), *reprinted in* STUDIES IN SPACE LAW, *supra* note 214, at 215, 249; *see also* REUNEN, *supra* note 200, at 139.

[429] *Id.* Such a right is implicit under principles of international law. *See* RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 335 (1986); *see also* Vienna Convention on the Law of Treaties, May 23, 1969, art. 60(1) & (2), 1155 U.N.T.S. 331 (entered into force Jan. 27, 1980) (although the United States does not adhere to the Vienna Convention, the U.S. Department of State has stated that it regards particular articles as codifying international law).

[430] "The United States... [sought] to preserve the effective operation of the free access clause... [and thus] made it clear... that neither [the advance notice] requirement or the condition of reciprocity implied any 'veto right.'" CHENG, *supra* note 428, *in* STUDIES IN SPACE LAW, *supra* note 214, at 249-50.

[431] *Id.*, at 250.

Certain of the other more significant articles of the Outer Space Treaty (OST) were incorporated and expanded upon in subsequent treaties governing space activities. For example, OST Article V in the 1968 Rescue Agreement, the "responsibility and liability clauses" of OST Articles VI and VII in the 1972 Liability Convention, and OST Article VIII in the 1976 Registration Convention. These provisions of the Outer Space Treaty are not to be ignored; rather, they are discussed below within the context of the treaties that they engendered.

*c. **Rescue Agreement (1968)***—Article V of the Outer Space Treaty bestows on astronauts a unique status as "envoys of mankind"[432]—a lofty expression, which to some suggests that astronauts enjoy a special immunity from some forms of normal jurisdiction.[433] The basic principles laid down in OST Article V provide for: "(1) assistance to astronauts in the event of accident, distress, or emergency landing; (2) their safe and prompt return; and (3) mutual assistance between astronauts of different States in outer space and on celestial bodies."[434] The 1968 Rescue Agreement was set up to develop and give further expression to the duties encompassed in OST Article V.[435] The agreement is essentially a one-sided undertaking by the Contracting Parties to notify the launching authority and the Secretary-General of the United Nations if an astronaut or spacecraft comes down within their territory.[436] Contracting Parties further assume an

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[432] Outer Space Treaty, *supra* note 22, art. V, para. 1.

[433] REIJNEN, *supra* note 200, at 107; *but see* CHENG, *supra* note 357, at 417 (noting that during negotiations of the Outer Space Treaty, the representative from Hungary put forward the view that "as 'envoys' astronauts should enjoy jurisdictional immunity," however, the Soviet representative indicated that, to the contrary, the expression "envoys of mankind" merely "served to justify the legal obligations" in the rest of the article and had no special legal significance.").

[434] LACHS, *supra* note 401, at 79.

[435] REIJNEN, *supra* note 200, at 157.

[436] Rescue Agreement, *supra* note 24, art. 1 & art. 5, para. 1.

affirmative duty to search for, rescue, and return the astronaut to the launching State unconditionally, and at no expense to the launching authority.[437] The duty to recover downed spacecraft, on the other hand, is contingent on a request from the launching authority, and, even then, the State of landing has the option of returning the object or simply holding it "at the disposal of representatives of the launching authority."[438] In contrast to the recovery and return of astronauts, expenses incurred by the landing State in the recovery and return of space objects are to be borne by the launching authority.[439]

d. Liability Convention (1972)—Articles VI, VII, and IX of the Outer Space Treaty are linked through their common concern for the safety of activities carried on in outer space.[440] OST Article VI represents the first step in the regulation of responsibility in the space environment.[441] Pursuant to its provisions, States bear international responsibility for any activity in outer space, irrespective of whether it is carried out by governmental or non-governmental entities. This principle serves to remove the question of imputability and, thereby, helps ensure that all activities in outer space are carried out in accordance with the relevant rules of international law.[442] Article VII focuses on one significant aspect of responsibility; *i.e.*, liability for damage caused by space objects.[443]

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[437] *Id.*, art. 2; *see* CHENG, *supra* note 357, at 419 ("[T]he launching authority... apparently is not responsible for the expenses incurred by other contracting States in rescuing and returning astronauts.").

[438] Rescue Agreement, *supra* note 24, art. 5, para. 2 and 3.

[439] *Id.*, art. 5, para. 5.

[440] CHRISTOL, *supra* note 198, at 89.

[441] LACHS, *supra* note 401, at 121.

[442] *Id.*

[443] *See* CHENG, *supra* note 396, *in* STUDIES IN SPACE LAW, *supra* note 214, at 603-4 ("Liability represents merely one aspect of responsibility."); *see also* Bin Cheng, *Article VI of the 1967 Space Treaty Revisited: "International Responsibility," "National Activities," and "the Appropriate State,"* 26 J. SPACE L. 7, 9

Under Article VII, each State from whose territory or facility a space object is launched, as well as each State that actually launches or procures the launching of an object into space, is internationally liable for damage caused by the object, whether such damage occurs on Earth, in outer space, or on the moon or other celestial body. Additionally, under OST Article IX contracting States are obliged to avoid any space activity that would cause harmful contamination or adverse changes to the Earth's environment, and consult with other States before taking any action which could potentially interfere with their peaceful use of outer space, the Moon, or other celestial bodies.

The Liability Convention's principle functions are to specify the conditions under which liability is to be assessed and compensation paid for damage caused by space objects, and to formalize a process whereby claims may be considered and determined.[444] Notably, there are no territorial or geographic limits on the application of the Liability Convention, and under Article II of the agreement, the "launching state"[445] is absolutely liable for "damage caused by its space objects on the surface of the Earth or to aircraft in flight"—elsewhere than on the surface of the Earth, however, liability for damage caused by space objects is based on fault.[446]

(1998) ("Responsibility means answerability, answerability for one's acts and omissions, for their being in conformity with whichever system of norms... may be applicable.... Responsibility... [does] not necessarily involve payment of compensation, especially when no damage has been caused. [but, rather, can take the form of] for example assurances of nonrepetition. The term liability is used to specifically denote the obligation to bear the consequences of a breach of legal duty, in particular the obligation to make reparation for any damaged caused.... [R]espsonsibility is a broader concept than liability.").

[444] CHRISTOL, *supra* note 198, at 91.

[445] *See* Liability Convention, *supra* note 25, art. I ("The term 'launching State' means: (i) a State which launches or procures the launching of a space object; (ii) a State from whose territory or facility a space object is launched.").

[446] Liability Convention, *supra* note 25, art. III.

The 1998 IGA contains a cross-waiver of liability,[447] which requires that ISS Partner States waive all claims against other Partner States, their related entities, or employees of other Partner States or their related entities, for damage arising out of "Protected Space Operations."[448] However, the Liability Convention still applies to situations not specifically covered by the ISS cross-waiver.[449] Accordingly, in the case of a cooperative launch of one of the Space Station elements,[450] the Liability Convention subjects the States concerned to joint and several liability for any damage that results from the launch of the element into outer space.[451]

*e. **Registration Convention (1976)***—The first reference to registration of an object launched into space was in Article VIII of the Outer Space Treaty. OST Article VIII provides that a State on whose national registry a "space object" is carried retains "jurisdiction and over any personnel thereof, while in outer space or on a celestial body,"[452] and, thus establishes registration as the basis for determining the nationality of a space object. The requirement that each spacecraft have a nationality was generally based on the maritime concept that "when a states gives to a ship the right to use its flag,

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[447] 1998 IGA, *supra* note 294, art. 16.

[448] *Id.*, art. 16.3(a).

[449] *Id.*, art. 17, para. 1. The ISS cross-waiver of liability only applies to claims for damage arising out of "Protected Space Operations," as defined in Article 16.2(f). *See also* Moenter, *supra* note 295, at 1047-48 (describing the cross waiver of liability of the 1998 IGA).

[450] *See* 1998 IGA, *supra* note 294, art. 12(2).

[451] Liability Convention, *supra* note 25, art. V; *see also* 1998 IGA, *supra* note 294, art. 17.3 (Partners may conclude separate agreements regarding the apportionment of any joint and several liability arising out of the Liability Convention).

[452] "The term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof." Registration Convention, *supra* note 26, art. I. For purposes of international law, a "space object" can be defined as "an object designed and intended to penetrate into outer space." *See supra* pp. 82-83 and note 400.

such state assumes certain international responsibilities for the good conduct of that ship... and at the same time acts as the protector of the ship to enforce its international rights."[453] The Registration Convention, thus, compels States to acknowledge their responsibility for space objects by requiring that any State launching an object into orbit or beyond, register the object in a registry maintained by the launching State.[454] The launching State is also obliged to furnish certain information about each space object to the Secretary-General of the United Nations for recordation in a central registry of objects launched into outer space. However, although the Registration Convention entered into force in 1976 and today has more than 50 signatories presumably committed to the principle of registering space objects with the United Nations, States nevertheless often delay registering objects launched into space or fail to register them altogether.[455]

*f. **The Moon Treaty (1979)***—Aside from being dubbed "the last of the 'first generation' of space treaties,"[456] the Moon Treaty holds the distinction of being the first treaty to give effect in international law to the concept of "the common heritage of mankind."[457] As such, it seeks to establish the Moon and other celestial bodies as a new type of territory under international law; *i.e.*, "the common heritage of mankind," in which national appropriation in a territorial sense is prohibited (*res extra commercium*),

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[453] McDOUGAL, ET AL., *supra* note 214, at 585-586.

[454] Registration Convention, *supra* note 26, art. II, para. 1.

[455] Moenter, *supra* note 295, at 1044.

[456] Reynolds, *supra* note, at 115.

[457] BIN CHENG, *The Moon Treaty; Agreement Governing the Activities of States on the Moon and Other Celestial Bodies within the Solar System other than Earth*, 33 CLP 213 (1980), *reprinted in* STUDIES IN SPACE LAW, *supra* note 214, at 357, 357. According to Cheng, the Moon Treaty is also perhaps the most poorly drafted of the five treaties that have emanated from COPUOS. CHENG, *supra*, at 374.

and the fruits and resources of the territory are the property of mankind at large.[458] In this regard, however, the Moon Treaty "adds little, if anything, to the provisions of the Outer Space Treaty relating to military space activities."[459] Furthermore, although in force, the Moon Treaty has garnished only a handful of ratifications, and not one by a significant space power, and is, therefore, of no real significance in establishing international space law.[460]

In the end, clearly the most that can be said is that the "*corpus juris spatialis*" partially demilitarizes outer space by, *inter alia*, (1) banning the use of nuclear weapons anywhere in outer space,[461] (2) prohibiting the stationing weapons of mass destruction in orbit around the earth, moon or any other celestial body, or otherwise installing such weapons on the moon or any other celestial body,[462] (3) restricting use of the moon and other celestial bodies for "exclusively peaceful purposes,"[463] and (4) expressly forbidding

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[458] *Id.*, at 357 (noting that, heretofore, international law divided the world into three parts: "(i) national territory, (ii) *res nullis, i.e.*, areas which may be acquired as national territory, and (iii) *res extra commercium, i.e.*, areas which by law are not susceptible to national appropriation); *compare* CHRISTOL, *supra* note 198, at 318-19 ("[T]he [Moon] Treaty allows for exploitation by both public and private legal persons of natural resources that have been reduced to possession by the act of removing them from their original in place location. Once such materials and resources are no longer in place the possessor may maintain proprietary rights."). For discussion of the provisions in the Moon Treaty which, "bundled together," define the territorial status labeled "the common heritage of mankind," see CHENG, *supra*, at 367-74.

[459] Vlasic, *supra* note 408, at 43; *cf.* Vlasic *in* PERSPECTIVES ON INT'L L., *supra* note 200, at 397 (noting that the Moon Treaty (art. 1 and 3) corrects an omission in OST Article IV(1), by expressly prohibiting the stationing of weapons of mass destruction in orbits around the Moon and other celestial bodies or trajectories to or around them); *and generally* BIN CHENG, Definitional Issues in Space Law: the "Peaceful Use" of Outer Space, including the Moon and other Celestial Bodies (Adapted from the paper *The Status of Outer Space and Relevant Issues: Delimitation of Outer Space and Definitions of "Peaceful Use,"* 11 J. SPACE L. 89 (1983)), *in* STUDIES IN SPACE LAW, *supra* note 214, at 513, 532-34 (discussing the provisions of the Moon Treaty related to the military use of space).

[460] *See* sources cited *supra* note 27 and 459.

[461] Limited-Test-Ban Treaty, *supra* note 22, art. I.

[462] Outer Space Treaty, *supra* note 23, art IV, para. 1.

[463] Outer Space Treaty, *supra* note 23, art IV, para. 2.

military maneuvers, the testing of weapons, or the establishment of military bases, installations or fortifications on celestial bodies.[464] However, while outer space plainly remains open to military use,[465] the 1998 IGA itself expressly restricts use of the International Space Station to "peaceful purposes."[466] Therefore, the question that remains is what are the legal obligations of the ISS Partners concerning use of Space Station Alpha for "peaceful purposes."

B. "Peaceful Purposes" and the Military Use of the ISS

1. Meaning of "Peaceful Purposes"

While the adjective "peaceful" can be found in virtually all U.N. documents relating to outer space, the treaties that make up international space law fail to provide an authoritative definition of the term.[467] The phrase "peaceful purposes" as used in the Outer Space Treaty was originally adapted from the 1959 Antarctic Treaty,[468] which, to a considerable extent, served as the model for the 1967 treaty.[469] Article I of the Antarctic Treaty reads as follows:

> 1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, as well as the testing of any type of weapons.

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[464] *Id.* For a comprehensive summary of military activities prohibited and permitted by treaty or customary international law, *see* Vlasic, *supra* note 408, at 47-50.

[465] Outer Space Treaty, *supra* note 23, art IV, para. 2; *see also* sources cited *supra* note 413.

[466] 1998 IGA, *supra* note 294, art. 1, para. 1.

[467] Vlasic, *supra* note 408, at 37; *see also* Bhupendra Jasani, *Introduction* to PEACEFUL USES OF SPACE, *supra* note 408, at 1, 7.

[468] Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 72, 1959 U.S.T. LEXIS 420 (ratified by the United States on Aug. 18, 1960; entered into force on Jun. 23, 1961).

[469] REIJNEN, *supra* note 200, at 88.

2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other purpose.

Because the Antarctic Treaty is credited with the "demilitarization" of the Antarctic,[470] it is often cited as the most authoritative aid for the interpretation of the term "peaceful" in the outer space context,[471] particularly by those who seek to equate "peaceful," as it pertains to outer space, with "non-military."[472] However, in view of the fact that the Outer Space Treaty permits certain military activities in those areas reserved "exclusively for peaceful purposes" (i.e., the moon and other celestial bodies),[473] and, at the same time, makes international law (including the right of self-defense) applicable to those same extraterrestrial regions,[474] it is doubtful that the drafters of the treaty intended to attach such a definition to the term "peaceful."[475] Furthermore, the practice of States at the time of the treaty's adoption and since plainly belies such an interpretation.[476]

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[470] *See* Vlasic, *supra* note 408, at 41 n.12; *see also* Aldo A. Cocca, Historical Precedents for Demilitarization, in PEACEFUL PURPOSES, *supra* note 205, at 29, 41–42.

[471] Vlasic, *supra* note 408, at 41.

[472] *See* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 650-51.

[473] Outer Space Treaty, *supra* note 23, art. IV, para. 2.

[474] *Id.*, art. III; *see also supra* pp. 44–47.

[475] *See* Jasentuliyana, *supra* note 408, *in* PEACEFUL PURPOSES, *supra* note 205, at 128; *and* Stephen Gorove, Article IV of the Outer Space Treaty and Some Alternatives for Further Arms Control, *in* PEACEFUL PURPOSES, *supra* note 205, at 77, 82 (asserting that the drafters intended to give "peaceful" a distinct meaning within the context of the treaty itself); *compare* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 650 (arguing that Article I of the Antarctic Treaty, in which the word "peaceful" is used in contradistinction to "military," was "very much on the minds of those who drew up the 1967 Space Treaty"). In this regard, the argument that the Outer Space Treaty prohibits all military activities on the Moon and other celestial bodies, *except* those expressly permitted by the treaty (*see e.g.*, LACHS, *supra* note 401, at 106-08), would appear to gain support from the fact that at the time the treaty was adopted, military activities were not being carried out in these areas.

[476] *See* Vlasic, *supra* note 408, at 42, 45. Vlasic notes that by the time negotiations on the Outer Space Treaty (OST) began, the United States and Soviet Union were both "using outer space for a variety of military purposes" (*e.g.*, surveillance, communications, navigation, etc.), which the United States openly regarded as "peaceful." While the Soviet Union publicly opposed these activities, it secretly engaged in them as well, and thus acquiesced to the U.S. interpretation. Thus, Vlasic states: "With only the Soviet Union and the United States active in outer space before and for sometime after entry into force of the OST, the 'practice' of even one space power, clearly a 'specially affected' state, carried substantial weight in law. All the more so when supported by several other states with developing space capabilities."

For its part, the United States has, from the very beginning of the space age up to the present day, maintained the official position that "peaceful" means "non-aggressive" and not "non-military."[477] Indeed, while some of the very earliest U.S. statements on the international control of space activities appear to support the proposition that outer space should be used exclusively for *nonmilitary* purposes,[478] by the spring of 1958 (less than a year after the launch of Sputnik I), the anticipation of the availability of reconnaissance satellites caused a decisive shift in U.S. policy towards the view that space could and should be used for "peaceful," rather than "nonmilitary" purposes.[479] Thus, the 1958 Space Act (the statutory basis for the national space program)[480] states that U.S. space activities are for "peaceful purposes," but also provides that these activities shall contribute to "national defense."[481]

Once again, a main goal of U.S. space policy during the pre-outer space treaty era (1957-1967) was to gain international recognition of the legality reconnaissance satellites, while simultaneously discouraging military space activities that threatened these

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[477] CHENG, *supra* note 459, *in* STUDIES IN SPACE LAW, *supra* note 214, at 515; *see also* Morgan, *supra* note 208, at 304 nn.353-55.

[478] *E.g.*, National Security Council Action No. 1553 (Nov. 21, 1956) (outlining a U.S. disarmament proposal to prohibit "the production of objects designed for travel in or projection though outer space for military purposes," which would have ultimately banned ICBMs as well as military satellites), *quoted in* STARES, *supra* note 6, at 54 ("It is difficult to assess how sincere Eisenhower and his administration were with these proposals."); *see also* Vlasic, *supra* note 408, at 39.

[479] *See* NAT'L SECURITY COUNCIL, PRELIMINARY U.S. POLICY IN OUTER SPACE (NSC 5814/1) (Jun. 20, 1958), *reprinted in* ORGANIZING FOR EXPLORATION, *supra* note 7; *quoted in* STARES, *supra* note 6, at 55; *cf.* Vlasic, *supra* note 408, at 40 ("[A]s early as 1958-59, the legal position of the United States with respect to the meaning of the phrase "peaceful uses" became crystallized along lines quite dissimilar from the initial rhetoric.").

[480] National Aeronautics and Space Act of 1958, Pub. L. No. 85-568, 72 Stat. 426 (1958) (unamended) (codified as amended at 42 U.S.C. §§ 2451 et seq. (2000)).

[481] *Id.*, §102.

assets.[482] Thus, not surprisingly, the U.S. interpretation of "peaceful" as synonymous with "non-aggressive" reflects and upholds this policy. The definition is a corollary to the meaning of the terms "peace" and "aggression" found in the U.N. Charter.[483] "Essentially, nations have agreed in the Charter to act 'peacefully,' a term which the Charter then elaborates with specific examples, *e.g.*, suppression of acts of aggression, no threats or use of force, save in the common interest or for (legitimate) self-defense."[484] By the same token, "[t]he term 'peaceful purposes'... was interpreted by the United States to mean... [that] all military uses are permitted and lawful as long as they remain 'non-aggressive' as per Article 2(4) of the U.N. Charter, which prohibits 'the threat or use of force.'"[485]

In contrast, the Soviet Union, as part of its diplomatic offensive to ban U.S. reconnaissance satellites,[486] initially took the view that "peaceful purposes" meant "non-military," and, thus, that all military activities in outer space were prohibited.[487] The

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[482] *See supra* pp. 2-4, 11-12.

[483] Morgan, *supra* note 208, at 305.

[484] *Id.*, at 305 n.357.

[485] Vlasic, *supra* note 408, at 40; *see also* Dembling & Arons, *supra* note 367, at 434. Commenting on the prospect of future efforts to address the non-incorporation of outer space into the Outer Space Treaty provision in Article IV(2), which confines all activities on the Moon and other celestial bodies to solely "peaceful purposes," Dembling, then General Counsel of NASA, writes: "In the interim, one might conclude that any military use of outer space must be restricted to *nonaggressive purposes* in view of Article III, which makes applicable international law including the Charter of the United Nations" (emphasis added). *But compare* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 651-52 (proposing that the U.S. interpretation of "peaceful" as meaning "non-aggressive" is due to "an initial misreading of the Treaty and the erroneous belief that the restriction of the use for 'exclusively peaceful purposes'... extends to the whole of outer space.").

[486] *See* STARES, *supra* note 6, at 69.

[487] Vlasic, *supra* note 408, at 40. "For more than twenty years scholars of international law in the Soviet Union have unanimously stated that 'use for peaceful purposes' should be interpreted as 'nonmilitary use.'" Vlasic, *supra*, at 40 n.11.

Soviet Union's official line softened somewhat as Soviet military satellite programs came into their own, such that it can be said that Soviets, at least, acquiesced to the U.S. interpretation.[488] Nonetheless, the Soviet Union consistently maintained that all of its activities in space were "peaceful" and "scientific."[489]

Though it can perhaps still be said that there are two competing definitions of "peaceful purposes" (one being "nonmilitary" and the other "non-aggressive"),[490] no State has ever formally protested the U.S. version of "peaceful" in the context of outer space activities."[491] Hence, within the United Nations a consensus has developed that "peaceful" more specifically equates to "non-aggressive."[492] In practice, this has led to an understanding among the major space actors that all military activities in outer space are permissible, unless specifically prohibited by treaty or customary international law.[493]

2. *Permissibility of Military Use of the ISS*

Under international law, States are free to erect space stations in outer space, even if devoted to exclusively military purposes, provided they do not run afoul of the minimal limitations of the Outer Space Treaty by carrying nuclear weapons or other weapons of

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[488] *See* STARES, *supra* note 6, at 71 ("Soviet diplomatic opposition to U.S. reconnaissance satellites effectively ceased in September 1963."); *see also* Vlasic, *supra* note 408, at 42; Morgan, *supra* note 208, at 304.

[489] *See* Morgan, *supra* note 208, at 304; *see also* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 650.

[490] This debate "has not been resolved and may never be." Morgan, *supra* note 208, at 241; *see also* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 650-52.

[491] Vlasic, *supra* note 408, at 45.

[492] Morgan, *supra* note 208, at 303 (quoting Walter D. Reed & Robert W. Norris, *Military Use of the Space Shuttle*, 13 AKRON L. REV. 665, 678 (1979)).

[493] Vlasic, *supra* note 408, at 38, 45.

mass destruction onboard.[494] Similarly, there is no restriction on the use of military personnel in outer space.[495] In fact, the Outer Space Treaty expressly provides that military personnel are even permitted to perform certain "peaceful" activities, such as scientific research, on the Moon and other celestial bodies.[496] The 1998 IGA, however, explicitly calls for a "civil international Space Station," which is to be operated and utilized "for peaceful purposes, in accordance with international law";[497] but what this means in terms of its use for military purposes is not totally clear.

Typically, a space system is considered "civil" if it is owned and operated by a non-military government agency, a business or other non-governmental organization, or an international organization of regional or global participation.[498] So, for example, the satellite system of the International Telecommunications Satellite Organization (INTELSAT),[499] which in its daily operations is used by both civil and military customers,[500] is still regarded as a civil system.[501] Another case in point is the system

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[494] Outer Space Treaty, *supra* note 23, art. IV; *see also* Vlasic, *supra* note 408, at 50.

[495] Vlasic, *supra* note 408, at 50.

[496] Outer Space Treaty, *supra* note 23, art. IV, para. 2. For the full text of Article IV, paragraph 2, of the Outer Space Treaty, *see supra* p. 84. The identical language is used in the Moon Treaty, *supra* note 27, art. III, para. 4.

[497] 1998 IGA, *supra* note 294, art. 1, para. 1, & art. 14, para. 1; *see supra* p. 67 and note 308.

[498] *See* DOYLE, *supra* note 19, at 85.

[499] Agreement on the International Telecommunications Satellite Organization (INTELSAT), Aug. 20, 1971, 23 U.S.T. 3810, 1971 U.S.T. LEXIS 157 (entered into force on Feb. 12 1973) [hereinafter INTELSAT Agreement], *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.9 (Oct. 1986); Operating Agreement Relating to the International Telecommunications Satellite Organization (INTELSAT), Feb. 12 1973, 23 U.S.T. 4091, 1973 U.S.T. LEXIS 302), *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.10 (Oct. 1986).

[500] The INTELSAT Agreement prohibits use of its space segment to provide "specialized communication services" for military purposes. INTELSAT Agreement, supra note 499, art. III, para. (d) & (e). However, the services provided to DoD are considered "public communication services" available to the military forces of any signatory State. INTELSAT does not provide any "specialized services" (which apparently would require equipping satellites with special hardware) to anyone at this time; thus, there is no issue concerning military use of INTELSAT. Morgan, *supra* note 208, at 293-94.

operated by the International Maritime Satellite Organization (INMARSAT),[502] a "hybrid" commercial enterprise/public service organization.[503] As with the 1998 IGA, the INMARSAT Convention contains a "peaceful purposes" clause,[504] and yet INMARSAT services were used by U.S. and coalition forces during the 1991 Gulf War, and thereafter by United Nations peacekeeping forces in Somalia, Bosnia and Croatia.[505] However, ownership and management are not solely determinative of whether a given space system is civil or military; it is oftentimes the use and/or user that is controlling.[506] Thus, for example, though the Hughes *Leasat* satellite was commercially owned and provided, it was under contract to the U.S. Navy, who controlled its design, development, production, launch, and provision of services, and, therefore, *Leasat* could well be considered a military satellite.[507] In any case, as the examples of INTELSAT and INMARSAT show, the mere fact that a space system is regarded as "civil" does not preclude the possibility of it being used for military purposes.

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[501] DOYLE, *supra* note 19, at 86.

[502] Convention on the International Maritime Satellite Organization (INMARSAT), Sep. 3, 1976, 31 U.S.T. 1, 1976 U.S.T. LEXIS 309 (entered into force on Jul. 16, 1979) [hereinafter INMARSAT Convention], *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.12 (Oct. 1986); Operating Agreement on the International Maritime Satellite Organization (INMARSAT), Jul. 16, 1979, 31 U.S.T. 135, 1979 U.S.T. LEXIS 309, *reprinted in* 4 U.S. SPACE LAW, *supra* note 294, § II.A.13 (Oct. 1986).

[503] Morgan, *supra* note 208, at 280.

[504] "The Organization shall act exclusively for peaceful purposes." INMARSAT Convention, *supra* note 503, art. 3(3).

[505] *See* Morgan, *supra* note 208, at 265-270 (discussing military satellite use during regional conflicts).

[506] DOYLE, *supra* note 19, at 91.

[507] *Leasat* had a design life beyond the time period of the Navy's needs and, thus, under Hughes' lease arrangement Hughes retained the right to recover the satellite and revert to commercial applications as much as the satellite's useful life as remained after expiration of the Navy's lease. *Id.*, at 88, 90.

In regards to the Space Station, despite the aforementioned reference to the "civil" nature of the facility, neither the 1998 IGA nor the implementing MOUs specify what restrictions, if any, are imposed on use of the ISS for military purposes under the "peaceful purposes" requirement. Notably, the 1987 law authorizing NASA to undertake construction of an international space station provided that the facility was to serve four purposes:

> (1) the conduct of scientific experiments, applications experiments and engineering experiments;
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> (2) the servicing, rehabilitation, and construction of satellites and space vehicles;
>
> (3) the development and demonstration of products and processes; and
>
> (4) the establishment of a space base for other civilian and commercial space activities.[508]

From the statement "*for other civilian and commercial space activities*," one could reasonably infer that all of the enumerated uses of the international space station are to be understood as being civilian and commercial in nature—*i.e.*, "non-military."[509] If so, use of the U.S. space station elements for any military purpose could be construed as being contrary to their intended purpose under U.S. law. Yet, this inference is negated by the position taken by the United States during subsequent negotiations on the International Space Station. Specifically, in 1988, during negotiations between the United States and the European Partner States, the Chief U.S. Negotiator professed the view that—

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[508] Act of Oct. 30, 1987, *supra* note 295, § 106. Section 108 of the same law provides for "development of the space station... [as] part of a balanced *civilian* space program." (emphasis added).

[509] *See generally* S. Neil Hosenball, The Space Station—Past, Present and Future with some Thoughts on some legal Questions that need to be addressed, *in* SPACE STATIONS, *supra* note 287, at 36 (In an article by the former General Counsel of NASA, Hosenball writes: "The Space Station has been fully justified as a *civil and commercial space facility*... No national security related funds will be used [for Space Station development].") (emphasis added).

> the United States has the right to use its elements, as well as its allocations of resources derived from the Space Station infrastructure, *for national security purposes*... [and further] [w]ith respect to such uses of these elements and resources, the decision whether they may be carried out under the Agreement will be made by the United States.[510]

For its part, the European Governments' Delegation made it clear that by "peaceful purposes" they meant civil, non-military projects,[511] and that "with respect to the use of elements of the permanently manned civil Space Station provided by Europe, the European partner will be guided by Article II of the Convention establishing the European Space Agency [ESA],"[512] which states that the purpose of the ESA is to provide for and promote space research, technology and applications "*for exclusively peaceful purposes*."[513]

"During the negotiation of the 1998 IGA with the European member states, in particular, the civil character and peaceful use of the Station was [again] of primary importance."[514] Nevertheless, the prevalence of the United States' 1988 negotiating position seems to be born out by the language of the 1998 IGA. Again, Article 9.3(b) provides that the Partner who furnishes a space station element shall decide whether a contemplated use of that element satisfies the Article 1.1 mandate that the ISS be used for "peaceful purposes, in accordance with international law." If by "peaceful purposes" the Partners meant exclusively "civil ("non-military") purposes," then Article 9.3(b) would

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[510] CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 653 n.44 (emphasis added).

[511] *Id.*, at 652.

[512] *Id.*, at 653 n.44.

[513] Convention for the Establishment of a European Space Agency, May 30, 1975, art. II, 14 I.L.M. 855 (1975) (entered into force Oct. 30, 1980).

[514] Moenter, *supra* note 295, at 1045.

appear redundant and the reference to international law in Article 1.1 would be meaningless; therefore, such an interpretation presumably cannot be correct.[515] Indeed, the statement that the ISS be used for "peaceful purposes, *in accordance with international law*" strongly suggests that, notwithstanding the characterization of the ISS as a "civil" space station, the term "peaceful purposes" should be given the meaning that it has been accorded under the international law governing outer space activities—*i.e.*, that "'peaceful purposes' does not exclude military activities so long as those activities are consistent with the United Nations Charter."[516]

Moreover, even assuming the ISS Partners tacitly agreed that the Space Station's "civil" character precluded there being any dedicated missions or projects carried out aboard the facility directly by or on behalf of their respective military services, it would not necessarily foreclose use of the ISS for military purposes. As previously stated, Article IV of the Outer Space Treaty states: "The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited."[517] Although this provision specifically pertains to the use of *military* personnel to conduct scientific research on the Moon and other celestial bodies, it has been argued that the additional statement "*or for any other peaceful purposes*" underscores the fact that the drafters of the Treaty regarded scientific research as a "peaceful" activity *per se*—*i.e.*, "irrespective of whether it is conducted by civilian or military personnel."[518] Under this theory,

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[515] *Cf.* CHENG, *supra* note 407, *in* STUDIES IN SPACE LAW, *supra* note 214, at 651-52.

[516] Morgan, *supra* note 208, at 295.

[517] Outer Space Treaty, *supra* note 23, art. IV, para. 2.

[518] Gorove, *supra* note 475, *in* PEACEFUL PURPOSES, *supra* note 205, at 82; *see also* CHENG, *supra* note 457, at 369 ("[T]he 1967 Space Treaty in its Article 1(3) asserts a general freedom of scientific investigation in outer space.").

"the purpose of the research, whether for advancement of science, military defense, or some other purpose, has no bearing on the lawfulness of any research activity."[519] Therefore, with the commercialization of the Space Station,[520] it is conceivable that a commercial firm could, consistent with the ISS goal of enhancing the scientific, technological, and commercial use of outer space,[521] use ISS facilities to perform research for the advancement of some military purpose without contravening the "peaceful purposes" requirement as defined by international law.[522]

C. Summary

Like a truck, a telephone, or a pair of binoculars, orbiting space stations have no inherent characteristics that make them civil or military—rather it is how the space station is utilized that is key to determining its civil or military potential.[523] The decision of the ISS Partners to use the notoriously imprecise "peaceful purposes" phraseology without providing a definition of the term in the 1998 IGA, not only reflects the Partner States' divergent interpretations of the meaning of "peaceful" as employed in

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[519] Gorove, *supra* note 475, *in* PEACEFUL PURPOSES, *supra* note 205, at 82; *cf.* Morgan, *supra* note 208, at 306 ("[S]tate practice appears to confirm that 'use' is to be distinguished from 'purpose.' Take, for example, the 'Star Wars' program... Although arguably 'non-peaceful' or 'aggressive' uses might be made of space, the stated purpose of the program was to defend the U.S., a peaceful 'purpose' [of] self-defense. Therefore, the drafters very deliberately distinguished between 'use' from 'purpose' and intentionally chose the latter. As a result, through the use of the term 'purpose,' the drafters of the Outer Space Treaty incorporated a 'rightful intent' test.").

[520] *See* sources cited *supra* note 292.

[521] 1998 IGA, *supra* note 294, art. 1, para. 1.

[522] *See* Logsdon, *supra* note 292, at 245 ("Among the many unresolved issues [with respect to ISS commercialization] are... the legal issues associated with commercial research aboard the ISS.").

[523] DOYLE, *supra* note 19, at 3. Each of the main uses of a permanent manned orbiting space station, including "observation," "space labs," and "mission staging" represent dual civil/military capabilities. DOYLE, *supra*, at 4.

international law on outer space,[524] but also suggests that the Partner States may have differing views about how the ISS should, in fact, be utilized. Thus, the question of the meaning of "peaceful purposes" appears likely to be a source of controversy in the future, especially as the ISS is opened up for commercial use by private sector entities.

Yet, it is not clear how much control, if any, a Partner can exercise over the conduct of military-related activities onboard the ISS by other Partners, or commercial firms from other Partner (or even non-Partner) States. Two particularly noteworthy issues in this regard are the following:

1. The 1998 IGA removes the determination of whether a contemplated use of a Space Station element is for "peaceful purposes" from the scope of the ISS "consensus management" regime[525] and places it in the hands of the Partner providing the element concerned.[526] At the same time, the agreement gives each Partner the right to request consultations with each other on "*any matter* arising out of Space Station cooperation" and obligates all Partners to promptly accede to such requests and use their best efforts to settle disputes.[527] This raises the question: Is the characterization of ISS activities (including commercial activities) as "peaceful" a "matter arising out of Space Station cooperation," such that it can be made the subject of consultations, or perhaps even submitted to mediation, arbitration or some other form of dispute resolution?[528] Or, is the

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[524] *See supra* pp. 100-01, 103.

[525] 1998 IGA, *supra* note 294, art. 1, para. 3, & art. 7, para. 1; NASA-ESA MOU, *supra* note 314, art. 8. ISS "consensus management" regime, *discussed supra* pp. 67-69.

[526] 1998 IGA, *supra* note 294, art. 9, para. 3(b).

[527] *Id.*, art. 23, para. 1-2 (emphasis added); NASA-ESA MOU, *supra* note 314, art. 18.

[528] *Id.*, art. 23, para. 2 & 4.

determination of the Partner that provided the element where such activities are taking place final?[529]

2. The 1998 IGA provides that use of the Space Station by "a non-Partner or private entity under the jurisdiction of a non-Partner" requires "consensus among all Partners."[530] Under Article 9.3(b), an Partner cannot refuse a fellow Partner access to resources derived from the Space Station infrastructure to support an ISS mission because they disagree with their fellow Partner's determination that the mission is for peaceful purposes. The question then remains: Can a Partner similarly refuse to consent to use of the ISS by a non-Partner (or a private commercial entity of a non-Partner) on the basis that they disagree with their fellow Partner's determination that the non-Partner's use is for peaceful purposes?

These questions must be counted among the many issues relating to the commercialization of the ISS that remain unresolved and need to be addressed in any policy or political discussions toward that end.[531]

Still, the permissibility of military use of the ISS will ultimately hinge on how the term "peaceful purposes" is interpreted and applied by each Partner State. The recent controversy over the Russian Federation's decision to send American "space tourist" Denis Tito to the Space Station over the objection of the United States and other Partner States shows how the limits of cooperation can be strained when one Partner State ignores the ISS goal of consensus management in favor of its own political and/or

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[529] *Id.*, art. 9, para. 3(b).

[530] *Id.*, art. 9, para. 3(a).

[531] *See* Logsdon, *supra* note 292, at 245-46.

economic desires. To avoid similar controversies over the conduct of military-related activities onboard the Space Station, the ISS Partners, acting through their Cooperating Agencies, will have to match the foresight and skill already exhibited by scientists and engineers in the planning and construction of "Alpha," in making future decisions about the operation and utilization of the facility.

CONCLUSION

The commercial use of outer space is growing rapidly, and on a global scale. In 1996, the annual number of commercial space launches surpassed the number of government launches for the first time. In 1997, the National Defense Panel noted that more than 1,000 satellites were expected to be launched in the decade between 1997 and 2006, representing a total investment of more than one-half trillion dollars.[532] At the same time, the ability of the United States' military to operate in space is seen as vital to the nation's security. In fact, in the *National Defense Authorization Act for Fiscal Year 2000*, the Congress asked DOD to "identify the technologies and technology demonstrations needed... to take full advantage of use of space for national security purposes."[533] According to U.S. Space Command, this is likely to entail increased military use of civil, commercial, and international space systems.[534]

This thesis has examined two cases where the increased use of civil, commercial, and international space systems impacts the current law governing the use of outer space, and, in particular, military activities in space. Part I showed how the convergence of military and commercial space activities increases the likelihood of "cyber-attack" on U.S. space systems and raises new questions about the applicability of self-defense in outer space. Part II demonstrated how this convergence places private commercial entities in the role of "military actors" in space, necessitating a reexamination of the concept of "peaceful purposes" with respect to outer space activities.

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[532] NDP REPORT, *supra* note 33, at 38.

[533] National Defense Authorization Act for Fiscal Year 2000, P.L. No. 106-65, § 1601, 113 Stat. 809 (1999).

[534] USSPACECOM 2020, *supra* note 4, at 7.

These are but two examples of the types of legal issues that are raised as U.S. military and commercial space activities become increasingly interrelated. In addition to these questions, other issues directly related to the convergence of military and commercial space activities remain outstanding, such as, for example, the legality of maintaining military "shutter control" over commercial remote sensing satellites. Resolving these questions through appropriate legal reforms and/or clarification of the existing legal regime is clearly essential if the principle of cooperation in the exploration and use of outer space, embodied in the Outer Space Treaty, is to be upheld.

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