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The Legality of Antisatellites

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RECENT DEVELOPMENT

The Legality of Antisatellites

I. INTRODUCTION

At 4 a.m. on Sunday, August 4, 1985, the Soviet Union unleashed a devastating surprise attack on orbiting American communications and surveillance satellites. The loss of these satellites left the NATO allies 'blinded' to Warsaw Pact troop movements and hampered NATO's attempts to respond to subsequent Soviet offensives across Europe due to a massive communications breakdown. The Soviets had won the World's first space battle.¹ This is how General Sir John Hackett described the initial hostilities of World War III in his best seller *The Third World War*.² General Hackett attributed the success of the Soviet offensive in space to their antisatellite development programs of the 1970's. These programs are not part of the novel's fantasy, rather they are facts in what is becoming history's most expensive arms race.³

The purpose of this Comment will be to examine antisatellite (ASAT) weaponry. After setting out a definition of ASATs and outlining their development, it will discuss the impact that ASATs will have on the world in time of war and peace. This will be followed by an in-depth analysis of international law as it relates to ASATs. This Comment will conclude with a presentation of various proposals for positive law changes relative to the limitation and control of ASATs.

1. J. HACKETT, *THE THIRD WORLD WAR: AUGUST 1985*, at 148 (1979).

2. *Id.*

3. Paul C. Warnke, former head of the Arms Control and Disarmament Agency and now Special Consultant to President Carter, described the potential arms race in space as "'much more expensive' than past earthbound programs." *The New Military*, BUSINESS WEEK, June 4, 1979, at 136 [hereinafter cited as *The New Military*].

The United States planned to quadruple its yearly space defense spending due to successful Soviet antisatellite (ASAT) tests. Middleton, *Soviet Tests Producing Increase in U.S. Space Defense Research*, N.Y. Times, Feb. 15, 1977, at 8, col. 3 [hereinafter cited as Middleton]. See *No Time to Hunt in Space*, N.Y. Times, Oct. 14, 1977, at 26, col. 1 [hereinafter cited as *Hunt in Space*].

II. BACKGROUND

A. Definition of ASATs

ASATs, also referred to as satellite interceptors and hunter-killer satellites,⁴ are space objects having the potential to interfere with the purpose of other space objects.⁵ To accomplish this objective, ASATs may make use of one of three lethal mechanisms. The first type utilizes kinetic energy and disables its target by explosive fragmentation or by a simple nonexplosive collision.⁶ A second type employs a directed-energy system, such as a high energy laser, in order to incapacitate or interfere with other space objects.⁷ A third type uses radiation from a nuclear explosion to neutralize a space object.⁸

The ASAT is generally part of a larger anti-satellite weapons system which, in addition to the lethal mechanism, includes the "sensors, control and instrumentation necessary for target acquisition, aiming, firing and damage assessment."⁹

Some satellites that are designed primarily to perform other functions have ASAT capabilities. These satellites will be referred to as multi-capacity satellites. For example, the National Aeronautics and Space Administration (NASA) intends to deploy lasers on space vehicles to be used for earthquake prediction and geological studies from orbit.¹⁰ To perform this mission, the lasers must be both extremely powerful and have good focusing characteristics. These are the precise qualities necessary for an ASAT. Thus, a laser that serves as a scientific instrument at distances of 40,000 km., can alternatively function as a satellite destruction mechanism from a range of 100 km.¹¹

Another example of a multi-purpose space object is the United States space shuttle. One of these functions, according to the Soviet Union, is to serve as an ASAT.¹² The ability of the shuttle to track and rendezvous with other space ob-

4. Christol, *Article Four of the 1967 Principles Treaty: Its Meaning and Prospects For Its Clarification*, in PROCEEDINGS OF THE TWENTY-FIRST COLLOQUIUM ON OUTER SPACE 192 (M. Schwartz ed. 1979) [hereinafter cited as Christol].

5. *Id.* at 193. ASAT is sometimes used in a broader sense to include systems with earth-to-space and space-to-earth capabilities. *Id.* at 207 n.1. This Comment shall deal with space-to-space systems only.

6. Tsipis, *US-USSR Confrontation or Cooperation in Space*, in NINETEENTH STRATEGY FOR PEACE: CONFERENCE REPORT 15 (Stanley Foundation ed. 1978) [hereinafter cited as Tsipis].

7. *Id.* Robinson, *Soviets Push for Beam Weapon*, AV. WEEK & SPACE TECH., May 2, 1977, at 16 [hereinafter cited as Robinson].

8. Christol, *supra* note 4, at 194.

9. Tsipis, *supra* note 6, at 15.

10. H. SCOVILLE, JR. & K. TSIPIS, CAN SPACE REMAIN A PEACEFUL ENVIRONMENT? 16 (Stanley Foundation Occasional Paper No. 18, 1978) [hereinafter cited as SCOVILLE & TSIPIS].

11. *Id.*

12. *Soviets See Shuttle as Killer Satellite*, AV. WEEK & SPACE TECH., Apr. 17, 1978, at 17 [hereinafter cited as *Shuttle*]; World Television Series, *The Real War in Space*, Transcript at 13 (WGBH Educational Foundation 1979) [hereinafter cited as *Real War in Space*]; *The New Military*, *supra* note 3, at 149.

jects is evidence of its potential to interfere with satellites in space. Once the shuttle maneuvers close to another space object, it can use a remote manipulator system¹³ to either place destructive devices on the object or to bring the object on board the shuttle for return to the United States.¹⁴

B. ASAT Development

1. The Soviet Union¹⁵

Soviet ASAT testing and development may have started as early as 1962.¹⁶ Kinetic-type ASATs were tested in orbit around the earth between 1968 and 1971.¹⁷ The Soviets discontinued testing in 1971, possibly in deference to the Strategic Arms Limitation Talks (SALT).¹⁸ However, Soviet testing un-

13. For a description of the remote manipulator system, see J. GREY, ENTERPRISE 156 (1979).

14. Shuttle, *supra* note 12, at 17. See *The New Military*, *supra* note 3, at 149. The Soviets are developing their own reusable shuttle and may soon possess the same capability. Covault, *Soviets Build Reusable Shuttle*, AV. WEEK & SPACE TECH., Mar. 20, 1978, at 14 [hereinafter cited as *Soviet Shuttle*].

15. Four basic reasons have been advanced to explain the strong Soviet desire to develop ASATs. First, the Soviets may desire the ability to destroy American reconnaissance satellites. Second, the Soviets may have commenced their ASAT development to counter certain American programs such as project "Saint." See notes 26-29 *infra*. Third, the Soviets are very concerned over the proliferation of space-borne intelligence gathering and other military capabilities of certain "third nations" such as Communist China, France and West Germany. Their ASAT programs may be an attempt to counter this perceived threat. Finally, the American space shuttle may have prompted ASAT development. Tsipis, *supra* note 6, at 17-18. Other Soviet concerns include border security, air and space defense, "various bureaucratic imperatives and the traditional Soviet penchant for secrecy." *Id.* at 18.

16. "A Soviet antisatellite development and testing program may have had its origins back in 1962, when Vostok III and IV were maneuvered to within 5 km. of each other." SCOVILLE & TSIPIS, *supra* note 10, at 6.

17. A more suspect program started several years later when on October 19, 1968, the Soviet Union orbited Cosmos 248 and a day later launched Cosmos 249 in a rendezvous trajectory. The trailer satellite, Cosmos 249, was observed to pass rapidly by the presumed target, Cosmos 248, and then exploded. The procedure was repeated ten days later with Cosmos 254, which also passed near 248 and exploded, again leaving Cosmos 248 intact. A similar experience was repeated two years later on October 20, 1970 and involved satellites Cosmos 373, 374 and 375, with the last two exploding after passing near the first one. In no case was the supposed target satellite destroyed. All of these satellites were launched with the large SS-9 launcher.

Id.

18. The Strategic Arms Limitation Talks (SALT) are a series of negotiations between the United States and the Soviet Union that began in November 1969. U.S. DEPT OF STATE BUREAU OF PUBLIC AFFAIRS, SALT II AGREEMENT 54 (Selected Document No. 12A 1979) [hereinafter cited as Document on SALT II Agreement]. SALT's goal is the limitation and reduction of both offensive and defensive strategic arms. *Id.* The first round of negotiations, SALT I, were concluded in May 1972 and produced two agreements: The Treaty on the Limitation of Anti-Ballistic Missile Systems, Oct. 3, 1972, United States - Union of Soviet Socialist Republics, 23 U.S.T. 3435, T.I.A.S. No. 7503 [hereinafter cited as ABM Treaty], and the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms, Oct. 3, 1972, United States - Union of Soviet Socialist Republics, 23 U.S.T. 3462, T.I.A.S. No. 7504. Negotiations for the SALT II Agreement began in November 1972 and yield-

expectedly resumed in 1976¹⁹ and the Soviets now have an operational ASAT system.²⁰ In this kinetic system, the Soviet satellite would maneuver near the targeted space object and explode, thus knocking out the target with debris.²¹

2. The United States²²

The history of U.S. ASAT development has been marked by indecisiveness as to whether or not to pursue such a program. An early U.S. program initiated in the late 1950's was terminated or delayed indefinitely in the mid-1960's.²³ A limited antisatellite program was begun in the 1960's as part of America's anti-ballistic missile (ABM) development.²⁴ This program was terminated in 1975.²⁵ Another project, code named "Saint" (satellite inter-

ed an agreement, a protocol, and a Joint Statement of Principles and Basic Guidelines for Subsequent Negotiations on the Limitation of Strategic Arms. Document on SALT II Agreement, *supra*, at 54. See generally SALT HANDBOOK (R. Labrie ed. 1979); W. PANOFSKY, ARMS CONTROL AND SALT II (1979).

19. Somewhat unexpectedly the Soviets resumed satellite rendezvous experiments in 1976 and 1977, with the only difference that the trailer or supposed intercept satellite, instead of achieving co-orbital position with the target object after several orbits and then exploding, was now launched in a highly elliptical trajectory that brought it near the target craft within its first orbit. Then instead of exploding, the trailer was usually maneuvered to return to Earth.

SCOVILLE & TSIPIS, *supra* note 10, at 6. See *Soviets Test Another Killer Satellite*, AV. WEEK & SPACE TECH., Jan. 2, 1978, at 21 [hereinafter cited as *Soviets Test*]; Christol, *supra* note 4, at 194.

The motivation behind this renewed Soviet interest in antisatellite capability is not clear. Perhaps this was a Soviet response to China's then recently demonstrated capacity to place into orbit 2000-4000 kg. satellites that could be used either for reconnaissance, target location for their strategic nuclear weapons, or for military communications. The Soviet Union may want to deny these assets to the Chinese in case of war between these two countries. The Soviets could also be preparing to counter the presumed extensive U.S. use of outer space for wartime military purposes.

SCOVILLE & TSIPIS, *supra* note 10, at 6.

20. Middleton, *supra* note 3, at 8; Weinraub, *Brown Says Soviets Can Fell Satellites*, N.Y. Times, Oct. 5, 1977, § A, at 11, col. 6; *Hunt in Space*, *supra* note 3, at 26, col. 1; Burt, *Soviet Said to Ask Space Shuttle Halt*, N.Y. Times, June 1, 1979, at 6, col. 1 [hereinafter cited as Burt, *Soviet*]; Zimmerman, *Are We Girding for 'Laser Wars' in Space?*, MACHINE DESIGN, Dec. 8, 1977, at 20 [hereinafter cited as Zimmerman]; SCOVILLE & TSIPIS, *supra* note 10, at 6; *The New Military*, *supra* note 3, at 142.

"Analysis of 14 Soviet killer satellite tests conducted since October, 1968, shows that the USSR has developed an operational killer satellite system that can function in at least three different attack modes at different altitudes and orbital inclinations." *U.S. Funds Killer Satellite Effort*, AV. WEEK & SPACE TECH., Feb. 6, 1978, at 19 [hereinafter cited as *U.S. Funds*]. See *The New Military*, *supra* note 3, at 142.

21. *Soviets Test*, *supra* note 19, at 21.

22. Current American ASAT development is basically a response to Soviet ASAT programs. 14 WEEKLY COMP. OF PRES. DOC. 1135, 1137 (June 20, 1978) [hereinafter cited as PRES. DOC. of June 20, 1978]. U.S. Secretary of Defense Harold Brown stated that the U.S. is increasingly dependent on space and cannot permit the Soviets to attain a dominant position in ASAT capability. *Real War in Space*, *supra* note 12, at 7.

23. Christol, *supra* note 4, at 194.

24. *Id.* See note 18 *supra*.

25. Christol, *supra* note 4, at 194.

ceptor),²⁶ involved an American effort to develop a payload that would have the capability of co-orbiting with and inspecting unknown space objects.²⁷ Such a system may have had the potential to directly interfere with orbiting space objects.²⁸ "Saint" was terminated before any test flights were made.²⁹

The American ASAT effort came to a standstill after these programs and probably would have remained that way had the Soviets not resumed ASAT testing in 1975.³⁰ The new Soviet tests resulted in a reassessment of the situation by the Ford Administration. Two days before he left office in 1977, Gerald Ford ordered the rapid development and deployment of an American ASAT to counter the Soviet weapon.³¹

Jimmy Carter entered the Presidency in 1977 with a philosophy of "maximum pacification of space."³² He put a limit on ASAT spending, limited work to development of ASAT technology only and ordered a new study of the matter.³³ This study by the National Security Council changed the Carter Administration's outlook. The President has since indicated that he will lift his ban on testing if Soviet-American efforts to ban ASATs fail.³⁴

It is generally acknowledged that the Soviet Union has a lead over the United States in ASAT development.³⁵ To offset the Soviet advantage, the United States will spend between \$400 and \$500 million in development programs.³⁶ Because American technology is superior to that of the Soviet Union, some strategists estimate that the United States can close this gap in a relatively short period of time.³⁷ In fact, American ASATs may be operational as early as 1981.³⁸

26. Tsipis, *supra* note 6, at 18.

27. STAFF OF SENATE COMM. ON AERONAUTICAL AND SPACE SCIENCES, 94th CONG., 2D SESS., REPORT ON SOVIET SPACE PROGRAMS, 1971-75 OVERVIEW, FACILITIES AND HARDWARE, MANNED AND UNMANNED FLIGHT PROGRAMS, BIOASTRONAUTICS, CIVIL AND MILITARY APPLICATIONS, PROJECTIONS OF FUTURE PLANS 395 (Comm. Print 1976).

28. *Id.*

29. *Id.*

30. "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." PRES. DOC. of June 20, 1978, *supra* note 22, at 1137.

31. *The New Military*, *supra* note 3, at 145.

32. *Id.*

33. *Id.*

34. *Id.*

35. *See, e.g., id.* at 136; *Real War in Space*, *supra* note 12, at 1.

36. *Shuttle*, *supra* note 12, at 17. The United States is evaluating three ASAT systems: 1) a homing intercept warhead system which operates as a heat-seeking rocket-powered ramming device. Zimmerman, *supra* note 20, at 26; *The New Military*, *supra* note 3, at 145; 2) an advanced system with laser capability, *i.e.*, directed energy ASATs. Covault, *U.S. Pushes Antisatellite Effort*, AV. WEEK & SPACE TECH., July 17, 1978, at 14; and 3) a conventional spacecraft system. *Id.*

37. SCOVILLE & TSIPIS, *supra* note 10, at 10. *See Satellite War-Games, the Latest Score*, WIRELESS WORLD, Jan. 1978, at 36 [hereinafter cited as *War-Games*].

38. Zimmerman, *supra* note 20, at 20.

3. Future ASAT Development

Existing ASATs are kinetic types. In the future, ASATs will probably employ a directed energy lethal mechanism. A directed energy ASAT will have certain advantages over kinetic types. It can launch an attack from a distance of several thousand kilometers and disable enemy vehicles without maneuvering to intercept the target.³⁹ Other advantages stem from the fact that the directed energy beam travels at the speed of light. Such ultra high speed attack would be sudden and would not result in the warning time that a kinetic ASAT would provide.⁴⁰ Furthermore, the directed energy system is characterized by greater accuracy.⁴¹ Both the U.S.⁴² and the U.S.S.R.⁴³ are developing beam weapons and high energy lasers. Experts estimate that these systems may be functional within 20 years.⁴⁴

III. THE IMPACTS OF ASATs

There are large numbers of potential military targets in space. Since the launching of Sputnik in 1957, outer space has been an area of considerable militarization.⁴⁵ In fact, well over half of the space efforts of both the U.S. and the U.S.S.R. have been devoted to various military purposes.⁴⁶ In addition, many of the remaining space programs may have an as yet unknown military role.⁴⁷ The satellite's role in defensive, as well as offensive, warfare is increasing.⁴⁸ A threat to a nation's strategic satellites is a threat to a nation's security.

39. *Beam Weapon*, AV. WEEK & SPACE TECH., Mar. 20, 1978, at 13 [hereinafter cited as *Beam Weapon*].

40. *Soviet Breakthrough is Reported in Research on an Antimissile Beam*, N.Y. Times, May 11, 1979, at 3, col. 3; Robinson, *supra* note 7, at 16.

41. *The New Military*, *supra* note 3, at 138.

42. *U.S. Funds*, *supra* note 20, at 19; *War-Games*, *supra* note 37, at 36; *Beam Weapon*, *supra* note 39, at 13. The United States has already successfully tested high energy laser weapons. In one test lasers shot down robot planes. *Real War in Space*, *supra* note 12, at 9; *The New Military*, *supra* note 3, at 139. In a more impressive test, the Navy used a prototype laser to bring down an entire array of antitank missiles travelling at 450 mph. *Id.* at 138-39.

43. Robinson, *supra* note 7, at 16; *U.S. Funds*, *supra* note 20, at 18; *The New Military*, *supra* note 3, at 139-42.

44. SCOVILLE & TSIPIS, *supra* note 10, at 12.

45. Tshipis, *supra* note 6, at 15; Christol, *supra* note 4, at 197.

46. B. LOVELL, *THE ORIGINS AND INTERNATIONAL ECONOMICS OF SPACE EXPLORATION* 39 (1973) [hereinafter cited as LOVELL]. At the end of 1972, 66% of Soviet and 52% of American payloads were for military purposes. *Id.* These figures may be conservative as space contains many dormant satellites. Dormant satellites are intended for future use and have yet to be activated. Therefore, their functions are not easily ascertained. *War-Games*, *supra* note 37, at 36.

Except for prototype ASATs, military space systems are passive systems that support "terrestrial" operations. Conversely, active systems initiate and participate directly in hostilities. Tshipis, *supra* note 6, at 15. Communications and reconnaissance satellites are examples of passive systems.

47. LOVELL, *supra* note 46, at 39.

48. SCOVILLE & TSIPIS, *supra* note 10, at 8-9. For example, "[a] nation's plan for the strategic

In an effort to better safeguard its security, the U.S. is devoting special attention to the vulnerability of its satellites to attack.⁴⁹ New, attack-proof satellites are being designed.⁵⁰ In some cases, prior to plans for the deployment of vulnerable strategic satellites are being re-evaluated.⁵¹

The fear of attack is having an impact on non-military programs as well. Peaceful projects, such as power generation are threatened.⁵² Additionally, the specter of orbiting ASATs is causing private industry to reconsider their own previously planned scientific and commercial space programs.⁵³ An ASAT attack would be a highly provocative incident — one that could be con-

exploration of Space and the knowledge gained in such exploration may have a more decisive bearing upon the outcome of a contest between nations than any tactical engagement on earth." S. BHATT, *STUDIES IN AEROSPACE LAW FROM COMPETITION TO COOPERATION* 163 (1974) [hereinafter cited as BHATT].

49. PRES. DOC. of June 20, 1978, *supra* note 22, at 1137; Klass, *Satellite Vulnerability Fixes Emphasized*, *AV. WEEK & SPACE TECH.*, Oct. 24, 1977, at 58 [hereinafter cited as Klass].

50. Zimmerman, *supra* note 20, at 26; Real War in Space, *supra* note 12, at 10; Klass, *supra* note 49, at 58.

The Department of Defense is currently concentrating on methods for "hardening" the hulls of military satellites. Such methods employ protective plates and the use of wiring and sensitive instrumentation that is less vulnerable to heat, laser beams and bursts of X-rays from nuclear explosions in space. *The New Military*, *supra* note 3, at 149.

Future defense measures may include satellites with the capability to perform evasive maneuvers thus enabling them to dodge ASATs. There is also the possibility of the employment of a fleet of "dark" satellites. These satellites are constructed with radar-absorbing exteriors that make them nearly undetectable to enemy radar. Zimmerman, *supra* note 20, at 26; Middleton, *supra* note 3, at 8. Satellites may even be armed with weapons enabling them to fire back at an enemy ASAT. *The New Military*, *supra* note 3, at 149. Nevertheless,

Space-based systems, either defensive or offensive, cannot be securely protected. Hardening them, deploying decoys, providing a measure of maneuverability, or placing them in orbits that permit several hours warning time of an impending attack can offer a degree of safety by complicating the problems of the attacker. But a determined adversary, willing to undertake the colossal costs associated with space war fighting, can destroy or render ineffective any space platform.

SCOVILLE & TSIPIS, *supra* note 10, at 12-13.

51. For example, the U.S. NAVSTAR Ground Positioning Satellite (GPS) system that can position missiles and aircraft with an accuracy of 10 meters in three dimensions anywhere on Earth could when available be an important part of weapons delivery systems. There are now no specific plans to use it or particularly to rely on it for guidance of ballistic or cruise missiles because in part, at least, it is subject to destruction by some future Soviet anti-satellite system.

Id. at 18.

52. *Id.* at 22. For information on space power production, see Hertzberg & Billman, *High Energy Laser Applications*, *AERONAUTICS AND ASTRONAUTICS*, Mar. 1979, at 16.

53. Now the promise of new industrial techniques and methods (for example, materials processing in a zero-g/high vacuum environment) may encourage a much larger extension of the earth's economy into space. The extent to which the safety of such programs can be guaranteed, either by negotiated peace or by active defense, will be a central consideration in corporate and national decisions to invest in costly space programs. While the scope and direction of "space industrialization" remain uncertain, . . . the presence of armed systems in space (intended to destroy space systems) would severely discourage industrial exploitation of the exoatmospheric environment.

Tsipis, *supra* note 6, at 17.

sidered an act of war.⁵⁴ Therefore, an ASAT attack would probably not occur in peacetime.⁵⁵ However, it has been suggested that ASATs could be used in situations far short of nuclear exchange.⁵⁶ ASAT capability will enable a state to eliminate an enemy's defensive space systems and, as a result, the very existence of ASATs is militarily destabilizing.⁵⁷ ASATs may spell the beginning of a new era of militarization of outer space. They are already the focus of an expensive arms race that may dangerously accelerate.⁵⁸

IV. ASATs AND INTERNATIONAL LAW

A. Sources of Space Law

The laws applicable to the surface of earth can, to some extent, be extended and applied to outer space.⁵⁹ However, conditions in outer space are so different from those on earth that a new body of law is taking shape to deal with new circumstances occurring beyond earth's airspace.⁶⁰ This new body of law is outer space law.⁶¹ Outer space law is still in the developmental stage.⁶² Many legal questions have been left unanswered.⁶³ Scientific research is yielding

54. SCOVILLE & TSIPIS, *supra* note 10, at 8; Tsipis, *supra* note 6, at 16.

55. Christol, *supra* note 4, at 200.

56. SCOVILLE & TSIPIS, *supra* note 10, at 19.

57. Christol, *supra* note 4, at 200; Friedberg, *What SALT Can (and Cannot) Do*, 23 FOR. POL'Y 92, 98 (1979) [hereinafter cited as Friedberg].

58. See SCOVILLE & TSIPIS, *supra* note 10, at 19; Real War in Space, *supra* note 12, at 7; Christol, *supra* note 4, at 204. See also note 3 *supra*.

59. O. OGUNBANWO, INTERNATIONAL LAW AND OUTER SPACE ACTIVITIES 25 (1975) [hereinafter cited as OGUNBANWO].

Although beyond the scope of this Comment, for an extensive discussion of the problems of delineating the boundary between air space and outer space and the various alternatives that have been proposed see Goedhius, *The Changing Legal Regime of Air and Outer Space*, 27 INT'L & COMP. L. Q. 576, 589-93 (1978) [hereinafter cited as Goedhius, *Changing Legal Regime*]. See note 106 *infra*.

60. INTERNATIONAL SPACE LAW 76 (A. Piradov ed. 1976) [hereinafter cited as Piradov]; P. JANKOWITSCH, INTERNATIONAL COOPERATION IN OUTER SPACE 20-21 (Stanley Foundation Occasional Paper No. 11, 1976) [hereinafter cited as JANKOWITSCH]. See Goedhius, *Changing Legal Regime*, *supra* note 59, at 577-78.

61. J. MORENOFF, WORLD PEACE THROUGH SPACE LAW 1-14 (1967) [hereinafter cited as MORENOFF]; C. RHYNE, INTERNATIONAL LAW 471 (1971) [hereinafter cited as RHYNE]; JANKOWITSCH, *supra* note 60, at 20. See G. SCHWARZENBERGER, A MANUAL OF INTERNATIONAL LAW 117 (5th ed. 1967) [hereinafter cited as SCHWARZENBERGER].

62. MORENOFF, *supra* note 61, at 1-14; RHYNE, *supra* note 61, at 471; JANKOWITSCH, *supra* note 60, at 20.

63. Robinson, *Militarization and the Outer Space Treaty — Time for a Restatement of "Space Law,"* ASTRONAUTICS & AERONAUTICS, Feb. 1978, at 28 [hereinafter cited as Robinson, *Militarization*]. Some legal questions have been deliberately left unanswered. For example, the United States opposes the establishment of a legal definition of the physical boundaries of outer space. It argues that technological developments in the aerospace field are so unpredictable that assigning a definite boundary at this time is premature. Canada, Sweden, the United Kingdom and West Germany support the U.S. position. See LEGAL SUB-COMMITTEE OF THE COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE, THE QUESTION OF THE DEFINITION AND/OR THE DELIMITA-

technology that enables man to explore and exploit the heavens in ways that were unimaginable only a short time ago. Such unforeseen advancements will have profound legal effect. Not only will they result in the exposition of new areas where space law must develop, but they will also result in existing space law being deemed inadequate.⁶⁴ Much of international law on earth is derived from principles of customary international law. However, because the space age is such a recent phenomenon, the practice of states has not had enough time to result in the development of international legal principles based on the practice of states.⁶⁵ Therefore, the primary source of outer space law is positive law.⁶⁶

B. *Positive Law Affecting ASATs*

1. United Nations Resolutions

Several resolutions relating to ASATs were passed by the United Nations General Assembly in the late 1950's and early 1960's. The Outer Space Resolution, U.N. Resolution 1348 (XIII)⁶⁷ passed on December 13, 1958, expressed the desire "to avoid the extension of present national rivalries into [outer space]" and established the Ad hoc Committee on the Peaceful Uses of Outer Space (COPUOS).⁶⁸

U.N. Resolution 1884 (XVIII)⁶⁹ [Resolution 1884] was passed on October 17, 1963. Resolution 1884 called upon states to refrain from orbiting weapons. It specifically asked the United States and the Soviet Union to affirm their intentions of not placing "objects carrying nuclear weapons or other kinds of weapons of Mass destruction" into outer space.⁷⁰

TION OF OUTER SPACE 8-12, U.N. Doc. A/AC. 105/C.2/7 Add. 1 (Background Paper Prepared by the Secretariat 1977) [hereinafter cited as LEGAL SUB-COMMITTEE, OUTER SPACE].

64. COOPERATION OR CONFRONTATION IN OUTER SPACE: THIRTEENTH CONFERENCE ON THE UNITED NATIONS OF THE NEXT DECADE 48 (Stanley Foundation ed. 1978) [hereinafter cited as THIRTEENTH REPORT].

It is interesting to note how increased technology has effected the Soviet Union's view towards reconnaissance satellites. At first Russia viewed *all* military uses of outer space, including the use of reconnaissance satellites, as illegal. In 1962, the USSR took the position that military uses were not *ipso facto* illegal. Only aggressive military acts, which included the use of reconnaissance satellites, were illegal. By 1964, the Soviets had developed their own reconnaissance satellites. They hushed their protests against such satellites and began to deploy their own. Address by Dr. D. Goedhuis, Harvard Law School (Sept. 28, 1967).

65. Piradov, *supra* note 60, at 75. Some authorities feel that a customary space law has had adequate time to develop regarding some issues. For example, since space-crafts have never been seriously challenged as they travel above foreign territories, a customary practice has been established allowing such space-crafts to travel freely above any nation on earth. See BHATT, *supra* note 48, at 92.

66. Piradov, *supra* note 60, at 74.

67. G.A. Res. 1348, 13 U.N. GAOR, Supp. (No. 18) 5, U.N. Doc. A/4009 (1958).

68. *Id.*

69. G.A. Res. 1884, 18 U.N. GAOR, Supp. (No. 15) 13, U.N. Doc. A/5571 (1963).

70. *Id.*

Two Resolutions, U.N. Resolution 1962 (XVIII): Declaration of Legal Principles Governing Activities of States in the Exploration and Use of Outer Space⁷¹ and U.N. Resolution 1963 (XVIII): International Cooperation in Peaceful Uses of Outer Space⁷² were passed on December 13, 1963. These resolutions set out principles and concepts later expressed in the 1967 Treaty on Outer Space⁷³ including the necessity of avoiding war in space and the development of outer space for peaceful purposes.⁷⁴

While an extensive discussion of the effects of United Nations' resolutions is beyond the scope of this Comment, it is generally accepted that a resolution does not impose any legal obligation upon United Nations Members.⁷⁵ Resolutions are not legislative actions and any member that wishes to dissent may continue to do so.⁷⁶ Nevertheless, a resolution is not completely without effect. It represents a measure of agreement among United Nations Members and, as such, makes it politically unattractive for dissenting members to act in a manner contrary to its provisions.⁷⁷ Therefore, while not establishing rigid laws, the above resolutions demonstrated the international consensus that outer space should be a peaceful environment free from nuclear weapons and other kinds of weapons of mass destruction.⁷⁸

2. Nuclear Test Ban Treaty

The Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Nuclear Test Ban Treaty) went into force for the United States and the Soviet Union on October 10, 1963.⁷⁹ The Treaty's preamble recited that the parties desired "to put an end to the contamination of man's environment by radioactive substances."⁸⁰ It may be concluded that

71. G.A. Res. 1962, 18 U.N. GAOR, Supp. (No. 15) 14, U.N. Doc. A/5656 (1963).

72. G.A. Res. 1963, 18 U.N. GAOR, Supp. (No. 15) 15, U.N. Doc. A/5656 (1963).

73. See § IV.B.3 *infra*.

74. Galloway, *Space Law and Astronautics for Peace and Human Understanding*, in PROCEEDINGS OF THE TWENTY-FIRST COLLOQUIUM ON OUTER SPACE 178 (M. Schwartz ed. 1979) [hereinafter cited as Galloway].

75. L. GOODRICH, THE UNITED NATIONS 282 (1959) [hereinafter cited as GOODRICH]; I. BROWNLIE, PRINCIPLES OF PUBLIC INTERNATIONAL LAW 14 (1973) [hereinafter cited as BROWNLIE]. For more information on the legal significance of United Nations resolutions, see J. CASTAÑEDA, LEGAL EFFECTS OF UNITED NATIONS RESOLUTIONS (1969); Cheng, *United Nations Resolutions on Outer Space: "Instant" International Customary Law?*, 5 INDIAN J. 23-48 (1965); ASAMOAH, THE LEGAL SIGNIFICANCE OF THE DECLARATIONS OF THE GENERAL ASSEMBLY OF THE UNITED NATIONS (1966).

76. GOODRICH, *supra* note 75, at 202.

77. *Id.*; BROWNLIE, *supra* note 75, at 14.

78. For definitions of "nuclear weapons" and "weapons of mass destruction," see § IVB.3.a *infra*.

79. Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Oct. 10, 1963, 14 U.S.T. 1313, T.I.A.S. No. 5433, 480 U.N.T.S. 43.

80. *Id.*

the Treaty's ban on nuclear tests in outer space precludes parties from testing ASATs employing nuclear lethal mechanisms beyond earth's airspace.

3. The Space Treaty

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies of January 27, 1967⁸¹ (Space Treaty) is perhaps the most important treaty in the field of space law.⁸² The Space Treaty, "embodies the international intent as well as broad guiding legal principles, of cooperation and restraint in exploring and exploiting space."⁸³

Article IV is the key provision of the Space Treaty⁸⁴ and is the provision that most directly affects ASATs. Article IV reads as follows:

Article IV

(1) 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.

(2) 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.⁸⁵

Since the Space Treaty was accepted by the General Assembly, Article IV has been the subject of varying interpretations.⁸⁶ Many of these interpretations center on certain critical words and phrases left undefined in the Treaty.⁸⁷ Nevertheless, there is general agreement on several issues.

81. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies of January 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 [hereinafter cited as Space Treaty].

82. The Space Treaty is the principle source of international space law. *Hearings Before the Subcomm. on Space Science and Application of the House Comm. on Science and Technology*, 94th Cong., 2d Sess. 3 (1976) (statement of Carl Christol).

83. Robinson, *Militarization*, *supra* note 63, at 26.

84. *Treaty on Outer Space: Hearings Before the Senate Comm. on Foreign Relations, Executive D*, 90th Cong., 1st Sess. 22 (1967) (statement of Arthur Goldberg) [hereinafter cited as *Hearings on Space Treaty*].

85. Space Treaty, *supra* note 81, art. IV.

86. OGUNBANWO, *supra* note 59, at 30; Robinson, *Militarization*, *supra* note 63, at 27.

87. The Treaty contains many unclear terms. See Robinson, *Militarization*, *supra* note 63, at 27.

a. *Weapons Prohibited Under Article IV*

Article IV of the Space Treaty prohibits "nuclear weapons or any other kinds of weapons of mass destruction." This same phrase was first used in U.N. Resolution 1884.⁸⁸ Unfortunately, the terms "nuclear weapons" and "weapons of mass destruction" have never been defined.

"Nuclear weapons" may be the easier of the two terms to define. "It may be presumed that all arms which utilize atomic energy in accomplishing their intended purpose, irrespective of their size or destructive force, would be regarded as nuclear weapons."⁸⁹ Hence, the nature of the nuclear weapon and not its destructive capacity is the determining factor. "Weapons of mass destruction" is somewhat more difficult to define. It is generally agreed that conventional weapons, *e.g.*, those whose lethal mechanism employs gunpowder and other conventional components do not constitute weapons of mass destruction.⁹⁰ Conversely, unconventional weapons, *e.g.*, nuclear, chemical and bacteriological weapons, are considered weapons of mass destruction.⁹¹ Again, as in the case of nuclear weapons, the destructive capacity of unconventional weapons is not important. They are, by their very nature, weapons of mass destruction. However, destructive capacity is related to the classification of new weapons. In the event that a new weapon cannot be categorized as conventional or non-conventional, it will be considered a weapon of mass destruction if its destructive impact is one of 'catastrophic' proportions.⁹²

The form of the weapon itself may also be critical. A strict interpretation of the phrase "any objects carrying" would ban only objects carrying specified weapons and not the weapons themselves.⁹³ Thus, a satellite carrying a prohibited weapons system is banned. However, if the satellite itself is the weapon, it may not be prohibited by this phrase. Perhaps this is why the United States is developing a "ramming/collision" ASAT which is itself a

E.g., the Treaty did not define "outer space." *Hearings on Space Treaty*, *supra* note 84, at 11 (statement of Arthur Goldberg).

88. *See* note 69 *supra*.

89. S. GOROVE, *STUDIES IN SPACE LAW: ITS CHALLENGES & PROSPECTS* 86 (1977) [hereinafter cited as GOROVE].

90. *Id.*; *Hearings on Space Treaty*, *supra* note 84, at 23, 76 (statement of Arthur Goldberg); *The New Military*, *supra* note 3, at 142.

91. *Hearings on Space Treaty*, *supra* note 84, at 100 (statement of Cyrus Vance); *id.* at 23, 76 (statement of Arthur Goldberg); OGUNBANWO, *supra* note 59, at 92; GOROVE, *supra* note 89, at 86.

92. *Hearings on Space Treaty*, *supra* note 84, at 23 (statement of Arthur Goldberg). A catastrophic impact is one whose magnitude is equivalent to that of a nuclear, chemical or biological weapon. *Id.* at 23, 76 (statement of Arthur Goldberg); *id.* at 100 (statement of Cyrus Vance). Weapons whose maximum destructive impact would affect less than 20 to 30 people probably would not be considered as one of catastrophic proportions. GOROVE, *supra* note 89, at 87. Lasers have been categorized as weapons of mass destruction. *Id.* at 87.

93. *Id.* at 88.

weapon rather than an object carrying a weapon.⁹⁴ Article IV(1) prohibits objects carrying weapons with unconventional lethal mechanisms. It does not prohibit objects carrying conventional weaponry. New weapons that cannot be categorized as conventional or non-conventional will be banned if their destructive impact is one of catastrophic proportions. If the object is the weapon, it may not be prohibited.

b. *Physical Jurisdiction of Article IV*

The historical rule of *usque ad coelum* extended a state's territorial jurisdiction upwards to infinity.⁹⁵ Thus, outer space was considered to be within the sovereignty of subjacent states.⁹⁶ This view has since been rejected⁹⁷ both by state practice⁹⁸ and by Article II of the Space Treaty⁹⁹ which declares space "the province of mankind" and "not subject to national appropriation."¹⁰⁰ Nevertheless, a state's complete sovereignty over its airspace is indisputable.¹⁰¹ Outer space begins where airspace ends.¹⁰² Hence, there is a boundary below which a subjacent state may exercise full sovereignty and above which there

94. See note 36 *supra*.

95. The phrase *cuius est solum eius est usque ad coelum et al* (he who owns the ground owns everything to the heavens and to the depths) is taken from ancient Roman law. R. SWIFT, INTERNATIONAL LAW: CURRENT AND CLASSIC 179-80 (1969); J. STONE, OF LAW AND NATIONS 212 (1974). See RHYNE, *supra* note 61, at 471; G. GAL, SPACE LAW 65-67 (1969); Hopkins, *Legal Implications of Remote Sensing of Earth Resources by Satellites*, 78 MIL. L. REV. 57, 77 (1978) [hereinafter cited as Hopkins].

96. *Id.*; see BHATT, *supra* note 48, at 114.

97. One theory rejecting state sovereignty in outer space is based on the idea that the territory subjacent to a point in space constantly changes as the earth rotates. This differs from the atmosphere which rotates with the earth. SCHWARZENBERGER, *supra* note 61, at 117.

98. Gorove, *Sovereignty and the Law of Outer Space Reexamined*, 2 ANNALS OF AIR AND SPACE LAW 311, 313 (1977); Hopkins, *supra* note 95, at 77.

99. Hopkins, *supra* note 95, at 77.

100. *Id.* Space Treaty, *supra* note 81, art. II.

101. Both the Paris Convention of 1919, 11 L.N.T.S. 174, and the Convention on International Civil Aviation of December 7, 1944, 61 Stat. 1180, 15 U.N.T.S. 295, T.I.A.S. No. 1591, recognize a state's sovereignty over its superjacent airspace. See F. NOZARI, THE LAW OF OUTER SPACE 113 (1973) [hereinafter cited as NOZARI].

102. LAY & TAUBENFIELD, THE LAW RELATING TO ACTIVITIES OF MAN IN SPACE 39 (1970); OGUNBANWO, *supra* note 59, at 31, 62; Piradov, *supra* note 60 at 27; SCHWARZENBERGER, *supra* note 61, at 117; D. GRIEG, INTERNATIONAL LAW 286 (1970) [hereinafter cited as GRIEG].

There are those who disagree with this two-zone approach and, instead, maintain that a multi-zone approach should be adopted. Under one such scheme, there would be three zones, the lowest of which would consist of territorial space under the complete sovereignty of the subjacent state. In the second, middle zone, the state would still maintain limited sovereignty subject to a right of transit by other states. The third and highest zone, stretching out to infinity, would not be subject to sovereignty and would be "free for passage of all instrumentalities." F. NOZARI, THE LAW OF OUTER SPACE 115 (1973). See Haanappel, *Airspace, Outerspace and Mesospace*, in PROCEEDINGS OF THE NINETEENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 160 (M. Schwartz ed. 1977) [hereinafter cited as Haanappel].

can be no exercise of state sovereignty.¹⁰³ Yet, due to the lack of physical definitions of both airspace and outer space, the exact boundary remains uncertain.¹⁰⁴

Article IV bars the stationing of prohibited weapons "in outer space in any . . . manner."¹⁰⁵ However, it is not certain whether outer space would include the orbital altitude at which ASATs operate.¹⁰⁶ Fortunately, Article IV begins with the phrase "States Parties to the Treaty undertake not to place *in orbit around the earth* . . ." (emphasis supplied).¹⁰⁷ This wording helps to avoid potential problems created by the lack of a physical definition of outer space. As a result, the Space Treaty bars "any objects carrying nuclear weapons or any other kinds of weapons of mass destruction"¹⁰⁸ from orbit around the

103. Piradov, *supra* note 60, at 27; SCHWARZENBERGER, *supra* note 61, at 117; GRIEG, *supra* note 102, at 286.

104. *See* note 102 *supra*.

105. Space Treaty, *supra* note 81, art. IV(1).

106. There are a variety of suggested definitions of outer space. *See, e.g.*, OGUNBANWO, *supra* note 59, at 50-58; BHATT, *supra* note 48, at 97; NOZARI, *supra* note 101, at 114-17; THIRTEENTH REPORT, *supra* note 64, at 7-8; Haanappel, *supra* note 102, at 160; JANKOWITSCH, *supra* note 60, at 20; Almond, *Definition and/or Delimitation of Outer Space*, in PROCEEDINGS OF THE TWENTY-FIRST COLLOQUIUM ON OUTER SPACE 77 (M. Schwartz ed. 1979) [hereinafter cited as Almond]. Most of these authorities consider the altitudes at which airplanes operate to be within air space and the altitudes beyond satellite orbit as outer space.

It is generally agreed that the lowest perigee of satellite orbit is in outer space. *Hearings on Space Treaty*, *supra* note 84, at 29 (statement of Arthur Goldberg); *id.* at 17 (statement of Dean Rusk). Yet some nations located in equatorial regions claim sovereignty over geosynchronous orbit areas above their respective territories. *See* Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space (277th mtg.), 16 U.N. GAOR 3, U.N. Doc. A/AC 105/C.2/SR.277 (1977) [hereinafter cited as Legal Sub-Committee]. A satellite is considered to be in geosynchronous orbit when its altitude and speed are controlled to give it an orbital period of 24 hours, *i.e.*, the time it takes for the earth to complete one rotation. COMMUNICATIONS SATELLITE CORPORATION, PROSPECTUS 9-10 (1964), cited in *Hearings on Satellite Communications Before the Military Operation Sub-Committee on the House Committee on Government Operation*, 88th Cong., 2d Sess., Part 1, at 597, 605-06 (1964). This can be accomplished above the earth's equator. *Id.* Once placed in orbit, the geosynchronous satellite remains relatively stationary above the same point on the earth's surface. *Id.* The sovereignty claim on the geosynchronous satellite orbit area is based on a theory that the existence of the geostationary orbit is dependent on the earth's gravity and, therefore, such orbits do not fall within the concept of outer space. Instead, the segment of the geostationary orbit above a nation is considered that nation's natural resource within its sovereign control. Legal Sub-Committee, *supra*, at 3. During December and November of 1976, representatives of Brazil, Columbia, Congo, Ecuador, Indonesia, Kenya, Uganda, and Zaire — all equatorial countries — met in Bogota, Columbia. At the meeting it was declared, *inter alia*, "that the geostationary synchronous orbit is a physical fact linked to the reality of our planet because its existence depends exclusively on its relation to gravitational phenomena generated by the earth, and that is why it must not be considered part of the outer space." LEGAL SUB-COMMITTEE, OUTER SPACE, *supra* note 63, at 10 n.11. These problems are becoming increasingly important. *See* Wilford, A 'Traffic Jam' in Outer Space, N.Y. Times, Mar. 24, 1980, at D1, col. 3.

It is also argued that, until a definition of outer space is formally agreed upon, nothing can legally prevent a nation from going as high above its territory as its capabilities permit in order to exercise its sovereignty. BHATT, *supra* note 48, at 104.

107. Space Treaty, *supra* note 81, art. IV.

108. Space Treaty, *supra* note 81, art. IV(1).

earth. The phrase, "orbit around the earth" intimates a full orbit and not a fractional orbit or suborbital flight.¹⁰⁹ Thus, intercontinental ballistic missiles¹¹⁰ (ICBMs) with nuclear warheads that pass through satellite altitudes¹¹¹ and the fractional orbiting bombardment system¹¹² (FOBS) (which travels in a partial or "fractional" orbit) are not prohibited under Article IV.¹¹³

c. *Article IV(2): The Peaceful Purpose Clause*

Article IV(2)¹¹⁴ which includes the "peaceful purpose" clause, apparently does not add any further limitations to ASATs. The Article states that: "the moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes." Hence, on its face, peaceful purposes apply only to "the moon and other celestial bodies." The omission of the term "outer space" probably was not accidental.¹¹⁵ The drafters of the Space Treaty did not intend to enact a broad prohibition of military activity, and thus carefully constructed Article IV accordingly.¹¹⁶ The absence of the term "outer space" in the peaceful purpose clause appears to be a clear manifestation of their intent.¹¹⁷

However, certain writers argue that "peaceful purposes" are applicable to outer space. This argument is based on a theory that the various articles must

109. GOROVE, *supra* note 89, at 87.

This interpretation implies that the object must have been placed into full orbit around the earth rather than into a fractional orbit but it leaves open the question whether or not the object must have actually completed at least one full orbit before it could come under the Treaty's prohibition.

Id. at 87 n.7.

110. *Id.* at 87. "Intercontinental Ballistic Missile" (ICBM) can be defined as a "land-based fixed or mobile rocket-propelled vehicle capable of delivering a warhead to intercontinental ranges." Document on SALT II Agreement, *supra* note 18, at 52.

111. OGUNBANWO, *supra* note 59, at 98.

112. The fractional orbital bombardment system (FOBS) employs "a missile that achieves an orbital trajectory but fires a set of retrorockets before the completion of one revolution in order to slow down, reenter the atmosphere, and release the warhead it carries into a ballistic trajectory toward its target." *Id.*

113. OGUNBANWO, *supra* note 59, at 98.

114. Space Treaty, *supra* note 81, art. IV(2).

115. GOROVE, *supra* note 89, at 88. Dr. Roy of the International Civil Aviation Organization (IACO) does not feel that the peaceful purpose clause applies to outer space. His position has been summarized as follows:

By analyzing the other articles [of the Space Treaty] we can see that every article says "the Moon, other celestial bodies and outer space" except Article IV in which it is only said, "the Moon and other celestial bodies." Therefore, it is clear that the intention was present to exclude outer space from Article IV.

Summary of Discussions, in PROCEEDINGS OF THE TENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 114 (1967). See Zedalis & Wade, *Anti-Satellite Weapons and the Outer Space Treaty of 1967*, 8 CALIF. W. INT'L L. J. 454, 476 n.80 [hereinafter cited as Zedalis & Wade].

116. Robinson, *Militarization*, *supra* note 63, at 27.

117. GOROVE, *supra* note 89, at 88-89.

be interpreted together as a whole and not in an isolated, separate manner.¹¹⁸ Using this method of analysis, the jurisdiction of Article IV(1) would expand through Article XIII which states that the "provisions of /the/ Treaty shall apply to activities in . . . outer space . . . including the moon and other celestial bodies"¹¹⁹ (emphasis in original). Similarly, the prohibition of Article IV(1) would be supplemented by Article I which allows for the use of space only for the benefit of all countries¹²⁰ and by Article IV(2), the "peaceful purpose" clause.¹²¹ Hence, under this view, parties to the Space Treaty may use outer space only for "peaceful purposes." Unfortunately, the meaning of "peaceful purposes" is unclear.¹²²

The Space Treaty did not define "peaceful purposes."¹²³ As a result, numerous interpretations have been advocated. The two most popular are the "nonaggressive" and the "nonmilitary" interpretations.¹²⁴ A nonaggressive interpretation would allow military personnel and equipment in outer space as long as their activities are nonaggressive in nature¹²⁵ and do not come under one of the exceptions specified in the Space Treaty.¹²⁶ The United States favors the application of this view to outer space, the moon and celestial bodies.¹²⁷ The Soviet Union adopts this approach only with respect to outer space.¹²⁸ With regards to the moon and other celestial bodies, the Soviets ad-

118. Zedalis & Wade, *supra* note 115, at 477.

119. Space Treaty, *supra* note 81, art. XIII.

120. *Id.* art. 1.

121. *Id.* art. IV(2); Zedalis & Wade, *supra* note 115, at 477; Herczeg, *Problems of Interpretation of the Space Treaty of 27 January 1967*, in PROCEEDINGS OF THE TENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 105, 106-07 (1967) [hereinafter cited as Herczeg].

122. M. LACHS, *THE LAW OF OUTER SPACE, AN EXPERIENCE IN TEMPORARY LAW-MAKING* 106 (1972) [hereinafter cited as LACHS]; Christol, *supra* note 4, at 196-97.

123. OGUNBANWO, *supra* note 59, at 30.

124. *Id.* at 28-29; LACHS, *supra* note 122, at 106; GOROVE, *supra* note 89, at 90. For a discussion of the "non-aggressive" analysis, see Vlastic, *The Space Treaty: A Preliminary Evaluation*, 55 CALIF. L. REV. 507, 514 (1967). For a discussion of the "non-military" analysis, see Markov, *Against the So-Called "Broader" Interpretation of the Term "Peaceful" in International Space Law*, in PROCEEDINGS OF THE ELEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 73, 75 (1968).

125. The United Nations General Assembly adopted a definition of aggression on December 14, 1974. The definition included the following language: "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." G.A. Res. 3314, 29 U.N. GAOR Supp. (No. 31) 142, U.N. Doc. A/9631 (1974).

On June 20, 1978, President Carter stated that attacks on the space activities of any nation shall be considered infringements of the sovereign rights of that nation. PRES. DOC. of June 20, 1978, *supra* note 22, at 1136; see Tsipis, *supra* note 6, at 14. Thus, the United States may interpret an ASAT attack as an act of aggression.

126. GOROVE, *supra* note 89, at 90.

127. *Hearings on Space Treaty*, *supra* note 84, at 59 (statement of Sen. Gore); OGUNBANWO, *supra* note 59, at 29.

128. Zedalis & Wade, *supra* note 115, at 470 n.59.

vocate a nonmilitary interpretation¹²⁹ barring all military activity, in addition to all aggressive activity, unless such activity qualifies as an exception under the Space Treaty.¹³⁰

Both the nonaggressive and the nonmilitary interpretations would permit military personnel if they are involved with "scientific research or for any other peaceful purposes" and military equipment would be permitted if necessary for "peaceful exploration of the moon and other celestial bodies."¹³¹ Furthermore, both interpretations would bar aggressive activity. Thus, an aggressive attack by an ASAT on a satellite would be prohibited. It may also be argued that the mere presence of ASATs in space is aggressive.¹³² Such an interpretation would ban ASAT deployment.

d. *The Space Treaty and Other International Legislation Regarding ASATs*

Article I of the Space Treaty reads, in part: "Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States . . . in accordance with international law, . . ."¹³³ Similarly, Article III states, in part:

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, . . .¹³⁴

These articles make international law, including the Charter of the United Nations, applicable to outer space.¹³⁵

Article 2(4) of the United Nations Charter reads:

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.¹³⁶

Hence, the threat or use of force, including its preparation, that is prohibited

129. *Id.*; *Hearings on Space Treaty*, *supra* note 84, at 59 (statement of Sen. Gore); OGUNBANWO, *supra* note 59, at 90.

130. GOROVE, *supra* note 89, at 90.

131. Space Treaty, *supra* note 81, art. IV.

132. One view holds that all weapons, defensive as well as offensive, are not peaceful *per se* and are prohibited by the peaceful purpose clause. OGUNBANWO, *supra* note 59, at 32. However, another view considers weapons peaceful *per se* in that they act as a deterrent to aggressive action. *Id.*

133. Space Treaty, *supra* note 81, art. I.

134. *Id.* art. III.

135. 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 *MANUAL ON SPACE LAW* 12 (N. Jasentuliyana ed. 1979).

136. U.N. CHARTER art. 2(4).

on earth is also prohibited in outer space.¹³⁷ Such a prohibition would encompass an ASAT attack by one nation on the space activities of another nation.¹³⁸

e. *The Space Treaty and ASATs — A Summary*

Under Article IV,¹³⁹ objects carrying nuclear weapons or any other kinds of weapons of mass destruction are banned from orbiting the earth. If the object makes less than a full orbit, or if the objects themselves are the weapons or carry weapons other than nuclear weapons or weapons of mass destruction, they are allowed under Article IV(1)¹⁴⁰ to orbit the earth.

Authorities do not agree on whether the prohibitions against aggressive activity found in the "peaceful purpose" clause¹⁴¹ apply to outer space. Nevertheless, by extending the application of international law into outer space, Article III¹⁴² prohibits ASAT activities that constitute a threat or use of force. Hence, while certain types of ASATs are not prohibited from orbit, their use in an aggressive manner is a violation of international law.

4. The Strategic Arms Limitation Talks¹⁴³ (SALT)

a. *SALT I*¹⁴⁴

The first round of Strategic Arms Limitation Talks between the United States and the Soviet Union yielded the following provisions among others:

Article XII

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.
2. Each Party undertakes not to interfere with the national tech-

137. Herczeg, *supra* note 121, at 107 (quoting Eilene Galloway). See Busák, *Astronautics for Peace and Human Progress, Problems Relating to the Peaceful Uses of Outer Space*, in PROCEEDINGS OF THE TWENTY-FIRST COLLOQUIUM ON OUTER SPACE 173 (M. Schwartz ed. 1979) [hereinafter cited as Busák].

138. The threat or use of force is barred not only when directed "against the territorial integrity or political independence of any state," but also when used or brandished "in any other manner inconsistent with the purposes of the United Nations." Thus an attack or any other constraint against a ship's aircraft or any other vehicle moving in other dimensions, such as outer space, constitutes a violation of law. LACHS, *supra* note 122, at 106. "The threat or use of force against the territorial integrity or political independence of any state is prohibited." U.N. CHARTER art. 2(4) (emphasis supplied). The United States would view an ASAT attack as one against the political independence of a state. See note 125 *supra*. See also Busák, *supra* note 137, at 173. Nevertheless, international law does allow the use of ASATs in self-defense. See § IV. c *infra*.

139. Space Treaty, *supra* note 81, art. IV.

140. *Id.* art. IV(1).

141. *Id.* art. IV(2).

142. *Id.* art. III.

143. See note 18 *supra*.

144. *Id.*

nical means of verification of the other Party operating in accordance with paragraph 1 of this Article.¹⁴⁵

The principal method of "national technical means of verification" (NTM)¹⁴⁶ is by reconnaissance satellites.¹⁴⁷ Therefore, this bilateral agreement implicitly bars the parties from interfering with the other nation's reconnaissance satellites used to verify SALT I.¹⁴⁸ However, SALT I failed to further address the problems presented by ASATs. Non-reconnaissance satellites were not covered and no agreement was reached regarding the development and testing in outer space of ASATs.¹⁴⁹

b. *SALT II*

If ratified, SALT II will have a significant effect on the American and Soviet development of ASATs. Article IX(1)(c) of the Treaty prohibits the parties from developing, testing or deploying "systems for placing into Earth's orbit nuclear weapons or any other kind of weapons of mass destruction, including fractional orbiting missiles."¹⁵⁰ This expands the prohibitions of the Space Treaty which only prescribed the placement of these weapons in space or in orbit around the Earth and which did not prohibit fractional orbital

145. ABM Treaty, *supra* note 18, art. XII. "The Interim Agreement in Article V restated the promises set forth in Article XII of the Treaty." Christol, *supra* note 4, at 199.

146. "National technical means of verification" (NTM) was not defined in either SALT I or SALT II. *Military Implications of the Treaty on the Limitation of Strategic Offensive Arms and Protocol Thereto (SALT II Treaty): Hearings Before the Committee on Armed Services, 96th Cong., 1st Sess. 734-35 (1979)* (statement of Lt. General Edward Rowney, U.S. Army). It has been suggested that NTM was undefined on purpose and that the Soviets and Americans disagree on the definition of NTM. *Id.* Secretary of State Cyrus Vance disagrees and believes that

there is an understanding between the United States and the Soviets that national technical means can be described broadly as technical information collection systems used for verifying compliance with agreements and which operates from outside the national territory of the other state. In SALT I the United States described NTM in these terms and the Soviet side stated that there was no substantive difference between us on this point.

Id. at 502 (statement by Cyrus Vance).

147. "The term 'national technical means of verification' has come to mean principally space objects, and in particular observation-type satellites. Although national technical means are not limited to observation satellites, they are an exceedingly important aspect of the information gathering process." Christol, *supra* note 4, at 199-200.

148. SCOVILLE & TSIPIS, *supra* note 10, at 5, 15; THIRTEENTH REPORT, *supra* note 64, at 23; *War-Games*, *supra* note 37, at 36. The intent of the parties was made explicit during the SALT I negotiations. "In the early stages of the SALT negotiations, the United States brought up the principle of guaranteeing the sanctity of reconnaissance satellites for verification purposes, and the Soviet Union concurred with this principle." SCOVILLE & TSIPIS, *supra* note 10, at 15.

149. *Id.* at 5; *War-Games*, *supra* note 37, at 36.

150. Subparagraph 1(c) of Article IX reads as follows:

1. Each Party undertakes not to develop, test, or deploy: . . .

(c) systems for placing into Earth orbit nuclear weapons or any other kind of weapons of mass destruction, including fractional orbital missiles.

Document on Salt II Agreement, *supra* note 18, at 41.

missiles such as the FOBS.¹⁵¹ However, the parties have stipulated that the provisions of 1(c) of Article IX do not require the dismantling or destruction of any existing launchers of either party.¹⁵²

SALT II, like SALT I, depends on NTM¹⁵³ and prohibits each side from interfering with NTM.¹⁵⁴ The Treaty does not define NTM. However, the Department of State defined NTM to include photo-reconnaissance satellites¹⁵⁵ and added that Article XV(2) "prohibits use of antisatellite systems against satellites of the other Party that are used for Treaty verification."¹⁵⁶

SALT II may have additional significance regarding ASATs. U.S. Secretary of State, Cyrus Vance, stated that American ratification of SALT II will help to make future bilateral ASAT negotiations with the Soviet Union successful.¹⁵⁷ Conversely, Vance warned that an American failure to ratify SALT II will adversely affect the chances for a successful ASAT agreement.¹⁵⁸

c. *The SALT Agreements — A Summary*

The SALT Agreements are bilateral treaties coming into effect only upon ratification by the parties.¹⁵⁹ SALT I has been ratified¹⁶⁰ and prohibits the parties from interfering with each others NTM including satellites used for verification purposes.

Upon ratification, SALT II will reemphasize the prohibitions of SALT I. Additionally, it will expand Article IV of the Space Treaty to preclude development, testing and deployment of systems for placing into orbit nuclear weapons and weapons of mass destruction. Finally, fractional orbiting missiles will be banned.

151. *Id.* at 20

152. *Id.* at 41. Nevertheless,

the Soviets have agreed to dismantle or destroy twelve SS-9 launchers at the Tyura-Tam test range which have been used to test a fractional orbital bombardment system (FOBS) several times in the past. Moreover, any fractional orbital missiles in existence must be dismantled or destroyed pursuant to the obligation of paragraph 4 of Article XI, and such missiles cannot be developed in the future.

Id. at 20.

153. Article XV(1) reads as follows:

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

Id. at 43.

154. Article XV(2) reads as follows:

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

Id. For the text of paragraph 1 of this Article, see note 153 *supra*.

155. Document on SALT II Agreement, *supra* note 18, at 21.

156. *Id.*

157. Mohr, *Vance Tells Senate Panel Pact Defeat Would Hurt NATO*, N.Y. Times, July 11, 1979, at 3, col. 2.

158. *Id.*

159. Document on SALT II Agreement, *supra* note 18, at 46 (Art. XIX).

160. See note 18 *supra*.

5. Current Negotiations Regarding ASATs

a. *Background and Negotiations to Date*

At first, the prospects for a bilateral negotiated agreement between the United States and the Soviet Union appeared dim. The Soviets had a comfortable lead in ASAT development¹⁶¹ and did not appear interested in negotiations.¹⁶² The Soviet lead in ASAT development may also have initially led to the reluctance of the United States to negotiate. Without an ASAT capacity of its own, the United States would be in a weak bargaining position relative to the Soviets.¹⁶³ Hence, the United States began its own ASAT program¹⁶⁴ and the space arms race was underway.¹⁶⁵ As the race developed, Soviet and American interest in a negotiated settlement grew. This stemmed from a Soviet fear that America would produce an ASAT superior to their own¹⁶⁶ and America's reluctance to expend the huge amounts of resources necessary for a successful ASAT program.¹⁶⁷ Thus, in March 1976, when American officials offered to negotiate ASATs with the Soviets, the Soviets accepted the invitation.¹⁶⁸

Preliminary negotiations were held in Helsinki during June 1978 at the request of President Carter.¹⁶⁹ The parties met again at Berne, Switzerland in January and February of 1979.¹⁷⁰ However, these talks failed to produce an agreement.¹⁷¹ A third round of talks was held in Vienna in late April 1979.¹⁷² These talks ended in a deadlock and it now appears doubtful that the parties will reach agreement in the near future.¹⁷³ The parties did not impose a

161. Burt, *U.S. Seeks to Curb 'Killer Satellites'*, N.Y. Times, Apr. 10, 1979, § A, at 17, col. 1 [hereinafter cited as Burt, *U.S.*]. See note 34 *supra*.

162. *Id.*; Burt, *Soviet*, *supra* note 20, at 6.

163. Burt, *U.S.*, *supra* note 161, § A, at 17, col. 1. *The New Military*, *supra* note 3, at 139; *Shuttle*, *supra* note 12, at 17; *U.S. Funds*, *supra* note 20, at 18.

164. See § II.B *supra*.

165. SCOVILLE & TSIPIS, *supra* note 10, at 19; *Real War in Space*, *supra* note 12, at 7; *The New Military*, *supra* note 3, at 136.

166. The Soviets recognize America's overall technological superiority and fear that an all-out American ASAT effort will produce a system superior to theirs. Burt, *U.S.*, *supra* note 161, § A, at 17. See *U.S. Optimistic on Killer Satellite Ban*, AV. WEEK & SPACE TECH., June 26, 1978, at 20 [hereinafter cited as *U.S. Optimistic*]; Friedberg, *supra* note 57, at 98.

167. *The New Military*, *supra* note 3, at 138.

168. *Killer Talks*, AV. WEEK & SPACE TECH., Nov. 28, 1977, at 13 [hereinafter cited as *Killer Talks*].

169. *U.S. Optimistic*, *supra* note 166, at 20; Christol, *supra* note 4, at 201; *U.S. and Soviet to Resume Talks on 'Killer Satellites' on April 23*, N.Y. Times, Apr. 15, 1979, at 11, col. 6 [hereinafter cited as *U.S. and Soviet Talks*]; *More Talks are Planned on Anti-Satellite Arms*, N.Y. Times, Feb. 20, 1979, § D, at 76, col. 1 [hereinafter cited as *Talks Planned*].

170. *U.S. and Soviet Talks*, *supra* note 169, at 11; *Talks Planned*, *supra* note 169; Burt, *U.S.*, *supra* note 161, § A, at 1.

171. *Talks Planned*, *supra* note 169, § D, at 76.

172. *U.S. and Soviet Talks*, *supra* note 169, at 11; *Third U.S.-Soviet Talks in Vienna*, N.Y. Times, May 1, 1979, at 5, col. 1.

173. Burt, *Soviet*, *supra* note 20, at 6.

moratorium on the development of ASATs¹⁷⁴ and both sides have continued to develop and test ASATs.¹⁷⁵ Talks have focused on the possibility of limiting ASATs.¹⁷⁶ Throughout the negotiations, the United States made it clear that it cannot accept an imbalance in antisatellite weapons stockpiles.¹⁷⁷

b. *Potential Problems*

The United States is seeking to negotiate the dismantling of existing Soviet ASAT equipped rockets.¹⁷⁸ American officials concede that it would be difficult to achieve such an agreement¹⁷⁹ and that the most the Soviets are likely to accept will be a prohibition on the testing of new antisatellite systems.¹⁸⁰ The United States has indicated that it will not allow the Soviets to establish a superior ASAT capability.¹⁸¹ Therefore, a Soviet refusal to dismantle its existing ASAT weaponry will leave the United States with no alternative other than the development of an ASAT system.¹⁸²

The Soviets consider the U. S. space shuttle to be an ASAT.¹⁸³ In the current negotiations the Soviets have raised this issue and have demanded that any moratorium on ASAT development must include a cessation of shuttle testing.¹⁸⁴ The United States has termed this demand as "totally unacceptable."¹⁸⁵ An American official close to the talks stated that the United States would neither terminate the shuttle nor slow its development.¹⁸⁶ However, the United States may be willing to agree not to use the shuttle as an ASAT.¹⁸⁷

The United States and the Soviet Union are not the only nations that have the capability to exploit outer space for military purposes.¹⁸⁸ The People's

174. *Killer Talks*, *supra* note 168, at 13.

175. *See* § II.B *supra*.

176. Christol, *supra* note 4, at 201.

177. *Id.*

178. Burt, *U.S.*, *supra* note 161.

179. *Id.*

180. *Id.*

181. "Our overall game plan is not to permit the other side to attain unilateral superiority in space," says a top national official. "There are two ways to do it. One is to build up our capability until it is at least equivalent. The other is to get [the Soviet Union] to get rid of some of [its] capability, with unambiguous verifiability. Either one is acceptable to [the Carter] Administration."

The New Military, *supra* note 3, at 149.

182. *Id.*

183. *See* § II.A *supra*.

184. Burt, *Soviet*, *supra* note 20, at 6; *see Shuttle*, *supra* note 12, at 17. The Soviets are developing their own reusable shuttle. *Soviet Shuttle*, *supra* note 14, at 14. Therefore, the Soviet challenge of the U.S. shuttle may be countered with an American challenge to the Soviet shuttle. *Shuttle*, *supra* note 12, at 17.

185. Burt, *Soviet*, *supra* note 20, at 6.

186. *Id.*; Paul Warnke, the former United States Chief Arms Negotiator, has indicated that the United States is not willing to abandon the shuttle or even to modify its specifications. *Real War in Space*, *supra* note 12, at 14.

187. *Id.*

188. Tsipis, *supra* note 6, at 18, 21-22.

Republic of China, The Federal Republic of Germany and France are developing their own space programs.¹⁸⁹ It is believed that the outer space potential of these nations is a major motivation behind Soviet ASAT development.¹⁹⁰ Thus, a bilateral treaty with the United States may fail to allay all of the Soviet concerns.¹⁹¹

Even after a bilateral agreement between the U.S.S.R. and the United States is signed, problems will remain. Unless the agreement calls for launch or orbit inspection,¹⁹² verification of compliance with an agreement will be difficult to achieve. Presently, inspection of satellites is not expressly allowed at either launch sites¹⁹³ or in orbit.¹⁹⁴ Instead, the parties prefer to rely on remote ascertainment.¹⁹⁵

The United States has expressed confidence that weapons systems in outer space can be detected and monitored by remote technical means.¹⁹⁶ However, remote systems are not foolproof.¹⁹⁷ Small numbers of satellites can be secretly deployed without being identified.¹⁹⁸ Therefore, isolated deployment of ASATs may go undetected.¹⁹⁹ Verification is further complicated by the fact that the behavior of many non-military satellites performing peaceful missions strongly resemble that of ASATs.²⁰⁰

President Carter has stated that the United States prefers to limit ASATs rather than to deploy them.²⁰¹ Yet, in the same statement, Carter warned that the United States will vigorously pursue the development of its own ASATs in the absence of an agreement.²⁰² Time may be the greatest obstacle to an effec-

189. *Id.*

190. *See* notes 15, 19 *supra*.

191. Tsipis, *supra* note 6, at 21-22.

192. An agreement on a provision allowing for launch or orbit inspection is unlikely. Launch sights are highly confidential areas and the United States is not apt to open up these sights to Soviet inspection and vice versa. The United States would prefer to use technical means of verification even though these means are inferior. *See Hearings on Space Treaty, supra* note 84, at 23 (statement of Arthur Goldberg); *id.* at 91 (statement of Cyrus Vance); *id.* at 98 (statement of General Wheeler).

193. *Id.* at 23 (statement of Arthur Goldberg). During these hearings, Cyrus Vance stated: There is nothing in the . . . [Outer Space Treaty] which precludes our inspection of a satellite put up by another country. It would be possible for either the United States or the Soviet Union to pull up alongside — if the particular orbiting body in which they were traveling had that capability — a satellite of another country.

Id. at 98. Mr. Vance then commented that the Space Treaty allows physical inspection (*e.g.*, physical entry) regarding facilities on celestial bodies [Article XII] but does not cover such inspection of orbiting vehicles. *Id.* at 99.

194. *Id.* at 23 (statement of Arthur Goldberg).

195. *Id.* at 91 (statement of General Wheeler).

196. *Id.* at 81 (statement of Cyrus Vance); *id.* at 95, 98 (statement of General Wheeler).

197. Tsipis, *supra* note 6, at 16; SCOVILLE & TSIPIS, *supra* note 10, at 17.

198. *Hearings on Space Treaty, supra* note 84, at 81 (statement of Cyrus Vance); *id.* at 89 (statement of General Wheeler).

199. *Id.* at 83 (statement of Cyrus Vance).

200. SCOVILLE & TSIPIS, *supra* note 10, at 17; Tsipis, *supra* note 6, at 14.

201. PRES. DOC. of June 20, 1978, *supra* note 22, at 1137; Tsipis, *supra* note 6, at 14.

202. *Id.* There is no moratorium on ASAT development. *See* note 174 *supra*.

tive agreement. Soviet and American ASAT development continues. Once the technology is perfected and the system deployed, the subject matter of the negotiations becomes moot.²⁰³ Thus, the longer the talks last, the less likely it is that they will be successful.

c. *Legitimate Uses of ASATs: Force*

International law recognizes the justified use of force in specific circumstances. Article 51 of the United Nations Charter states in part: "Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security."²⁰⁴ This "inherent right of self-defense" has not been modified, replaced or abrogated by special regulations covering outer space, and, consequently, is applicable in outer space.²⁰⁵ Hence, if a member of the United Nations is attacked it may legitimately resort to force in outer space under the self-defense exemption.²⁰⁶ The Soviet Union²⁰⁷ and the United States²⁰⁸ apparently subscribe to this view.²⁰⁹

203. Real War in Space, *supra* note 12, at 8; Christol, *supra* note 4, at 202.

204. Article 51 reads:

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

U.N. CHARTER art. 51.

205. OGUNBANWO, *supra* note 59, at 32.

206. Piradov, *supra* note 60, at 88-89. There are two self-defense exception theories. The first, more popular, theory is a restrictive view which forbids the direct and overt use of armed force against other states save in response to a similar use of force. Tucker, *Legal Restraints on Coercion*, in *THE UNITED STATES IN A DISARMED WORLD* 153, 156-57 (The Washington Center of Foreign Policy Research ed. 1966). A second view would allow the use of force to remove a danger or threat to a nation. *Id.* at 149-50.

207. The Soviet view was expressed as follows:

From the fact that states are obliged to conduct their activities in the exploration and use of outer space, including celestial bodies, in accordance with international law, including the UN Charter, it does not follow by any means that there cannot be retaliation through or using outer space against an aggressor in the process of legitimate self-defence.

In other words, this fact does not amount to a prohibition of the use of outer space for military purposes in accordance with Article 51 of the UN Charter, which authorizes "individual or collective self-defence" against aggression.

Piradov, *supra* note 60, at 88-89.

208. The United States apparently subscribes to this view:

[I]t is clear that the United States has taken the position that the less than total arms control measures of Article 4(1) for the entire space environment did not invalidate the inherent right of national self-defense pursuant to customary international law and Article 51 of the UN Charter.

Christol, *supra* note 4, at 196.

209. In the past, nations have used the self-defense exception to justify military action when

It has been stated that "a consensus is rapidly growing in the world that a State has the right to take protective measures even though the spacecrafts activity occurs in space beyond the states territorial area."²¹⁰ Thus, if a state interprets activity in space as sufficiently threatening it can take measures it deems appropriate to protect itself. There is no universal interpretation of what constitutes a "sufficient threat." In the past, espionage by aerial reconnaissance has been considered sufficient to justify a military response. The U-2 incident is a well known example.²¹¹ A similar incident took place when the Soviet Union attacked an American spy plane fifty miles off the Soviet coast.²¹² This plane was in free airspace, yet it was attacked due to its threatening nature.²¹³ Professor Zhukov of the Soviet Union stated, "from the viewpoint of the security of a state it makes absolutely no difference from what altitude espionage over its territory is conducted."²¹⁴ This may indicate that reconnaissance satellites are subject to a legitimate ASAT attack.²¹⁵ States also have an interest in protecting their space activities and may resort to their own military capabilities if there is no other basis of protection.²¹⁶ Former Secretary of State Dean Rusk hinted that a state may legally use ASATs in defense of its own space objects.²¹⁷ The United States has also suggested that

they perceived a threat to their security, *e.g.*, the 1968 United States military intervention in the Dominican Republic, *see* Meeker, *The Dominican Situation in the Perspective of International Law* 53 DEPT STATE BULL. 60 (1965), and the Soviet intervention in Czechoslovakia. Kovalev, *Sovereignty and International Duties of Socialist Countries*, Pravda, Sept. 25, 1968, reprinted in N.Y. Times, Sept. 27, 1968, § 1, at 3, col. 1.

210. Goedhuis, *Comment II, Current Problems in Space Law*, 1966 BRIT. INST. INT'L & COMP. L. 28, 31 (International Law Series No. 6).

211. Wright, *Legal Aspects of the U-2 Incident*, 54 AM. J. INT'L L. 836, 840 (1960); *United States Plane Downed in the Soviet Union*, 42 DEPT STATE BULL. 816 (1960); OGUNBANWO, *supra* note 59, at 29. The U-2 was attacked when it was 30 to 40 miles above the U.S.S.R.. *Id.* at 29.

212. On July 1, 1960, an American RB-47 aircraft was flying an electromagnetic observation flight over the Barents Sea. The plane was shot down by the Soviet Air Force at a point fifty miles off the Soviet coast. *Security Council Rejects Soviet Complaint Against U.S. in RB-47 Incident Casts 88th and 89th Vetoes*, 43 DEPT STATE BULL. 235-38 (1960) [hereinafter cited as *RB-47 Incident*]. At no time during its flight was the plane closer than thirty miles to the Soviet coast. *Id.* at 235. *See* OGUNBANWO, *supra* note 59, at 29.

213. The Soviet Union charged that the plane was engaged in a "premeditated aggressive mission." *RB-47 Incident*, *supra* note 212, at 236; OGUNBANWO, *supra* note 59, at 29.

214. OGUNBANWO, *supra* note 59, at 29.

215. However, this view of reconnaissance satellites is probably outdated. "Despite an initial difference relating to the legality of the use of reconnaissance-type satellites, there is now agreement that such space objects are legal under the Principles Treaty." Christol, *supra* note 4, at 205. Both the Soviet Union and the United States deploy reconnaissance satellites. *See* LOVELL, *supra* note 46, at 37; SCOVILLE & TSIPIS, *supra* note 10, at 6-7; THIRTEENTH REPORT, *supra* note 64, at 11. Thus, it would be hard for either to justify an attack (armed or legal) on the other.

216. Almond, *supra* note 106, at 83.

217. During the Senate Committee Hearings on the Space Treaty, former Secretary of State Dean Rusk was asked if state A can take unilateral action against space objects of state B when B's objects interfere with the legitimate space activities of A. He responded that Article IV of the Space Treaty "does not inhibit, of course, the development of an antisatellite capability in the event that should become necessary." *Hearings on Space Treaty*, *supra* note 84, at 26 (statement of Dean Rusk).

military action may be taken in situations where a violation of the Space Treaty has occurred.

A state having real reason to suspect [a Space Treaty] violation would be entitled to challenge the suspected state and, if its reasonable doubts were not removed, to take appropriate steps to protect itself against the effects of a Treaty violation. The extent of these rights would, of necessity, depend upon the facts of the particular situation.²¹⁸

Thus, it appears that if a state feels sufficiently threatened in or from outer space, it can resort to the use of ASATs and argue that such use is legally justified.

V. RECOMMENDATIONS

Most space law scholars agree that further positive law is required to limit ASAT development and deployment. This can be accomplished through one of several means. One method calls for an expansion of Article IV of the Space Treaty. This can be done in at least two ways. The first would be to amend Article IV itself.²¹⁹ Alternatively, a new treaty could expand the principles found in the Space Treaty.²²⁰ The latter method is not new. Since the Space Treaty was accepted by the General Assembly in 1967, several of its general articles were expanded into full and separate treaties.²²¹ Article IV could be

218. *Hearings on Space Treaty*, *supra* note 84, at 100 (memorandum of Legal Advisor Leonard C. Meeker).

219. Christol recommends the following specific proposals to revise Article IV:

Paragraph one should be extended to cover conventional weapons. It is no longer acceptable to limit the scope of this paragraph to nuclear or mass destruction-type weapons. If there were any doubt whether an ASAT is a conventional weapon, it would be desirable to provide specifically that ASATs may not be launched into, tested in, or used in the space environment. Further, Article 4(1) should be revised so that the term "place in orbit around the Earth" should read that "States Parties to the Treaty shall not attempt to launch a space object that has the capability of orbiting or place in orbit around the Earth, the Moon or other celestial bodies. . . ." etc.

Christol, *supra* note 4, at 203.

Article 4(2) should be amended to include outer space, *per se*, as an area in which the command of exclusively peaceful purposes is to apply. To offer assurances that such purposes will be complied with, the new Article 4 should provide that space objects be equipped with docking facilities meeting a common international standard so that inspections could be accomplished by non-national, including multi-national, inspecting satellites.

Id.

220. Galloway, *supra* note 74, at 181; GOROVE, *supra* note 89, at 94.

221. Articles V and VIII were the basis for The Agreement on The Rescue and Return of Astronauts and the Return of Space Objects, Apr. 22, 1968, 6 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119; Article VII was expanded by the Convention on International Liability for Damage Caused by Space Objects, Oct. 9, 1973, 24 U.S.T. 2389, T.I.A.S. No. 7762. Article XI was expanded by the Convention on Registration of Objects Launched into Outer Space, Sept. 15, 1976, 28 U.S.T. 695, T.I.A.S. No. 8480. See Galloway, *supra* note 74, at 181; GOROVE, *supra* note 89, at 94.

expanded in a similar manner in order to provide some detailed prohibitions on arms limitations.²²² Such a treaty will resolve some of the serious inconsistencies now present in Article IV.²²³

Another suggestion is the gradual pacification of space. To implement this, a ban would be imposed on military activity in space. This ban would be followed by the gradual step-by-step reservation of single parts of outer space, *e.g.*, geostationary orbits, orbits around celestial bodies, etc., for peaceful use free from any military activity.²²⁴ An alternative would be a bilateral agreement between the Soviet Union and the United States. Such an agreement should at least ban the use of ASATs and preferably ban the testing, deployment and use of ASATs.²²⁵ The agreement should be policed by a multinational body similar to the bilateral Standing Consultative Commission established under the Anti-Ballistic Missile Treaty.²²⁶ ASAT prohibitions may encourage states to deploy other kinds of space weapons systems. Therefore, any agreement must proscribe all weapons systems.²²⁷

Adequate verification is the key to any arms control agreement. Such agreement should explicitly allow for inspection of satellites by manned or unmanned space objects.²²⁸

VI. CONCLUSION

Extensive ASAT development is being conducted by the Soviet Union and the United States. The Soviets already have operational ASATs and American ASATs may be functional in less than a year. The resource expenditure for this space arms race is staggering and the prospects of ASATs in space is causing negative repercussions in other areas of space development. Peaceful projects are being reconsidered and cancelled. New satellites are being redesigned, at great cost and effort, to withstand ASAT attacks. The high ideals of the Space Treaty, calling for the peaceful use of outer space, are being neglected as space is gradually turned into an armed camp.

International law has responded in part to the ASAT threat. The Space Treaty has prohibited ASATs carrying nuclear weapons or other weapons of mass destruction from orbiting earth. However, the Space Treaty is severely

222. Galloway, *supra* note 74, at 181.

223. GOROVE, *supra* note 89, at 94.

224. See Busák, *supra* note 137, at 173.

225. SCOVILLE & TSIPIS, *supra* note 10, at 18-20.

226. *Id.* at 18-21.

227. *Id.* at 20.

228. Christol believes that space inspection agreements may be based on existing agreements allowing for the boarding and inspection of foreign vessels in national fishing zones. Christol, *supra* note 4, at 202. Another plan would call for the eventual creation of a multinational global verification institution to police all arm limitation agreements. See Goldblat, *Monitoring Arms Control, Do We Need a Global Verification Institution*, in OPPORTUNITIES FOR DISARMAMENT 69, 76 (J. Sharp ed. 1977).

limited in its effect. If the objects themselves are ASATs or carry ASATs with lethal mechanisms other than those expressly proscribed, they are not prohibited.

Articles I and III of the Space Treaty incorporate existing international law principles, including those expressed in the Charter of the United Nations, into the Treaty. Signatories may not make use of the "threat or use of force." Therefore, aggressive attacks that are illegal on earth are illegal in outer space. Similarly, Article 51 of the U.N. Charter extends the "inherent right of self-defense" to outer space. Hence, states may legitimately resort to force in outer space if such force is used in "self-defense" — a term given broad interpretation in the past.

The bilateral SALT talks protect certain American and Soviet reconnaissance satellites used to verify the SALT Agreements, but fail to provide further limitations on ASATs.

Thus, there is no current ban on the development and deployment of many types of ASATs. These satellites may patrol outer space much as submarines and destroyers patrol our oceans. While it is unlikely that ASATs will attack foreign satellites in peacetime, their existence may contribute to the destabilization of the current military balance.²²⁹

In order to prevent the proliferation of ASATs in outer space, further developments in positive law are necessary. A far reaching bilateral limitation agreement between the U.S.S.R. and the United States should be concluded before the possibility of limiting ASATs is extinguished by advances in technology. This agreement should be supplemented by a similar multilateral agreement binding those nations that are developing military space capabilities, *e.g.*, the Federal Republic of Germany and the People's Republic of China. Both agreements should provide for manned and unmanned inspections of space objects for verification. Both agreements should also ban all other space weapons systems, *e.g.*, space-to-earth, from outer space.

Former United States Ambassador to the United Nations, Arthur J. Goldberg, stated that Man's greatest danger in outer space lies not in its cold and hostile environment, but in our own human nature with its discords and violence. Therefore, as the space age unfolds, Man's first responsibility is to prevent the extension of his earthly conflicts into outer space.²³⁰ Whether or not Man's first responsibility will be met remains to be seen.

Dana J. St. James

229. *Id.* at 200.

230. *Hearings on Space Treaty*, *supra* note 84, at 113 (statement of Arthur Goldberg).