University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Documents on Outer Space Law | Law, College of

1-1-1985

Outer Space Arms Control: Existing Regime and Future Prospects

Norman A. Wulf
U.S. Arms Control and Disarmament Agency

Follow this and additional works at: http://digitalcommons.unl.edu/spacelawdocs

Part of the Air and Space Law Commons

Wulf, Norman A., "Outer Space Arms Control: Existing Regime and Future Prospects" (1985). *Documents on Outer Space Law.* Paper 9.
http://digitalcommons.unl.edu/spacelawdocs/9

This Article is brought to you for free and open access by the Law, College of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Documents on Outer Space Law by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Published in:

Proceedings of the Twenty-Seventh Colloquium on the Law of Outer Space, International Institute of Space Law of the International Astronautical Federation, Lausanne, Switzerland, October 7–13, 1984

Published by American Institute of Aeronautics and Astronautics
New York, 1985.

OUTER SPACE ARMS CONTROL: EXISTING REGIME AND FUTURE PROSPECTS

Norman A. Wulf*

Abstract

The existing arms control regime for outer space bans attacks on satellites of other countries, except as acts of self-defense. The moon and other celestial bodies cannot be used for military activities. Detonating nuclear explosives in outer space is prohibited. Deployment in space of nuclear weapons or other weapons of mass destruction is prohibited. Development, testing, or deployment of space-based anti-ballistic systems or their components by the United States or the Soviet Union is prohibited.

Proposals that outer space be demilitarized or that anti-satellite weapons be banned create complex problems. Since all space activities have potential military uses, great care would have to be taken in defining precisely what a proposal to demilitarize space is meant to prohibit. Similarly, many space objects have the capability to be used to damage or destroy space objects. Any reasonable definition of anti-satellite weapon will leave uncontrolled some non-weapon systems that have a residual anti-satellite capability. Daunting problems of verification and the disparity between the current relevant space capabilities of the United States and the Soviet Union add further complexity.

While it is unreasonable to conclude that demilitarization of space or a ban on ASAT weaponry are panaceas, it is also unreasonable to conclude that nothing useful can be done in space arms control.

Introduction

This paper seeks to summarize the existing legal regime for arms control in outer space and thereafter to comment on some factors that influence the prospects for new arms control constraints. It will be seen that a fairly extensive legal regime for arms control in outer space already exists. It will also be seen that factors influencing future outer space arms control prospects are quite complex.

I. The Existing Regime

A. Protection of Satellites

A basic proposition is that under existing international law no country can damage, destroy or forcibly interfere with the satellites of another country, except when engaged in individual or collective self-defense. While this rule is not stated explicitly in existing international law, it is nonetheless implicitly and clearly set forth in the Outer Space Treaty[1] and the UN Charter.

Let us begin our examination with Article I of the Outer Space Treaty. It states in pertinent part:

> Outer space ... 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....

The basic law applicable to outer space is set forth in this article -- outer space is open to all States for use and exploration. Destroying a satellite operated by a foreign state violates this basic right by depriving that State of the use of outer space.

Of course, all rights are subject to certain limitations and this right is no exception. Article IX of the Outer Space Treaty states in part:

> States Parties to the Treaty ... shall conduct all their activities in outer space ... with due regard to the corresponding interests of all other States Parties to the Treaty....

This limitation is an obvious one. If one State in exercising its freedom to use outer space conducts space activities in total disregard of the space activities conducted by another State, the latter State's freedom to use space may be infringed. Obviously, States in exercising their outer space freedom must take account of the freedom sought to be exercised by other states.

It is worth pausing a moment to look at the antecedents of this rule. An analogous area in which a well-defined body of law had been developed prior to the Outer Space Treaty negotiations is the law of the sea. Indeed, the negotiators of the Outer Space Treaty have acknowledged their debt to this body of law and practice.[2] Perhaps best reflective of the customary rules of law of the sea was the 1958 Geneva Convention on the High Seas.[3] Article 2 of that Convention sets forth the basic high seas rule:

> The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom

*Deputy General Counsel, U.S. Arms Control and Disarmament Agency, Washington, D.C. 20451 The views expressed herein are those of the author and do not necessarily reflect those of the U.S. Government or any agency thereof.

This paper is declared a work of the U.S. Government and therefore is in the public domain.

> of the high seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, inter alia, both for coastal and non-coastal States:
>
> [Freedom of navigation, fishing, overlight and the laying of submarine cables and pipelines.]
>
> These freedoms and others which are recognized by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the freedom of the high seas.

This basic rule has operated as the peacetime law for several centuries.[4] With little more, this concept has allowed for the use of the seas by all States with the understanding that interference with the activities of others is to be avoided. In short, the same basic rule that for centuries protected foreign ships from harm was placed in the Outer Space Treaty and now protects foreign satellites from harm.

Law of the sea rules, however, required that jurisdiction over ships on the high seas be assigned to some State. That State is the State whose flag the ship flies -- the flag State.[5] The Outer Space Treaty specifies that the State Party "on whose registry an object launched into outer space is carried" -- the registry State -- has jurisdiction over the space object.[6] Traditional maritime rules did not readily transfer to space since an unmanned ship on the high seas would be considered abandoned and a legitimate object of salvage. To prevent any concept of salvage applying to unmanned orbiting satellites, Article VIII makes clear that

> Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.

Thus, the Outer Space Treaty firmly establishes that jurisdiction over a space object is vested in the registry State and that objects in space are not to be viewed as abandoned or subject to salvage or interference by other States. To summarize the rules thus far, all States are free to use outer space but they must do so with regard to the use of space by others. The fact that an object is in outer space does not alter its ownership; jurisdiction over the space object shall be in the registry State.

Were the analysis to be stopped at this point, some doubt arguably might exist about protection accorded space objects. Those doubts would be dispelled, however, by Article III of the Outer Space Treaty. It imposes an obligation on State Parties to conduct their space activities "in accordance with international law, including the Charter of the United Nations." While the applicability of the Charter to man's activities in space had been presumed by many, this provision made its applicability clear to all.[7] The intricacies of the Charter are beyond the scope of this paper. Suffice it for me to state that the Charter's proscription on the "threat or use of force", except when an act of individual or collective self-defense, applies to space objects -- space objects whose ownership is not subject to question as a result of Article VIII of the Outer Space Treaty and whose right to be present in space is clearly established by Article I of the Treaty.

While it may have been preferable that the Outer Space Treaty state explicitly that space objects of a State shall not be damaged or destroyed by other States, there can be no question that the combined effect of the Outer Space Treaty and the UN Charter is to provide such protection. There is, therefore, a peacetime legal regime in place that implicitly precludes a State from damaging or destroying satellites of other States.

B. Prohibition of Certain Acts or Weapons

Having established that a principle component of the existing arms control regime for outer space is the implicit protection of satellites, this analysis now examines other features of the existing regime, specifically those rules prohibiting certain acts and those rules prohibiting certain weapons.

Traditional law of the sea rules prohibit two activities explicitly -- slave trading and piracy.[8] What of outer space? Article IV of the Outer Space Treaty places explicit prohibitions on military activities on celestial bodies:

> The moon and other celestial bodies shall be used by all State 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.

This prohibition is patterned after Article I of the Antarctic Treaty that prohibited military activities on that frozen continent.[9]

Although some have made arguments to the contrary, it is clear that the Outer Space Treaty does not prohibit military activities conducted elsewhere in outer

space than on the moon and other celestial bodies. Thus, there is no overall prohibition on military activities conducted in Earth orbit. The practice of both major space powers substantiates this.

Limitations are in place with respect to certain weapon systems, particularly nuclear weapons and other weapons of mass destruction. The 1963 Limited Test Ban Treaty prohibits detonating a nuclear explosive device in outer space.[10] The Outer Space Treaty, some four years later, prohibited placing nuclear weapons "or any other kinds of weapons of mass destruction" anywhere in outer space.[11] Weapons of mass destruction include radiological, chemical and biological weapons and any weapons developed in the future which have characteristics comparable in destructive effect to those of nuclear weapons or other weapons mentioned above.[12]

Beyond the nuclear realm but perhaps approximating their destructive effect is the ban on hostile use of environmental modification techniques. The EnMod Convention not only prohibits hostile use of environmental modification techniques in space that result in widespread, long-lasting or severe effects on Earth but also such use that results in comparable effects on space.[13]

In the bilateral realm, the United States and the Soviet Union have agreed in the 1972 ABM Treaty not to develop, test, or deploy anti-ballistic missile systems or components which are space-based.[14] The ABM Treaty, however, does not preclude research on such systems or components.

From this brief overview the existing arms control regime for outer space can be summarized as follows:

-- Damaging or destroying another State's satellites is prohibited except when an act of individual or collective self-defense;

-- The moon and other celestial bodies shall not be used for military activities;

-- Detonating nuclear explosives in outer space is prohibited;

-- Deployment of nuclear weapons and other weapons of mass destruction in outer space is prohibited; and

-- Development, testing, or deployment of space-based ABM systems or components by the United States or the Soviet Union is prohibited.

II. Future Prospects

There has been a great deal of attention given to possible further arms control measures applicable to outer space. Some call for a complete ban on all military activities in outer space -- demilitarization -- while others call for a ban on anti-satellite weapons. There are calls for other measures as well, but I shall confine myself to these two broad areas.[15]

A. Demilitarization of Outer Space

The first problem to be overcome is a definitional one. What are military activities? Do they include military use of a communication satellite? A navigation satellite? Would such a ban extend to military use of maps prepared through use of remote sensing satellite imagery? Indeed, would one go so far as to ban weather satellites because that information could assist the military?

Or, perhaps at the other end of the spectrum, would this ban be limited to certain specific military actions? For example, the Outer Space Treaty explicitly prohibits placing on any celestial body "military bases, installations and fortifications." If this restriction were made applicable to Earth orbit, would the Soviet manned space station be a military base? After all, it is manned by Soviet military personnel. The response might well be, no, because use of military personnel does not automatically make the activity a military activity. Support for this view would be found in Article IV which, when talking about the prohibition on military activities conducted on celestial bodies, specifically allows military to be used. So, the mere fact that the personnel on-board the spacecraft are military, some would assert, does not make that craft a military installation.

Perhaps, the definitional problem could be reduced were military activities to be defined as referring to weapons or weapons systems. Thus, a military spacecraft would be a craft that has weapons on board -- an armed craft. The term "weapon", however, is not self-defining and perhaps more specificity is needed here as well. Thus, it may be necessary to speak in terms of weapons with the capability to damage or destroy targets in space or targets on Earth or in the Earth's atmosphere. However, there are problems in doing this as well.

What activities would such a definition exclude? A satellite that transmitted data to an Earth-based weapon system that used that data to target an Earth-based object would be excluded. If targeting satellites were to be included, the definition would have to cover not only those space objects that have weapon systems on board that are capable of damaging Earth targets but also it would have to cover space objects that assist Earth-based weapon systems to target Earth targets. How much assistance is enough? A navigational system that tells the weapon system with precision where it is located may assist that system in hitting its intended target. What about maps made from satellite imagery? Now, we are back to where we started when we were speaking of the gener-

ality of the phrase "demilitarization of space".

To me the conclusion is obvious. All space activities have potential military uses. To seek to "demilitarize space" without a precise definition of what that means is to ban nothing or to ban everything. Definitions are almost always arbitrary, excluding certain items and including others. If an approach that banned certain weapons were to be pursued, great care would have to be taken to define what is prohibited. Parties to any such agreement would have to accept that the arbitrary definition will exclude activities or systems that nonetheless have military implications -- how serious those implications are will vary depending not only upon the system themselves but also upon the perception of the party.

Another issue that must be dealt with is verification. No party to an arms control agreement that deals with its fundamental national security interests can be expected to base compliance upon trust of the other party or parties. It is the lack of trust that leads to the arms the agreements seek to control. Each party must have the independent capability to determine for itself whether the others are complying with the agreement. While there can be dispute as to how much verification is necessary, there can be no dispute that trust alone is inadequate.

Such verification activities could include the use of a variety of means ranging from observation satellites to review of the budgeting process and technical journals. The latter obviously is more available for use by the Soviet Union in verifying compliance by the United States than is available to the United States in verifying compliance by the Soviet Union. A more detailed discussion of verification is included in the following discussion of anti-satellite systems.

B. Anti-Satellite Systems

In the preceding section, reference was made to the peacetime rules established through the centuries for sea-going navigation -- freedom of the high seas combined with a due regard for the exercise by others. This basic regime did not prevail in war time nor did the existence of this rule prevent the development of vessels whose only practical use at that time was the destruction of vessels, i.e., the submarine. Following World War I, the United States and Great Britain proposed that submarines be abolished altogether. This proposal was not adopted but instead limitations on their use were subsequently adopted at the London Naval Conference of 1930. Those limitations did not survive World War II and now the use of submarines in times of hostilities is an accepted practice.[16] While fleets of commercial vessels ply the high seas on a routine basis, submarines capable of sinking those fleets ply the depths as a deterrent to armed conflict and, if deterrence fails, as a means of destroying enemy warships and denying seaborne lines of communication.

In space, a variety of satellites are pursuing their various activities protected by the peacetime rule of free use with a duty of due regard for other State's uses. These peacetime rules obviously would not protect all satellites during periods of conflict. Therefore, proposals to ban anti-satellite weapons have as their purpose not protection of satellites in peacetime but their protection during armed conflict. As with the proposal to ban submarines, the objective of such a ban on ASAT weapons would be to place a certain area or certain targets out of reach during a conflict by denying the sides the opportunity to develop and test ASAT weapons before hand. Another objective of a proposal to ban weapons for destroying satellites would be to avoid a racheting process of developing ASAT weapons and developing counters to such weapons. Achievement of these objectives, however, is frought with difficulties. Among them are problems of definition and verification. A separate problem is the applicability of such a ban during hostilities.

The definitional problem is similar to that encountered in the examination of demilitarization and probably will require the same solution -- an arbitrary definition. For example, a satellite with a capability to maneuver could be used as a weapon if it is maneuvered into a collision course with another satellite. Similarly, the docking of one satellite with another provides a capability that also could be used to maneuver a weapon close to the satellite of another country. However, banning satellites with the ability to maneuver or banning docking maneuvers would place an unreasonable burden on non-weapon uses of space. Another possibility would be a missile fired straight up from the ground that detonates a conventional or nuclear warhead in proximity to an orbiting satellite. Such ground launched missiles have, and will continue to have, important non-weapons uses so a ban on such missiles cannot be considered likely. Other examples could be given but the point is clear. It is not possible to eliminate all systems that have a capability to damage or destroy satellites. The focus, therefore, should be on systems dedicated to the damage or destruction of satellites or possibly on a discrete category of actions or hardware that have such distinct ASAT capability that the non-weapon use must be sacrificed. Such a sacrifice would only occur when the non-weapon use is not significant.

Verifying whether a particular system is a dedicated ASAT weapon or a system that is engaged in non-weapon activities

but has a residual ASAT capability is an obvious problem of extreme complexity. Even the technology and experience of approaching a foreign satellite for purposes of verification paradoxically could also enhance ASAT capabilities. Moreover, a close approach would not always reveal cases whether a particular space object had a weapon on board. If further arms control agreements are to be pursued, great care will obviously have to be exercised in defining their limits to ensure that they are verifiable.

Another complicating factor relates to the role of arms control agreements during a period of armed hostilities. Some agreements denominated as Laws of War are designed to be and are applicable during armed hostilities.[17] Others are clearly applicable during armed hostilities, although not specifically designated as laws of war -- the Environmental Modification Convention is an example.[18] Many arms control agreements clearly are not applicable during armed hostilities. The Limited Test Ban Treaty bans nuclear explosions in the atmosphere but does not purport to preclude use of nuclear weapons during armed hostilities.[19] It is doubtful that either the Soviet Union or the U.S. expect bilateral arms control agreements to be applicable during periods of armed hostilities between them. Given the nature of systems regulated and their possible use in a nuclear exchange, the possible non-applicability of the ABM Treaty during armed hostilities is probably of theoretical interest only. The adherence by either Party to their existing policies of interim restraint regarding the SALT I Interim Agreement and SALT II during a time of armed hostilities is probably even more theoretical. These agreements obviously have as their primary purpose the reduction of the risk of armed hostilities and result in a limitation on destructive capability should armed hostilities nonetheless occur.

Obviously, the Parties would need to decide and make clear in the agreement or in the negotiating record their intention as to the applicability of a possible future ASAT agreement during armed hostilities. However, if space systems are available that are perceived to be capable of use to directly threaten significant military assets of either Party to such an agreement whether those assets be in space or on Earth, it is doubtful that the parties would be able to agree that the agreement applied during period of armed hostilities. Moreover, the existence of such systems could serve as a significant disincentive to even considering the possibility of negotiating an ASAT ban.

Since it has already been concluded that existing international law protects space objects during peacetime and if a future ASAT agreement were not applicable during armed hostilities, what effect would such an agreement have? The answer is that the agreement would seek to protect space objects to some extent during armed hostilities by denying the parties the opportunity to test and deploy certain or all dedicated ASAT weapon systems thereby denying the sides the assurance that systems they may wish to use during armed hostilities would work. Some protection for satellites would result but there would be uncertainty as to what damage unproven or undedicated technology might be able to inflict upon satellites during hostilities.

This uncertainty is reduced for a party that has proven technology and is increased for a party that has technology more or less under development. Presently, the Soviet Union has a proven ASAT capability that can damage or destroy satellites in low Earth orbit. The U.S. is developing a direct ascent interceptor that is designed to damage or destroy satellites in low Earth orbit. It is possible that both could agree to destroy these systems but verification of compliance would require very intrusive verification measures. Even if this could be accomplished, there could be concern that the Soviet Union could quickly replicate its destroyed system with some confidence of the effectiveness of the replicated systems. Whether the Soviet Union would have the same concern regarding the U.S. ASAT system presumably would be determined by how much testing of the system had occurred before the systems were destroyed. Another approach might be to concentrate arms control attention on high altitude systems.

Conclusion

An ASAT arms control agreement is not a magic wand that will make satellites invulnerable to protection during times of armed hostilities. Any reasonable definition of ASAT weapon will leave uncontrolled some non-weapon uses with a residual ASAT capability. Verification of an ASAT arms control agreement poses problems that must be considered daunting. The disparity between current ASAT capabilities of the United States and the Soviet Union adds a further element of complexity.

Some may conclude from this presentation that the future prospects are bleak indeed. While it is unreasonable to conclude, as many suggest, that demilitarization of space or a ban on ASAT weaponry are panaceas, it is also unreasonable to conclude that nothing useful can be done in the area of space arms

control. However, it is important in looking at possible future steps to appreciate the complexity of the problem and to keep objectives realistic.

Footnotes

1. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. 6347, 610 U.N.T.S. 205 (effective Oct. 10, 1967).

2. Hearings before the Senate Foreign Relations Committee: Treaty on Outer Space, Executive D, 90th Cong. 1st Sess., p. 10 (1967).

3. Done at Geneva, April 29, 1958, 13 U.S.T. 2312; T.I.A.S. 5200, 450 U.N.T.S. 82 (effective Sep. 30, 1962). The second preambular paragraph of that Convention states that its provisions are "generally declaratory of established principles of international law."

4. Colombos, C.J., International Law of the Sea 47-86 (6th ed., 1967).

5. Supra note 3, at Article 5.

6. Supra note 1, at Article VIII.

7. Statement of Department of State Legal Advisor Becker before the U.N. Ad Hoc Committee on the Peaceful Uses of Outer Space on May 7, 1959, published in XL Department of State Bulletin 885-86 (June 15, 1959).

8. Supra note 3, at Articles 13, 14 and 22.

9. Paragraph 1 of Article 1 of the Antarctic Treaty states:

   > 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 maneuvers, as well as the testing of any type of weapons.

   The Antarctic Treaty (December 1, 1959) 12 U.S.T. 794, T.I.A.S. 4780, 402 U.N.T.S. 71 (effective June 23, 1961).

10. Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (August 5, 1963), 14 U.S.T. 1313, T.I.A.S. 5433, 480 U.N.T.S. 43 (effective Oct. 10, 1963).

11. Supra note 1, at Article IV.

12. U.N.G.A. Res. 84/XXXII December 12, 1977 and the Statement by Soviet Representative Likhatchev to the Conference of the Committee on Disarmament on August 9, 1977. CCD/PV. 760, pp. 20-25.

13. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (May 18, 1977), 31 U.S.T. 333, T.I.A.S. 9614 (effective January 17, 1980). Article II defines environmental modification techniques as referring to

    > any technique for changing -- through the deliberate manipulation of natural processes -- the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.

14. Treaty on the Limitation of Anti-Ballistic Missile Systems (May 26, 1972) 23 U.S.T. 3435, T.I.A.S. 7503 (effective Oct. 3, 1972).

15. This portion of the paper is drawn largely from a report transmitted to the Congress by President Reagan entitled, Report to the Congress on U.S. Policy on ASAT Arms Control (March 31, 1984).

16. Supra note 4, at 492-513.

17. Examples would be the 1949 Red Cross Conventions and the 1907 Hague Conventions.

18. Supra note 13, at Article I.

19. The applicability of the Limited Test Ban Treaty's prohibition of "or any other nuclear explosion" was addressed by the Legal Advisor of the Department of State during Senate Hearings on the Treaty as follows:

    > The question has been raised whether the words "or any other nuclear explosion" imposes any limitation on the use of nuclear weapons by the parties in war.
    >
    > The answer is no.

    Quoted in Whiteman, M., 11 Digest of International Law 793 (1968).