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Law of Outer Space—Summarized

Jeffrey Prevost*

WHY, IN VIEW OF THE ESOTERIC NATURE and pure remoteness and inaccessibility of outer space, is there a need for a body of law governing man's behavior in that medium?

The answer to that question could fill volumes and is still the subject of heated controversy. However, I hope that by this paper I can show that the body of knowledge concerning outer space, and the present capabilities of exploitation of space actually warrant immediate codification of boundaries of permissible extraterrestrial activities. The *rate of change* of acquisition of scientific knowledge and technological ability has increased geometrically since the end of the Dark Ages. From this it should be evident that, even if we feel that space does not warrant our legal consideration at this stage of development, the time of practical exploitation may be so close at hand that a prior formulation of policy and law concerning the peaceful uses of space is a wise matter if we wish to avoid the despoilation of a virtually virgin territory. Witness the chaotic ravaging of the New World in the 16th and 17th centuries as the result of unrestrained "development." Space must be saved from that fate.

Outer space, together with the sub-surface ocean, is an entirely new area of man's experience. Until this generation it was merely an object of conjecture; now we know more about the surface of the moon than we do about the structure of the earth ten miles below the surface. Space and the sea have been termed man's "final frontier." This is not precisely true, in the sense of the frontiers of the "Old West" and the New World. In those cases the pioneer was merely opening up an unused portion of beneficial environment. Space and the sea, however, are *hostile*; man must carry his environment with him to function, even to exist. In man's terms, "space" does not exist; it has no meaning for him except as an obstacle. It is this consideration which leads Professor Nicolas Matte to write of space as a "non-entity," something which defies all our notions of territory, property, and sovereignty, forcing us to adopt a whole new philosophy of law applicable to such a region.¹ In space, Euclidian concepts of geometry do not apply; even time seems to run amok. In Einsteinian terms, space and time are relative; is our legal

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¹ Matte, *Aerospace Law*, 14 (1969). See also, Mozaroff, *Exonerations From Liability for Damage Caused by Space Activities*, 54 *Cornell L. Rev.* 71 (1968).

treatment of it to be absolute? How will our law regard the interstellar traveler who returns to earth younger than his grandson? Such problems may seem to lie in the realm of fantasy now, but they may happen; and now is the time to formulate new concepts of thought, the better to deal with the problems when they do arise.²

The consensus of most legal authorities who have given the matter any thought seems to be that we must avoid the application of anthropocentric law to the regions of space. There are two reasons for this. The first is that space is inherently not man-related, as I have stated. Its adverse environment does its best to deny the existence of man. An effort to force man-centered laws on an area which almost defies human comprehension would only result in frustration.

The second reason is the highly improbable but always possible chance that we shall sometime in the future encounter extraterrestrial life. The psychological impact of such a meeting or communication would be impossible to predict, but a well-formulated policy would at least guarantee a chance that such a meeting would be successful. This is the basis of Andrew Haley's "Metalaw."³

The antithesis of anthropocentric law is natural law. The unconfined philosophy of such a law is exactly what we need for such an unconfined area as outer space, where we must regard man as only one part of an over-all scheme of interrelated objects. Our adventures into space as ambassadors rather than as exploiters can only benefit us in the long run.

I. Origins of Space Law

This section does not attempt to deal with the question of whether existing rules of law should be applied to the new field of outer space; rather, I will attempt to show how the use of space has (or has not) been affected by existing law. Technological advancement, in the early days of spaceflight, far outstripped exploration of legal and ethical problems involved, a situation since partially remedied by adoption of the Outer Space Treaty. This section, then, is of paramount importance in the history of the infancy of space exploration.

The prime concerns in the infancy of spaceflight were actual legal definitions of space and the extent of permissible control which nations could exercise over that area. Since these are analogous to problems in international law we shall inspect that body of law to see if its rules apply to outer space.

The question is, where exactly does "air space" end and "outer space" begin? According to the Paris Convention of 1919 (which the

² Barnett, *The Universe and Dr. Einstein* (1957).

³ Haley, *Space Law and Government*, 54 (1963); and see, Lipson & Katzenbach, *Law of Outer Space* (1961).

United States did not ratify),⁴ the Havana Convention of 1928,⁵ and the Chicago Convention of 1944,⁶ which superseded the first two, each nation has "complete and exclusive sovereignty over the air space above its territory."⁷ Space flight at that time was pure science fiction. Was the air space, then, really intended to include the entire area above a nation's land mass? There is some indication that there was no such intention,⁸ but since it may be supposed that space flight was never seriously considered the question is moot.

The concept of national sovereignty, whatever its merits, is one of the most fundamental precepts of anthropocentric law. Thus, if it should ever be decided that near space (orbit level) is within the lawful control of the subjacent nation, then the spacefaring nations have been committing one of the gravest injuries in international law. Two propositions militate against such an idea. The first is that outer space is not within the technical meaning of the term "air," and the second is that the offended nations have given their tacit consent to such overflight.

Air space, as such, is not readily susceptible to accurate measurement.⁹ Traces of gases have been found to altitudes of 70 miles and higher; some scientists have proposed that the "atmosphere" actually extends to a height of 60,000 miles.¹⁰ The great volume of gas, however, lies within five miles of the earth's surface. Despite this fact, present-day aircraft such as the discontinued X-15 have reached heights of 60 miles.¹¹ Obviously the 1944 concept of airspace is wholly insufficient to define outer space. International law then had no answer to this question at the dawn of spaceflight.

Several proposals were advanced to supply an answer. These include, inter alia: 1. adoption of the old *ad coelum* doctrine; 2. defining the boundary as the altitude at which gravity ceases; 3. defining "air space" as high as there is any measurable air; 4. extending the boundary to the altitude of effective ground control; 5. setting it at an altitude "guaranteeing the security of states"; 6. defining air space "functionally" (for purposes of navigation); 7. setting the boundary at the "von Karman Line." The danger to be avoided in adopting any standard is set-

⁴ International Convention For Regulation of Aerial Navigation, 11 L.N.T.S. 173 (1919).

⁵ Convention on Commercial Aviation, 47 Stat. 1901, T.S. No. 840 (1928).

⁶ Convention On International Civil Aviation, 61 Stat. 1180, T.I.A.S. No. 1591 (1944).

⁷ International Convention for Regulation of Aerial Navigation, *op. cit. supra* n. 4 at 173.

⁸ Latchford, Bearing of International Air Conventions On the Use of Outer Space, 53 Am. J. Intl. Law, 405 (1959).

⁹ National Aeronautics And Space Act of 1958, 72 Stat. 749. The term "atmosphere" is used in place of "air space."

¹⁰ Roy, Legal Problems of Space Exploration, Senate Document No. 87, 74 (1961).

¹¹ Schultz, Weapons And Space, Proceedings of the Conference On Space Science And Space Law, 60 (1963).

ting an arbitrary and often unworkable definition. For our purposes only the last four proposals are tenable. The *ad coelum* doctrine is fantasy in view of the rotation of the earth and the sheer impossibility of controlling an infinite space. The second proposal is also unworkable since technically the gravity of earth never ceases at all. Thirdly, as pointed out previously, the very inconsistency of measurement of the atmosphere would make such a boundary useless.

Defining the boundary of air space as the limit of effective ground control is feasible but virtually worthless.¹² This concept corresponds to the old marine league upon which our modern law of territorial seas is founded; the league, of course, being the maximum range of the ancient cannon. The problem is in defining "effective control." The U.S. and the U.S.S.R. can exercise great control over much of near space, but even their impotence is shown by the impunity with which "spy-in-the-sky" satellites operate. Most nations have difficulty exercising even partial control over the zone in which airplanes operate—the airspace of accepted international law. Thus, we may conclude that "control" is presently impossible.

For much the same reason the boundary guaranteeing the security of states is also unacceptable.¹³ Spy satellites violate the "security" of nations every day. Atomic missiles belie the security of nations at any altitude. Weapons of mass destruction could even be launched from the moon, to strike the earth at 25,000 miles per hour.¹⁴ It should be clear that no arbitrary boundary could fully protect any nation.

The "navigable air space" theory is more useful and less arbitrary but subject to fluctuation and uncertainty with advancements in technology.¹⁵ "Pure" aircraft, as mentioned, can operate at heights above 13 miles. This is well below the limit of the atmosphere and the operable perigee (low point) of satellites. The development of rocket aircraft muddies the picture somewhat, though, since these craft are capable of operation in both the atmosphere and near space. It may well be that the expense and impracticability of such planes will obviate consideration of their effect on the legal status of air space, but their future capabilities should not be discounted.

The "von Karman Line" has the virtue of setting a boundary that is easily determined without being completely arbitrary.¹⁶ It divides

¹² Cooper, *Air Law, a Field of International Thinking*, 4 *Transport and Communications Review* 3, 4 (1962).

¹³ *Air and Space Law*, *International Law Assn. Rep.* 255 (1960).

¹⁴ Pietrasick, *The Moon as A Fortress*, *The San Francisco Chronicle*, p. 24 (Feb. 1, 1970).

¹⁵ Cooper, *High Altitude Flight and National Sovereignty*, Senate Document No. 87, 3 (1961).

¹⁶ Based on the work of Dr. Theodore von Karman and presented in a paper at the University of California in 1957: *Aerodynamic Heating—The Temperature Barrier in Aeronautics*.

air and space into "regimes" and is based on seven considerations of law and fact: 1. aerodynamic lift effectively disappears; 2. there is no viable air; 3. the regime of exobiology begins; 4. molecular construction ends and atoms disassociate; 5. "air" as defined by treaty and many national statutes no longer exists; 6. the aeronautical regime of the Federation Aeronautique Internationale (which certifies air records) ends; 7. the Kepler regime of hyperbolic flight has taken over.¹⁷ The determination of all these factors is beyond the scope of this paper, but it is clear that the consensus of scientists, commentators, and other authorities is that this list constitutes an amalgamation of most of the primary definitions of "space." The line varies (just as "sea level" or any other standard does), but its mean altitude is approximately 275,000 feet, or about 52 miles.¹⁸ With scientific determination of the line's mean altitude the practical limit of air space would be established and legal differentiations could be set with confidence. Above this line sovereignty would be a meaningless concept; space would be a free zone, open to all.

Since the lowest operable perigee of satellites is about 85 miles, it would appear that the fixing of such a boundary is at best an academic concern. In most respects this is probably true; but a precise definition of space, and, consequently, the vehicles that operate in it, is important in terms of possible torts in space. The Rome Convention of 1952 set standards of liability for aircraft involved in accidents.¹⁹ Are the same standards to be applied to spacecraft? The complete diversity of operation and potentials of damage would seem to require, if any, greater standards of care and more adequate remedies for those who may suffer prejudice from man's operations in space. As will be discussed below, no standards have yet been adopted at all.

The second proposition refuting any violation of national sovereignty by trespass through air space is that the nations have given their tacit consent to such overflight. This idea is actually more important than the first in terms of international law because part of the law of nations is customary law, of which consent is a vital part.²⁰

Custom, or usage, has long been an accepted fact of the development of international law, corresponding the primitive stages of development of the law of the tribe, the city-state, the nation. Its main tenet is that such an overwhelming number of entities—as in this case, nations—give some sort of consent to an activity that the protests of the few dis-

¹⁷ Haley, *op. cit. supra* n. 3 at 96.

¹⁸ Matte, *op. cit. supra* n. 1 at 30. Later scientific measurements have placed this line at approximately 62 miles.

¹⁹ Convention On Damage Caused By Foreign Aircraft to Third Parties On the Surface, Rome, 1952 (never adopted by the U.S.).

²⁰ Haley, *op. cit. supra* n. 3 at 56.

senters may be ignored. The question presented then is whether such consent has been given to national overflight.

My conclusion is that such consent, although tacit, has been manifested.²¹ Orbital spaceflight has been a reality for more than a decade, and the space powers have made no effort to hide the fact of overflight from the "offended" nations. Indeed, some of those nations seem to take a perverse pride in such flight. In all those years there has not been one formal protest to overflight which I have found recorded, or cited in any reference material, directed toward either spacefaring nation. Although there is no consensus of authority as to when consent establishes an international "law" to which all are bound,²² it seems clear to the writer that such apparent consent has established a usage which should enforce the *de facto* aerospace right-of-way as an international law.

The reader may at this point be debating the usefulness of this whole discussion, regarding the subject matter as remote and of little immediate importance. It should be pointed out that this matter is of utmost concern to the superpowers, sensitive to criticism; since the normal trajectories of spacecraft upon take-off and reentry include long stretches of flight well *below* the von Karman Line,²³ often over inhabited territory, the grave spectre of international incident in case of accident is raised. The establishment of such consent would go far to mitigate the repercussions of such an event.

A related question arises as to sovereignty over celestial bodies. As in the prior discussion, there was no clear policy concerning this problem in international law prior to adoption of the Outer Space Treaty. The only doctrine relating to this question was the long outmoded *ad coelum* principle.²⁴ Whatever hope of enrichment this may have raised in the hearts of greedy rulers, however, was dashed by recognition of the fact that the earth rotates, carrying the nation right out from underneath the dominion of the moon and the planets. Thus, this doctrine was never seriously considered, and freedom of space remained only to be confirmed by the Outer Space Treaty.

Although much of the law of the sea is also a part of international law, I felt it best to consider its contributions to the law of space separately, since the latter has so often been characterized as a vast "ocean," where brave "sailors" navigate through hazardous conditions.²⁵ Such an analogy, if valid, might have been useful in delineating zones of national sovereignty (comparable to territorial waters), and in formu-

²¹ *Id.* at 67.

²² *Id.* at 59.

²³ Christol, *The International Law of Outer Space*, U. S. Naval War College, Newport, R.I. (1963).

²⁴ Haley, *op. cit. supra* n. 3 at 42.

²⁵ Matte, *op. cit. supra* n. 1 at 47.

lating rules of "navigation," international liability, and so forth.²⁶ Unfortunately, the analogy is more romance than science. The sea, as relates to pertinent law, is a surface of two dimensions; space is a three dimensional volume within which man operates. Time itself contracts; gravity ceases. The shortest distance between two points is a curved line; navigation, as used on earth, is meaningless.²⁷

The falsity of the analogy is pointed out by the fact that the International Court of Justice has recognized the right of nations to exploit the sea and appropriate portions of the seabed to the extent of technological capability—boundaries which often exceed territorial waters.²⁸ However, the consensus of international opinion, if not law, even before adoption of the Outer Space Treaty, was that space and the objects in it were not subject to national appropriation in any degree. It would appear, then, that any attempt to apply the law of the sea to outer space, while it might not result in bad law, would be so unwarranted as not to be worth the effort. Most authorities agree that the better course would be to formulate entirely new principles based on the realities of space.

II. Development of Specific Space Law

The almost complete lack of concrete law relating specifically to outer space at the advent of Sputnik I was met with characteristic silence by the governments of the world. Little need was seen to regulate such a remote area at all. The United Nations (perhaps sensing an appropriate area in which to win power and influence), semi-official and private organizations, and few individuals, however, saw the need for new concepts and laws to take effect before the world's interest in space was adversely affected. With the rapid advance of technology and consequent recognition of space's potential, the super-powers finally acknowledged the need and adopted the Outer Space Treaty. I will attempt to deal with the development of the "law" as it was first proposed by the unofficial organizations and the U.N., and finally as it eventually was promulgated with full legal effect by our governmental bodies.

A. Pre-Sputnik Era

Actual spaceflight was anticipated by many outside the realm of science fiction for some years prior to its actual birth. The technology was born with the V-1 and V-2 rockets of World War II infamy. If the large nations had been so inclined, orbiting of a satellite could probably have been achieved in the late 1940s, instead of a decade later. However,

²⁶ Moon, A Look At Airspace Sovereignty, 29 Jour. of Air Law and Commerce 328, 343 (1963).

²⁷ Barnett, *op. cit. supra* n. 2.

²⁸ North Sea Continental Shelf, 23 I.C.J. yearbook 100.

recovery from the War, the Cold War, the Korean War, and general disinterest all conspired to divert attention from such esoteric experiments and led the great powers to put their resources in weapons of war rather than devote them to peaceful exploration and practical exploitation of space.

At the same time the scientists of the world were marshalling their forces to bring about the International Geophysical Year (IGY), 1957-8, which was to double man's knowledge about his own world. The international community of scientists enlisted the aid of their various governments, including the U.S. and the U.S.S.R. One small experiment proposed the orbiting of a small earth satellite to measure radiation levels outside the earth's atmosphere. Despite their wholly innocent intentions, the scientists were causing the prestige of scientific discovery to become an expensive political prize. In this way one of the least significant but most spectacular experiments of the IGY became the focus of a development which was to change man's very outlook on life in the coming decade.²⁹

The period prior to 1957, however, saw few proposals for specific space law outside of a few scientists pleading for guarantees that space be used for peaceful purposes only, and some "science fiction" warnings against the possibility of contamination by extraterrestrial organisms, and the need for safety regulations. The law as it stood in the pre-Sputnik era, then, was of a type of customary law, one respecting the free pursuit of scientific inquiry, independent of any national—or international—interference or control. Thus, as long as the objectives of the Sputnik and Explorer were scientific, objections to their overflight and potential danger could be regarded as contrary to the custom of nations. From this beginning has grown the customary law of space discussed above.³⁰

B. Post-Sputnik Era

The immediate period following the launching of the Russian satellite spawned a number of nongovernmental organizations specifically designed to produce legal norms for space. Probably the most important was the International Institute of Space Law, an organ of the older International Aeronautical Federation.³¹ Founded formally in 1959,³² the Institute has conducted annual colloquia, drawing delegates from a diversity of nations, spacefaring and otherwise, and devoted exclusively to the development of viable space law. While it is difficult to gauge the Institute's actual impact on positive law, it is clear that many of the

²⁹ Haley, *op. cit. supra* n. 3 at 62.

³⁰ *Id.* at 67.

³¹ Matte, *op. cit. supra* n. 1 at 47.

³² Among the more prominent of the founders of the I.I.S.L. was Andrew Haley.

proposals discussed and adopted by that organization have at least had an influence on the content of later United Nations resolutions and the Outer Space Treaty itself. The Institute continues to discuss questions beyond the limited scope of the Treaty and should exert some considerable influence in the future.

The United Nations was not remiss in seizing upon the obviously international problems posed by the advent of space flight. The *ad hoc* Committee on the Peaceful Uses of Outer Space was established in 1958.³³ Its work product, while not prodigious, encouraged the establishment of the permanent committee in 1959.³⁴ This latter organization did not meet again until 1961 because of differences between the U.S. and the U.S.S.R. concerning its function.³⁵ Soon after this second meeting, however, the General Assembly adopted unanimously the first proposal from the Committee, entitled "International Cooperation in the Peaceful Uses of Outer Space," which was the first formal expression by a governmental organization of the principles that "international law, including the Charter of the United Nations, applies to outer space," and that neither space nor celestial bodies are subject to national appropriation.³⁶

This basic sentiment was reiterated in several subsequent resolutions emphasizing also the need for peaceful exploration of space. These resolutions encouraged certain groups, such as the World Meteorology Organization and the International Telecommunications Union, to expand research into outer space and explore related legal problems independently.³⁷ They also urged the highest consideration of astronauts and their vehicles, requesting that aid be rendered by any nation should an astronaut be endangered, either in space or on return to earth, and that space vehicles be returned to their launching nations upon request.³⁸

Probably the most important resolution in terms of political realities was the resolution demanding that the spacefaring nations refrain from placing nuclear weapons or other devices of mass destruction anywhere in outer space.³⁹ Although this resolution was actually adopted (on October 17, 1963) after the signing of the Limited Test-Ban Treaty (August 5, 1963, in Moscow), its adoption was such an expression of international sentiment as not to be ignored. Indeed, this resolution was duly noted in the preamble of the Outer Space Treaty itself, and some of its phrases were incorporated in the body of that Treaty. Although the resolution has been criticized as too weak, since it does not condemn

³³ UNGA Res. 1348 (XIII) (1958).

³⁴ UNGA Res. 1472 (XIV) (1959).

³⁵ Haley, *op. cit. supra* n. 3 at 318.

³⁶ UNGA Res. 1721 (XVI) (1961).

³⁷ UNGA Res. 1802 (XVII) (1962); UNGA Res. 1963 (XVIII) 1963.

³⁸ UNGA Res. 1962 (XVIII) (1963).

³⁹ UNGA Res. 1884 (XVIII) (1963).

the construction of such weapons, the fact that presently there are no bombs in orbit—according to published information—must be attributed at least in part to this expression of world opinion.

An important question is whether these resolutions can be accorded the status of binding international law.⁴⁰ The U.N., of course, has no power to make legislation binding on its members, but these same nations may bind themselves expressly to such proclamations through accession to an appropriate treaty. Proposals have been advanced that the resolutions constitute an instantaneous customary law of space, comparing the speed with which they have been accepted with the rapid advances in technology. However, in view of the fact that the resolutions constitute an instantaneous customary law of space, comparing the speed with which they have been accepted with the rapid advances in technology. However, in view of the fact that the resolutions were adopted mainly at the urging of the U.S. and the U.S.S.R., most authorities feel that the majority of member states will not regard them as binding unless they are also party to the Treaty.

The most important matter in terms of binding international law involves development of space law through the treaty-making powers of the sovereign nations.⁴¹ While it is clear that the wishes of a body such as the United Nations cannot be simply ignored, it is of course not difficult to circumvent such proclamations, since there is no police power to enforce them. The making of a treaty does not *per se* create a police power, but such an agreement may be considered binding for at least two reasons. First, all the parties to the agreement have an express desire to see that the conditions of the final resolution are followed. Second, the states parties to treaties want other nations to see that they honor their commitments; nations, like individuals, desire a good "credit rating." Treaties, of course, if they deal with a prohibition, may prescribe an enforcement power, such as access to inspect, but by far the most important aspect of observance of treaties is the good faith of the signatories themselves.

C. The Limited Test-Ban Treaty

The first important step taken by the sovereign states towards the peaceful uses of outer space was the Moscow Treaty of August 5, 1963,⁴² which banned tests of nuclear weapons in the atmosphere, under water, and outer space. This agreement, praised by many and condemned by many, was the culmination of disarmament talks dating back to 1946, under the Baruch Plan.⁴³ President Eisenhower's "Open Skies" proposal

⁴⁰ Matte, *op. cit. supra* n. 1 at 275.

⁴¹ *Id.* at 280.

⁴² 14 U.S. T. 1313, T.I.A.S. No. 5433 (1963).

⁴³ Matte, *op. cit. supra* n. 1 at 228.

of 1955 was a threat to both sovereign absolutism of air space and military secrecy, and thus never gained the favor of either side of the division of power.⁴⁴ The stalemate between arms control (favored by the U.S.) and complete disarmament—without inspection controls—(favored by the U.S.S.R.) led finally to adoption of the present treaty, which prohibits only the testing of such devices in the named areas. Such tests may be detected by seismography on earth; thus, there is a measure of control. A nuclear blast could not be hidden in space, of course, so it would be even easier to detect.⁴⁵ There have been at least three nuclear explosions in space, but none since promulgation of this treaty.

D. The Antarctic Treaty⁴⁶

Negotiated originally by the twelve nations which had collaborated in the exploration of the Antarctic during the IGY, this agreement, signed December 1, 1969, declared that the Antarctic continent shall be used for peaceful purposes only. Military bases and weapons testing are prohibited; at the same time the greatest possible scientific use and exploration are encouraged.

Analogies have been drawn from the Antarctic to outer space: both are cold, inhospitable places incapable of supporting human life.⁴⁷ From this, the argument runs that space should thus be treated exactly the same as the Antarctic. This assertion is effectively countered by the fact that the Antarctic is a finite area subject to control and development, whereas space is infinite and uncontrollable. This is important since under this treaty the signatories' claims to sovereign rights in the Antarctic were specifically declared to be free from prejudice. (Article IV.)⁴⁸

III. The Outer Space Treaty

The culmination of all the previous treaties, UN resolutions, and scientific usage of space was the agreement titled in full, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies."⁴⁹ It was signed simultaneously in Moscow, London, and Washington on January 27, 1967, a novel device designed to induce accession by a maxi-

⁴⁴ *Id.* at 231.

⁴⁵ Jenks, *Space Law* 301 (1965).

⁴⁶ 12 U.S. T. 794, T.I.A.S. No. 4780 (1959).

⁴⁷ Christol, *op. cit. supra* n. 23 at 257.

⁴⁸ Matte, *op. cit. supra* n. 1 at 253.

⁴⁹ 18 U.S. T. 2410, T.I.A.S. No. 6347 (1967).

imum number of States immediately.⁵⁰ It went into effect on October 10, 1967.

The important feature of the Treaty is that it is a statement of principles governing the desirable actions of parties rather than definitive rules delineating exactly both substantive and procedural law. Through the use of fairly vague terms it sets a pattern for use and exploration, rather than regulating them. It incorporates by specific reference the ideals of the prior U.N. resolutions and declares that international law shall apply also to outer space. Thus, despite the fact that it does not represent a material advancement over the principles adopted by the United Nations, it embodies those concepts in recognized legal form and binding international law. The Treaty has even been hailed as the first "Space Charter."⁵¹

The Treaty reiterates the prior-expressed desire of the signatory nations that space shall be used for peaceful purposes only, for the benefit of all mankind (Article I). The last phrase was included in order to induce the maximum number of non-space powers to accede to the Treaty, since the use is to be "in the interests of all countries, irrespective of their degree of economic or scientific development . . ." ⁵² It declares the "freedom" of outer space, both in access to exploration and to scientific study. The article further states that the parties "shall facilitate and encourage international cooperation in such investigation." Thus, it would appear that it is the duty of the signatories to collaborate in their space ventures. While the U.S. has provided facilities and assistance to several other countries, and has freely shared information with the U.S.S.R., it has never actively shared in the accomplishment of a space flight with that country, although a number of proposals to that effect have been made. It would appear that the Treaty has not yet had the desired effect of depoliticizing space.

Article II expressly declares that outer space, including celestial bodies, is not subject to appropriation by any means. An important aspect of this section is that it makes no distinction between space, which is virtually non-controllable, and celestial bodies, which are clearly susceptible to at least technical appropriation. In fact, it is clear that such a division is undesirable, and that space should be treated as an indivisible entity.⁵³

The reluctance of the great powers to extend the divisional squabbles of the earth beyond that sphere (and thereby extending a costly arms race) led to the adoption of this article. It is possible that the difficulties of actual appropriation as defined under international law—i.e., a permanent occupation accompanied by a "sovereign will of authority"

⁵⁰ Matte, *op. cit. supra* n. 1 at 289.

⁵¹ *Id.* at 288.

⁵² *Id.* at 290.

⁵³ Vallado, *The Law of Interplanetary Space* (1959).

and control—also made it easier for the space powers to assent to such an agreement.⁵⁴

A question is raised by the use of private telecommunications satellites in a “stationary orbit” over a fixed point on earth. This is an “occupation” which effectively appropriates a large volume of space within its area.⁵⁵ Is this to be regarded as an appropriation within the meaning of Article II? This point has not been settled, but it would appear that it will not present much practical difficulty since the Soviets have indicated they may be willing to cooperate with INTELSAT rather than devise their own East European satellite system.⁵⁶

Article III declares that activities in space shall be carried on in accordance with international law and the Charter of the United Nations, in the interest of “peace and security.” It puts a primary emphasis on international cooperation and understanding, demanding that the parties actively *promote* these principles. Of course, while the superpowers have used the occasions of their spaceflights to serve up plattitudes of peace and goodwill, it is also clear that they have used them to gain political influence and prestige, a practice not entirely conducive to understanding and security. It is doubtful, too, that such cooperation can come about while scientific accomplishments in space are regarded as a competition.

One of the most important sections of the Treaty is Article IV, which states that parties to the Treaty “undertake” not to place in orbit, nor install on celestial bodies, nor station in outer space any nuclear armaments or other weapons of mass destruction.⁵⁷ This article, then, takes the Test-Ban one step farther. An intentional omission, however, creates a basic flaw as to the banning of such weapons from space: to constitute a violation of the law they must be *orbited or stationed* in space. There is no prohibition of manufacture of such devices, nor is there a ban of missiles and bombs which achieve only a *partial* orbit; such weapons, known as a Fractional Orbiting Bombing System (FOBS), are difficult to detect by radar, and drop into their target zone almost vertically. There is little defense against them. The Soviet Union has reportedly developed such a system; the U.S. is understood to be developing the Multiple Independent Reentry Vehicle (MIRV), or the “Space Bus,” which would be capable of achieving full orbit status. Thus, it would appear that Article IV alone is inadequate to insure that space will never be used for aggression.

Article IV also prohibits the testing of weapons of any kind or the establishment of military bases on the celestial bodies. It allows the use of “any equipment or facility necessary for peaceful exploration” of

⁵⁴ 9 P.C.I.J. Rep. 102, 141.

⁵⁵ Matte, *op. cit. supra* n. 1 at 312.

⁵⁶ *Id.* at 165.

⁵⁷ UNGA Res. 1884 (XVIII), *supra* n. 39.

celestial bodies. Whether this would allow the explosion of a nuclear "device" on the surface of the moon for scientific purposes, as was recently proposed,⁵⁸ is unclear. However, the intent of the international community was very clear prior to adoption of the Treaty, that *any* destructive nuclear device was unwelcome in space. Our own definition of "weapon" as an "instrument designed to inflict injury upon an enemy,"⁵⁹ does not readily clarify the matter, but it is clear that even a scientific nuclear bomb is capable of destructive use. Thus, despite possible advantages to be gained from their use, nuclear devices should not be employed at all in scientific exploration.

Article V gives astronauts the status of envoys of mankind and demands that States' parties shall render all possible aid in the event of accident or emergency landing in the territory of another Party or on the high seas. It also declares that the astronauts of one State Party shall give all possible assistance to the astronauts of another nation.⁶⁰ The effect is uncertain whether, if it should be technically possible, one Party would be obligated to *launch* a rescue craft to astronauts of another State stranded in space. Such a coincidence of circumstances is highly unlikely, but should it happen, it is possible that the pressure of world opinion and humanitarian feelings might force the nation in such a position to at least try to effectuate a rescue. The nonexistence of suitable rescue techniques probably would prohibit such a rescue at this time. The later Treaty on the Rescue of Astronauts did not expressly deal with this point.⁶¹

Astronauts and States are also instructed by Article V to report to the United Nations any phenomena they discover which could constitute a danger to the life of astronauts, in order to insure the widest possible dissemination of such information and see that potentially affected nations take all appropriate precautions. Together with Article XI, this is the only responsibility the U.N. has towards conduct in outer space.

Responsibility for spatial activities is set out by Article VI. States Parties are responsible internationally for their own actions, whether such activities are carried on by governmental or *private* organizations.⁶² If an international organization is conducting the activity, then both the organization and its member States are responsible. If a private entity, such as the Communications Satellite Corporation (COMSAT), is carrying on the activity anywhere in space, then it is required to submit to authorization and continuing supervision by its own government.

⁵⁸ The San Francisco *Chronicle* (November 14, 1969).

⁵⁹ See 44 Words and Phrases 763 (1962). Nuclear weapons are not specifically discussed.

⁶⁰ Berger, Space Vehicle And Astronaut Assistance And Liability For Damage, 8th Colloquium on Law of Outer Space (1965).

⁶¹ April 22, 1968.

⁶² The U.N. Committee on Peaceful Uses of Outer Space is studying more constructive proposals concerning Art. VI under UNGA Resolution No. 2222 (XXI) (1966).

A section which is important, especially to the non-spacefaring nations, is Article VII, which declares that States which procure the launching of, and States from whose facilities or territory is launched, an object into outer space, shall be jointly liable for damage caused to other nations by such an object, whether on earth, in the air space, or in outer space. This is a very real problem, as evidenced by the disastrous potentialities of a faulty launching, and the documented reports of damage due to the return of satellite components to earth.⁶³

A pointed dispute exists as to the interpretation of this article.⁶⁴ The primary problem revolves around the question of absolute liability without fault and whether damages should be limited or not. Procedural matters of determining liability and method of recovery are also being argued. The Treaty itself provides no definitions or remedies. It has been proposed that international law as set out in the Rome Convention on "Damage Caused by Foreign Aircraft to Third Parties on the Surface" should govern spacecraft also.⁶⁵ That agreement established absolute but usually limited liability without fault and usually irrespective of the actual cause. This proposal has merit; considering the even greater hazards of spaceflight, the standards of care should certainly not be relaxed.⁶⁶

Article VIII declares that the State of registry retains jurisdiction and control over objects and personnel launched into space, including those *installed* on celestial bodies. Such objects, when they return to earth in the territory of another Party, are to be returned to the State of registry after identification. While the article seems innocent enough on its face, it actually introduces an element of sovereignty into space.⁶⁷ "Jurisdiction" and "control" seem like perfectly natural concepts of order in space, but the fact remains that an object installed on a celestial body and retained in the jurisdiction of the launching State appropriates *de facto* at least the soil upon which it rests. A kind of *jus primis occupantis*,⁶⁸ the first boundary in space, is established.⁶⁹ To obviate this, Prof. Matte proposes a jurisdiction of *protection* to be verified by the international community, perhaps under the U.N., which could deal with the registration of the vehicle at the same time.⁷⁰

Much concern has been expressed over the recent moon flights and

⁶³ Christol, *op. cit. supra* n. 23 at 353; Matte, *op. cit. supra* n. 1 at 339.

⁶⁴ Matte, *Id.* at 345.

⁶⁵ Convention On Damage Caused By Foreign Aircraft to Third Parties On the Surface, *supra* n. 19.

⁶⁶ Caplan, Law for Space Activities; Practical Proposals for a Comprehensive Convention, 8th Colloquium on Law of Outer Space (1965).

⁶⁷ Matte, *op. cit. supra* n. 1 at 336.

⁶⁸ *Id.* at 313.

⁶⁹ Cooper, Who Will Own the Moon? The Need for an Answer, 32 J. of Air Law and Comm. 165 (1966).

⁷⁰ Matte, *op. cit. supra* n. 1 at 313.

the possibility of contamination from space.⁷¹ Article IX attempts to deal with this problem by directing the Parties to conduct explorations "so as to avoid . . . harmful contamination and . . . harmful changes in the environment of earth." States are to adopt "appropriate measures" for that purpose. If another State Party fears that such measures are insufficient it may request a consultation with the launching State, but beyond this no steps are taken by the Treaty to insure that precautions are taken. The goodwill of the launching nation is all that really governs such activities, and perhaps their desire (or lack of same) to spend vast sums of money to achieve such purposes.

Article X, requiring international cooperation for observation and tracking of space flights, appears to be innocuous, but, in fact, it was one of the more difficult agreements to reach.⁷² It states that any Party shall consider on the basis of equality a request by a launching nation to be afforded an opportunity to observe its own flights from the former's territory, the nature of such "opportunity" to be determined by agreement between the parties. The U.S.S.R., in negotiation of the treaty, demanded a clause requiring rights to be granted on the basis of the most favored nation, which of course would entitle that nation to observation bases in all those nations which have allowed U.S. bases, and even in the U.S. if it granted such rights to another nation. The United States resisted such a proposition vigorously, declaring that observation rights are granted on the basis of reciprocal advantage and bilateral agreement. The U.S.S.R. is benefited by the fact that the clause is included in the Treaty at all, but it represents a victory for the U.S. in its final form, since such opportunities remain subject to the will of the host State.⁷³

The United Nations, which has been purposely excluded from operation of the Treaty, is thrown a pittance of responsibility by Article XI, which agrees that information concerning space flights shall be furnished to the Secretary-General, who is obliged to distribute it to the fullest extent possible. Such information would be voluntary, however, on the part of the launching State, so this section is actually a mere repetition of the provisos of some U.N. resolutions as to the principles of voluntary cooperation.⁷⁴

Article XII goes part way to mitigate the adverse effects of Article VIII as to the control of objects on the moon and celestial bodies, although in some ways it compounds the problem. The Article declares that the outer space facilities of a State Party shall be open to free

⁷¹ i.e. See Berrill, *Our Gamble in Space: The Search for Life*, 212 *Atlantic* No. 35 (Aug. 1963).

⁷² Matte, *op. cit. supra* n. 1 at 315.

⁷³ Dowling and Arons, *The Evolution of the Outer Space Treaty*, 33 *J. of Air Law and Comm.* 430, 442 (1967).

⁷⁴ *Id.* at 445.

access by other States on the basis of reciprocity—a provision patterned after the Antarctic Treaty of 1959. However, the visiting state must give prior notification to insure “maximum precautions” for safety and avoidance of interference with normal operations at the site.⁷⁵ The basis of reciprocity is elusive: does this mean that the visiting state must have the same type of installation, or the same number as it desires to visit? The measure was adopted in part to effect some sort of international control over the activities of States on the moon, but such verification of use would seem to be illusory since the visited state may request “consultations” before such a visit may take place, thus allowing any illicit activity to be hidden.⁷⁶

Article XIII declares that the provisions of the Treaty shall apply to all activities in space, including those undertaken by international or intergovernmental organizations.⁷⁷ It directs that any practical questions arising from such international activities are to be resolved by negotiation either with the organization itself or with nation members of that group. This article, however, does not obviate the responsibility placed on individual nations by Article VI, nor can it place responsibility on States, members of the organization in question, which are not parties to the Treaty.

What is the total effect of the Outer Space Treaty? It has been severely criticized from several sides as weak, inadequate, ambiguous, and anthropocentric.⁷⁸ It was conceived by the two major space powers in what some regard merely as a cynical desire to avoid a new arms race in space. Its unique method of signing was intended to give the fullest possible semblance of international cooperation, even though the prospects for true internalization of space are exceedingly dim at this time.

Despite these facts, it cannot be said that the Treaty is not an important document in international law. The mere fact that it *does* help prevent a spatial arms race makes it invaluable, whatever the motives behind it. The fact that it is a declaration of *principles* sets it apart from most treaties and will allow development of more complex law within the context and realities of space, as knowledge of that area increases. Most important, it sets a direction for mankind, condemning all military activity and encouraging only peaceful activity. Cynics may point to vacuous promises and broken treaties, but the powerful nations of the world, despite all indications to the contrary, are not blind: aggressive competition in space could only lead to disaster; cooperation, on the other hand, could reveal benefits unthought of in this age.

⁷⁵ See Vlastic, *The Space Treaty; a Preliminary Evaluation*, 55 Cal. L. R. 515 (1967).

⁷⁶ Cooper, *Some Crucial Questions About the Space Treaty*, *Air Force and Space Digest* 107 (Mar. 1967).

⁷⁷ This Article should be read in conjunction with Art. VI.

⁷⁸ Matte, *op. cit. supra* n. 1 at 319.