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Comments

LEGAL RAMIFICATIONS OF THE UNCONTROLLED RETURN OF SPACE OBJECTS TO EARTH

REBECCA J. MARTIN

THE SPACE station Skylab was launched into orbit by the United States in May of 1973.¹ Efforts to maintain the orbit of Skylab failed, and on July 11, 1979, the remnants of Skylab plummeted to earth in the outback region of Australia.² Fortunately, no damage of consequence was reported,³ but the incident sparked a wave of concern over the potential danger of the uncontrolled return of space objects to earth.⁴ The fall of Skylab also highlighted the possible international legal issues which may arise in the event of the uncontrolled return to earth of a space object. The major legal aspects may be divided into four general areas: (1) liability for personal and property injury; (2) financial responsibility for search and recovery operations; (3) treatment of the wreckage; and (4) methods of asserting a claim for damages. This comment, after tracing the history of the international agreements concerning the regulation of space activities, will discuss these issues in terms of present international space law.

I. HISTORY OF REGULATIONS CONCERNING SPACE ACTIVITIES

The existence of complex international legal problems inherent in the uncontrolled return to earth of space debris was recognized from the inception of the "Space Age."⁵ The United Nations General Assembly acknowledged the need for regulation of space activities in a 1958 resolution calling for a study of "the nature of legal

¹ TIME, July 16, 1979, at 21.

² NEWSWEEK, July 23, 1979, at 31.

³ *Id.*

⁴ U.S. NEWS & WORLD REPORT, July 23, 1979, at 5.

⁵ The "Space Age" began in 1957 with the launching of the Russian satellite Sputnik I. Debates on the peaceful uses of outer space were begun in the United Nations General Assembly around the same time.

problems which may arise in the carrying out of programmes to explore outer space."⁶ The project was assigned to the Ad Hoc Committee on Peaceful Uses of Outer Space, a committee created by the same resolution.⁷ Following the report of the Ad Hoc Committee in 1959,⁸ the United Nations General Assembly established the Committee on the Peaceful Uses of Outer Space (the Committee) as a permanent body.⁹

Between 1959 and 1961 no progress was made in the regulation of any outer space activities because of the refusal of Russia and other Eastern European members of the Committee to participate in the proceedings.¹⁰ At the end of 1961 the Committee began to meet on a regular basis, and at the Second Session in 1962 the Legal Subcommittee was formed.¹¹ The members agreed that the Subcommittee would give priority to the creation of principles governing the exploration and use of outer space; from these principles various legal issues, such as liability, would be defined through debate.¹²

⁶ G.A. Res. 1348, 13 U.N. GAOR, Supp. (No. 18) 6, U.N. Doc. A/4090 (1958).

⁷ *Id.*

⁸ G.A. Res. 1472, 14 U.N. GAOR, Supp. (No. 16) 5, U.N. Doc. A/4354 (1959). The report of the Ad Hoc Committee divided the problems encountered in outer space activities into two groups: legal problems susceptible of priority treatment, and other problems.

⁹ *Id.* The Committee originally consisted of representatives of 24 countries. Today 37 nations participate in the work of the Committee, including the United States, the Soviet Union, France, the German Democratic Republic, the Federal Republic of Germany, Japan and the United Kingdom.

¹⁰ Foster, *The Convention on International Liability for Damage Caused by Space Objects*, 10 CANADIAN Y.B. INT'L. L. 137 (1972). The U.S.S.R., Poland and Czechoslovakia refused to participate because of the composition of the Committee and its method of procedure. The United Arab Republic and India would not participate without the Soviet countries. *Id.*

¹¹ Report of the Committee on the Peaceful Uses of Outer Space, 17 U.N. GAOR, I Annexes (Agenda Item 27) 2, U.N. Doc. A/5171 (1962). Two subcommittees were established at the same time, the Legal Subcommittee and the Scientific and Technical Subcommittee. All members of the Committee on the Peaceful Uses of Outer Space are represented on its two subcommittees.

¹² *Id.* See Hosenball, *Space Law, Liability, and Insurance Risks*, 12 FORUM 143 (1976). The Legal Subcommittee is to follow a procedure of consensus of the members to reach agreement, the same procedure followed by the Committee. No votes are ever taken on any matter before the Committee or its subcommittees. A single member can prevent an item from passing or being included in the reports. Conflict must be resolved by unanimous agreement, or by the dissenting member noting an objection but allowing an item to pass and be included in a report.

The activity of the Legal Subcommittee led to the first major international treaty governing the use of space, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (the Outer Space Treaty of 1967).¹³ The treaty was the culmination of the original report of the Ad Hoc Committee in 1959, and later proposals of the Legal Subcommittee, which were submitted by the Committee to the General Assembly and adopted as resolutions. The most important of these resolutions was that entitled Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, which was adopted by the General Assembly in 1963 and was the principal basis for the Outer Space Treaty.¹⁴

Even before the Outer Space Treaty was signed, the United Nations General Assembly requested further elaboration of specific principles in regard to the international responsibility and liability of states with respect to their space activities. Although the Committee had acknowledged that the activity of all nations in outer space is governed by the applicable general principles of international law,¹⁵ the General Assembly encouraged the Committee "to continue with a sense of urgency its work on an agreement [regarding] assistance to and return of astronauts and space vehicles," as well as its work on a draft treaty on liability.¹⁶ Priority was given to work on the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects launched into Outer Space (the Rescue Agreement), which became effective in

¹³ 18 U.S.T. 2410, T.I.A.S. No. 6437 [hereinafter referred to as the Outer Space Treaty].

¹⁴ G.A. Res. 2222, 21 U.N. GAOR, Supp. (No. 16) 13, U.N. Doc. A/6316 (1967).

¹⁵ Report of the Committee on the Peaceful Uses of Outer Space, 16 U.N. GAOR, Committees (1st) 245 (Agenda Item 21), U.N. Doc. A/C1/SR.1210 (1961). Two propositions generally accepted by the members of the Committee were that principles of international law, including the charter of the United Nations, applied to outer space and celestial bodies, and neither outer space nor celestial bodies are subject to claims of sovereignty or national appropriation but are available for exploration and use by all states in conformity to international law. The United Nations formally adopted these two recognized principles in 1961. U.N. Res. 1721 A, 16 U.N. GAOR, Supp. (No. 17) 7, U.N. Doc. A/5100 (1962).

¹⁶ G.A. Res. 2260, 22 U.N. GAOR, Supp. (No. 16) 11, U.N. Doc. A/6716 (1968).

1968.¹⁷ In 1970 the General Assembly formally expressed its regret that the Committee had not completed a draft treaty on liability.¹⁸ Finally, in June of 1971, the Legal Subcommittee reached consensus on a draft of the Convention on International Liability for Damage Caused by Space Objects (the Liability Convention).¹⁹ The draft was adopted by the General Assembly on November 29, 1971, and took effect as a treaty in 1972.²⁰ Turning to the problem of the identification and cataloging of all objects launched into space, the Legal Subcommittee completed a final draft of the Convention of Registration of Objects Launched into Outer Space which was recommended for signature by the General Assembly in 1974.²¹ It became effective on September 15, 1976.²²

Thus, the work of the Committee on the Peaceful Uses of Outer Space and its Legal Subcommittee over the past two decades resulted in four treaties which refined the governing principles of international law in the area of space and related activities: (1) the Outer Space Treaty of 1967; (2) the Rescue Agreement of 1968; (3) the 1972 Liability Convention; and (4) the Registration Convention of 1976. The scope of these treaties is far from comprehensive; it would be impossible to envision and provide for all the variables encountered in space exploration. The resolution of legal problems occasioned by the uncontrolled return to earth of any space object, however, should in the first instance be governed by the provisions of these four treaties.

¹⁷ Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (1968), 19 U.S.T. 7570, T.I.A.S. No. 6599 [hereinafter referred to as the Rescue Agreement].

¹⁸ G.A. Res. 2733 B, 25 U.N. GAOR, Supp. (No. 28) 20, U.N. Doc. A/8028 (1970).

¹⁹ Report of the First Committee on Item 33, 26 U.N. GAOR, Annexes (Agenda Items 33 and 92) 2-8, U.N. Doc. A/2528 (1971).

²⁰ The Convention on International Liability for Damage Caused by Space Objects (1972), 24 U.S.T. 2389, T.I.A.S. No. 7762 [hereinafter referred to as the Liability Convention].

²¹ The subject of the registration of space objects had first been addressed by the Ad Hoc Committee on the Peaceful Uses of Outer Space. See 14 U.N. GAOR, 1 Annexes (Agenda Item 25), U.N. Doc. A/4144 (1959). A subsequent resolution called for a registration of any objects launched into orbit or beyond, U.N. Res. 1721 B, 16 U.N. GAOR, Supp. (No. 17) 7, U.N. Doc. A/5100 (1962). After 1961, however, the matter of registration was largely ignored until the completion of the Liability Convention in 1972.

²² Convention on the Registration of Objects Launched into Outer Space (1976), 28 U.S.T. 695, T.I.A.S. No. 8480.

II. COMPENSATION FOR DAMAGE TO PERSONS OR PROPERTY

In the event of the crash of a space object to earth the most important legal issue would be the determination of liability for any damage to persons or property. To receive compensation under the Liability Convention the "damage" caused must fall within the scope of that term as used in the Convention. Similarly, the instrument which causes the damage must be identified as a space object. The party responsible must be identified, and the standards of compensation and liability must be determined. The general principle of liability for space activities, first set forth in paragraph eight of the Declaration of Legal Principles (Declaration),²³ is reiterated by Article VII of the Outer Space Treaty, which states:

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or its natural or juridical persons by such object or its component parts on Earth, in air space, or in outer space, including the moon and other celestial bodies.²⁴

A. *The Standard of Liability—Absolute Liability*

The Liability Convention of 1972 is essentially an elaboration of the provisions of the Declaration. The statement of general principles, however, was altered upon incorporation into the draft for the 1972 Convention.²⁵ The major alteration was the substitution of "absolutely liable" for "internationally liable" concerning the responsibility of a state party for damage caused by space objects. This change resulted from problems of interpretation that arose during the consideration of Article VII of the Outer Space Treaty.²⁶ The delegate from India argued that "internationally" would be acceptable only if it meant "absolutely."²⁷ This argu-

²³ G.A. Res. 1962, 18 U.N. GAOR, Supp. (No. 14) 15, U.N. Doc. A/5514 (1963).

²⁴ Outer Space Treaty, *supra* note 13, at art. VII.

²⁵ Liability Convention, *supra* note 20, at art. II: "A launching state shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to an aircraft in flight." *Id.*

²⁶ Dembling & Arons, *The Evolution of the Outer Space Treaty*, 33 J. AIR L. & COM. 419 (1967).

²⁷ Report of the Committee on the Peaceful Uses of Outer Space, 21 U.N.

ment was not answered, however,²⁸ apparently because the delegates believed the concept of absolute liability was still being refined in detailed draft treaties and would later be included in a liability treaty.²⁹

As expected, the Liability Convention did subsequently use the phrase "absolutely liable."³⁰ No further definition of the meaning of the phrase is given. As the treaty provides for a very limited exception to liability, however, it is clear that the drafters intended that a claimant should not be required to prove fault or negligence on the part of the responsible state or states. Thus the standard of liability is strict liability.³¹

Several arguments for using strict liability as the basic standard of liability in international space law were advanced prior to and during the final drafting of the Liability Convention.³² First, the difficulty of proving fault or negligence, considering the complex

GAOR, 2 Annexes (Agenda Items 30, 89, and 90) 18, U.N. Doc. A/6431 (1966).

²⁸ 21 U.N. GAOR, Committees (1st) 435 (Agenda Item 91), U.N. Doc. A/C1/SR.1493 (1966).

²⁹ Dembling & Arons, *supra* note 26, at 439.

³⁰ A standard of liability based on proof of fault or negligence is provided in the Liability Convention for the instance when the damage occurs "elsewhere than on the surface of the earth." Liability Convention, *supra* note 20, at arts. III, IV(1)(b). This provision allows for damage to another object in space, or to persons or property on board that object.

³¹ The standard of liability that is established is referred to as strict liability in the United States. This concept of absolute liability is not limited to American jurisprudence, but is recognized in Europe and the Soviet countries as well. It was not unusual, therefore, that the members of the Legal Subcommittee agreed on the desirability of the principle almost without discussion. Mazaroff, *Exonerations from Liability for Damage Caused by Space Activities*, 54 CORNELL L. REV. 71 (1968). In every country that recognizes the doctrine of strict liability differences exist as to what type of activity the doctrine applies, and what circumstances allow exoneration from the application of the doctrine. For example, strict liability in the U.S.S.R. is imposed for any damage caused by activities which involve increased danger. Exoneration is allowed in the instances of irresistible force and intentional wrongful action or gross negligence on the part of the injured party. *Id.*

The United States follows a less rigid standard, however, and applies the doctrine only to activities that are deemed to reach the level of "ultrahazardous" in nature. The Restatement of Torts suggests a somewhat broadened application and indicates that the doctrine should be applied to any "abnormally dangerous activity." Exoneration is usually allowed in the case of an unforeseeable operation of a force of nature, or the intentional reckless or negligent conduct of a third party. RESTATEMENT (SECOND) OF TORTS § 520 (Tent. Draft No. 10, 1964).

³² N. MATTE, AEROSPACE LAW 159 (1977).

and technical nature of the evidence, was noted.³³ Second, the possibility that the evidence necessary to prove fault may involve classified information which the responsible state would refuse to divulge was also suggested as support for the strict liability standard.³⁴ In addition, most commentators classified space activity as ultrahazardous in nature and felt that this classification dictated the application of the strict liability standard.³⁵ Finally, precedent for the use of strict liability in international treaties had been established by several prior international agreements.³⁶ For example, the 1952 Rome Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface merely requires the injured party to establish the requisite causal connection to obtain relief.³⁷ A limited exception to liability was provided for those cases in which the negligence or intentional wrongful act of the claimant is involved.³⁸

The exclusion from liability under the terms of the Liability Convention is similarly limited. Article VI provides:

[E]xoneration from absolute liability shall be granted to the extent that a launching State establishes that the damage has resulted either wholly or partially from gross negligence or from an act or omission with intent to cause damage on the part of a claimant State or of natural or juridical persons it represents.³⁹

Whether this would allow for exoneration of the entire claim is not stipulated. The author of *Aerospace Law* argues that the more correct and just "application of the concept of contributory negligence would lead to exoneration of the launching state only

³³ *Id.*

³⁴ *Id.*

³⁵ Mazaroff, *supra* note 31. "Haley, Cooper, Beresford, Taubenfeld, McDougal and Jenks consider present space activities ultrahazardous and maintain that a policy of strict liability should or will be applied by the international community in a multilateral agreement." *Id.* at 80.

³⁶ Nanda, *Liability for Space Activities*, 41 U. COLO. L. REV. 509 (1969). The major international conventions which had previously adopted the principle of strict liability are: the 1952 Rome Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface, the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy, the 1962 Brussels Convention on the Liability of Operators of Nuclear Ships, and the 1963 Vienna Convention on Civil Liability for Nuclear Damage. *Id.* at 516.

³⁷ *Id.* at 517.

³⁸ *Id.*

³⁹ Liability Convention, *supra* note 20, at art. VI.

with respect to the part of the total claim which represents the damage of the person whose acts contributed to the damages."⁴⁰ Permitting the contributory negligence of one victim to preclude compensation to an entire claimant state and its other individual victims would be in opposition to the intention of the drafters of the Liability Convention to permit very limited exoneration.

B. *Damage*

The strict liability standard eliminates the necessity of proving fault or negligence to establish a claim, but in order to qualify for compensation the damage must be within the scope of the meaning of that term as defined by Article I of the Liability Convention: "The term 'damage' means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations; . . ."⁴¹ Commentators have noted that this definition is very broad: "it is difficult to say precisely what kind of damage is covered: loss of profit, interest, sentimental value, pain and suffering?"⁴² These types of damages are unknown in the Soviet and Eastern European legal systems.⁴³ For example, in the U.S.S.R. compensation is determined in the context of institutional costs (hospitalization, etc.) rather than personal loss to the individual.⁴⁴ Damages for such personal losses, however, would probably be present in any claim presented by the United States.⁴⁵

There is also the possibility that a party might suffer indirect damages.⁴⁶ It was proposed that these be included in the definition of "damages."⁴⁷ The United States opposed this proposal and

⁴⁰ N. MATTE, *supra* note 32, at 160.

⁴¹ Liability Convention, *supra* note 20, at art. I.

⁴² N. MATTE, *supra* note 32, at 157.

⁴³ Hosenball, *supra* note 12.

⁴⁴ *Id.* at 150.

⁴⁵ *Id.* at 151.

⁴⁶ Indirect damages may be viewed as the remote consequences of an action, those related in some manner to the action but not a direct result of it. An example given by Hosenball in his article is that of a tourist who suffered a heart attack in the evacuation of the Eiffel Tower, after it was struck by a large piece of satellite. The tourist's heart attack is possibly the indirect result of the crash of the satellite. *Id.* at 146-47, 151.

⁴⁷ U.N. Doc. A/AC.105/C.2/L.26. India proposed to include in a liability treaty the stipulation that "damage may be instant or delayed, direct or indirect." See U.N. GAOR, 2 Annexes (Agenda Item 32) 2, U.N. Doc. A/6804, appendix

specifically stated in 1971 that the Liability Convention did not cover indirect damages.⁴⁸ A final answer to this question must await the determination of a specific claim.

C. *Standard and Form of Compensation*

Article XII of the Liability Convention also deals with compensation for damages in terms of the amount for which a responsible state shall be liable. "The compensation . . . shall be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore [the damaged person or property] to the condition which would have existed if the damage had not occurred."⁴⁹ Unfortunately, this provision does not clarify which types of damages will be compensated, nor does it provide a substantial formula by which to measure damages.

One of the more troublesome problems confronted by the Legal Subcommittee was the standard of compensation to be adopted. The members of the Legal Subcommittee were concerned with the determination of the applicable law to be used to establish the standard.⁵⁰ Proposals for the applicable law included that of the state where the damage occurs,⁵¹ that of the state liable for the damage,⁵² and the law as agreed upon by the claimant and respondent for determining the standard of compensation.⁵³

The difficulty in negotiating the standard of compensation was

III, Proposals Relating to the Liability for Damage Caused by the Launching of Objects into Outer Space (1967).

⁴⁸ Hosenball, *supra* note 12, at 151.

⁴⁹ Liability Convention, *supra* note 20, at art. XII.

⁵⁰ See 21 U.N. GAOR, Committee (1st) (Agenda Item 33), U.N. Docs. A/C.1/PV.1819 through A/C.1/PV.1826 (1971) (general debate on liability).

⁵¹ Several member states supported the adoption of the principle of *lex loci delicti commissi*, including Brazil. 21 U.N. GAOR, Committees (1st) (Agenda Items 33 and 92) 3, U.N. Doc. A/C.1/PV.1821 (1971); Canada, *id.* at 6, and France. 21 U.N. GAOR, Committees (1st) (Agenda Items 33 and 92) 8, U.N. Doc. A/C.1/PV.1823 (1971).

⁵² Hungarian Draft Proposal, 22 U.N. GAOR, 2 Annexes (Agenda Item 32) 27, U.N. Doc. A/6804, appendix II (1967).

⁵³ Report of the Committee on the Peaceful Uses of Outer Space, 23 U.N. GAOR (Agenda Item 24, Annex II), U.N. Doc. A/7285 (1968). The proposal that the law accepted by the claimant and the respondent would be the applicable law for determining the standard of liability was agreed upon by the Subcommittee in discussion but that premise was never formally included in the text of the Liability Convention.

due in part to the differences in the tort and claims laws of the various legal systems of the countries represented in the Committee.⁵⁴ For example, the Russian system of compensation is much more limited than that of the United States.⁵⁵ If the applicable law were that of the launching state, a United States claimant injured by a Russian satellite component would be limited to the Soviet measure of damages.⁵⁶ For differing reasons the United States, the Soviet Union and others would not accept the applicable law of the state where the damage occurred.⁵⁷ The final agreement upon the payment of compensation "in accordance with international law and the principles of justice and equity"⁵⁸ leaves open, as stated above, the question of the precise damages that will be compensated.

The text of Article XII does allow for speculation upon this question, however. Because no uniform view exists on what constitutes each aspect of international law, the respective views of the parties involved in any claim proceeding will play an important role.⁵⁹ As stated in the proceedings of the Legal Subcommittee, "reference to the principles of justice and equity . . . would enable the claims commission to take into account the legal system in force in the State in which the damage occurred."⁶⁰ The concept of full compensation included in the preamble to the Convention,⁶¹ along with the restitution provision of Article XII, indicates that the determination of any claim should be victim-oriented.

The form of compensation is explicitly determined by Article XIII of the Liability Convention. Payment is to be made in the currency of the claimant state, or, upon request of that state, in

⁵⁴ Hosenball, *supra* note 12, at 150.

⁵⁵ Mazaroff, *supra* note 31. The Russian system of compensation is comprehensive in coverage for institutional costs such as hospitalization and medical expenses, but does not extend to individualized losses such as personal suffering.

⁵⁶ Hosenball, *supra* note 12, at 150.

⁵⁷ *Id.*

⁵⁸ Liability Convention, *supra* note 20, at art. XII.

⁵⁹ N. MATTE, *supra* note 32, at 169.

⁶⁰ U.N. Doc. A/AC.105/C.2/SR.164 (1971) as quoted in N. MATTE, *supra* note 32, at 169.

⁶¹ The preamble to the Liability Convention states in part: "Recognizing the need to elaborate effective international rules and procedures concerning liability for damage caused by space objects and to insure, in particular, the prompt payment under the terms of this Convention of a full and equitable measure of compensation to victims of such damage." 24 U.S.T. 2389.

the currency of the state from which compensation is due.⁶² The parties may agree on an alternate form of compensation.⁶³

D. *The Party Responsible*

The determination of the party responsible for the damage must be made before compensation can be awarded to the victim. The party responsible must be held liable under the terms of the governing international law. Complications arose out of the provisions of the 1967 Outer Space Treaty, which established the state liable as "[e]ach State Party to the Treaty that launches or procures the launching of an object into outer space, . . . and each State Party from whose territory or facility an object is launched."⁶⁴ A definition of "outer space" is not provided.⁶⁵ The demarcation line between airspace and outer space has never been established.⁶⁶ It is not stated, therefore, whether space objects, or parts thereof, which never reach any point that might be considered outer space are to be included within the above provision.

The drafters of the Liability Convention attempted to avoid the above complications by eliminating the use of the phrase "outer space." The necessity for establishing the line for outer space in terms of where the damage occurs is eliminated by referring to damage that occurs "on the surface of the earth or to an aircraft in flight"⁶⁷ and that which occurs "elsewhere than on the surface of the earth."⁶⁸ The party responsible is the "launching state,"⁶⁹ not a state which "launches an object into outer space,"⁷⁰ as first delineated in the Outer Space Treaty. Following the general guide-

⁶² Liability Convention, *supra* note 20, at art. XIII.

⁶³ *Id.*

⁶⁴ Outer Space Treaty, *supra* note 13, at art. VIII.

⁶⁵ *Id.*

⁶⁶ The problem of delineating airspace from outer space has been the subject of much debate within the Committee as the members have attempted to establish a definition of outer space. Apparently the difficulty in identifying sufficient scientific or technical criteria upon which a precise and lasting definition could be based has hampered the adoption of a generally recognized definition of outer space. See Report of the Committee on the Peaceful Uses of Outer Space, 23 U.N. GAOR 135 (Agenda Item 24), U.N. Doc. A/7285 (1968).

⁶⁷ Liability Convention, *supra* note 20, at art. II.

⁶⁸ *Id.* art III.

⁶⁹ *Id.*

⁷⁰ Outer Space Treaty, *supra* note 13, at art. VII.

lines of the Outer Space Treaty, however, a launching state is any state which launches, procures the launching of, or supplies the territory or facility for the launching of a space object.⁷¹ As there is no mention of "outer space," the problem of defining the phrase directly is avoided. Its meaning, however, is implicit in the phrase "space object."

The importance of determining what constitutes a space object is paramount, as the Convention explicitly covers only damage caused by space objects. Yet the text of the Liability Convention merely states, "the term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof."⁷² The absence of a definition is due to the acceptance by the Legal Subcommittee of the suggestion that "space object" had a reasonably understood and clear meaning.⁷³ The Hungarian draft convention defined "space object" as any device "designed for movement in outer space and sustained there otherwise than by the reaction of air."⁷⁴ The requirement for a design adapted to movement in outer space appears to be the criterion common to the drafts submitted to the Legal Subcommittee which included a definition of space objects.⁷⁵ If this is to be the "clear meaning" accepted by the Legal Subcommittee, then a generally accepted definition of outer space should be recognized by that body. Otherwise, it is questionable whether objects designed for use not in space, but on other celestial bodies, are encompassed within the term "space object."⁷⁶ Considering the problem further, it is not clear when space objects may lose their status as such; the classification as a space object may be lost with the loss of ability to move in space if the object is adapted to another use.

One author has suggested that "persons and property on board a space object are not encompassed by the term 'space object.'"⁷⁷

⁷¹ Liability Convention, *supra* note 20, at art. I.

⁷² *Id.*

⁷³ Foster, *supra* note 10, at 145.

⁷⁴ U.N. Doc. A/AC.105/C.2/L.10 (1967) as quoted in Foster, *supra* note 10, at 145 n.30. This was apparently the interpretation given to the meaning of "space object" by the member states that submitted a draft proposal containing a definition of that term.

⁷⁵ Foster, *supra* note 10, at 145.

⁷⁶ *Id.* at 146-47.

⁷⁷ *Id.* at 158. "This conclusion is supported by the terminology of Article I(d) and Articles II, III and IV of the Liability Convention particularly since

If the persons or property become detached from the space object, any damage they subsequently caused would not give rise to liability under the Convention.⁷⁸ This reasoning is not universally accepted. The author of *Aerospace Law* asserts that the definition of space object supports the conclusion that damage caused by anything associated with it, as well as that damage caused by the object itself, will be covered by the Convention.⁷⁹

The wording of the Liability Convention also indicates that it is necessary for an object to be launched in order for it to be considered a space object.⁸⁰ Permanent moon stations, transported and assembled on the moon, may not be within this category. Space shuttles, such as the United States Enterprise, designed for takeoff in the manner of conventional aircraft, also lack the element of having been "launched."

The existence of the type of space shuttle referred to poses a further problem: the distinction between "aircraft" and "space objects." Definitions of "aircraft" usually refer to a flight instrumentality that utilizes aerodynamic lift for operation.⁸¹ The proposed design for future space shuttles indicates that liftoff and return to earth will be accomplished by aerodynamic lift.⁸² Objects intended for use in outer space, but so designed as to rely on aerodynamic lift while passing through the atmosphere are not excluded from definitions of "aircraft" currently in use.⁸³ In certain cases, therefore, objects may be classified as both "aircraft" and "space objects."

The distinction may be one of academic interest only until the question of liability for damage arises. The standard of liability to which a responsible state will be held may vary with the classification.⁸⁴ Space objects are subject to the provisions of the Lia-

the latter two articles speak of damages 'to a space object . . . or to persons or property on board such space object.' *Id.* at 158 n.69.

⁷⁸ *Id.* at 158-59.

⁷⁹ N. MATTE, *supra* note 32, at 157.

⁸⁰ Liability Convention, *supra* note 20, at arts. I, II, III.

⁸¹ See International Civil Aviation Organization, Convention on International Civil Aviation, Annex 2: International Standards, Rules of the Air 9 (6th ed. Sept. 1970).

⁸² Foster, *supra* note 10, at 159.

⁸³ *Id.*

⁸⁴ *Id.*

bility Convention,⁸⁵ while the settlement of a dispute involving damage caused by an aircraft may be subject to the Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface.⁸⁶ The latter treaty has limitations on absolute liability not available in the Liability Convention.

Several methods to determine a definite classification for instrumentalities of such a dual nature are possible. They might be classified according to the place where the damage occurs, the mode of operation at that time, or according to their designated primary purpose.⁸⁷ The latter classification is the most advantageous; the status of the object would not vary according to circumstances.

As stated above, liability under the Convention rests with the launching state. Specifically defined by the Convention, the "launching state" is any state "which launches or procures the launching of a space object"⁸⁸ or "from whose territory or facility a space object is launched."⁸⁹ The term "launching" is meant to include attempted launchings.⁹⁰ The definition recognizes that more than one state may be involved in a project, and many states may cooperate to facilitate one launching. A state may be held liable even though it takes only a passive role in the launching.⁹¹

Through Article V, joint and several liability for any damage caused by a space object is invoked "whenever two or more states jointly launch a space object."⁹² The difficulty encountered is that the use of the phrase "launching states" was omitted by the drafters. Their purpose is not clear, but writers have agreed that the effect is to create joint and several liability only for those states that actively participate in a launch.⁹³ Support for this argument is extracted from the drafters' belief that it was necessary to include explicitly in the category of participants in a joint launching a

⁸⁵ Liability Convention, *supra* note 20.

⁸⁶ It should be noted that the Convention on Damage Caused by Foreign Aircraft is not uniformly in force.

⁸⁷ Foster, *supra* note 10, at 159.

⁸⁸ Liability Convention, *supra* note 20, at art. V(c)(i).

⁸⁹ *Id.* art. I(c)(ii).

⁹⁰ *Id.* art. I(b).

⁹¹ Foster, *supra* note 10, at 163.

⁹² Liability Convention, *supra* note 20, at art. V.

⁹³ Foster, *supra* note 10, at 165-66.

state lending its territory or facility to the launch.⁹⁴ Presumably the state which merely procures the launching is to remain only severally liable. The dividing line between active and passive participation is non-existent. At what point a state which procures a launching becomes sufficiently involved to be regarded as a joint participant is not established. The word "procures" itself is subject to innumerable interpretations.⁹⁵

By virtue of joint and several liability the claimant state may institute proceedings against any or all of the states responsible for the full amount of the liability. The right of indemnification for those states held in joint and several liability is also provided for by Article V.⁹⁶ Participants wishing to avoid ex post facto determination of their degree of liability may apportion responsibility among themselves by agreement.⁹⁷ Any such agreement, however, shall not interfere with "the right of a state sustaining damage to seek the entire compensation due under this Convention from any or all of the launching states which are jointly and severally liable."⁹⁸

In a situation where two independent launchings result in an accident with damage to a third party, the approach to joint and several liability is the same.⁹⁹ The claimant state is not required to prove which launching state is in fact responsible for the damage. Proceedings may be instituted against any of the launching states for the full amount of the compensation.

Only a state, in the sense of a national government, may be held liable under the Convention. Belief that participation in inter-governmental organizations should not serve as a shield against liability led to the drafting of Article XXII: "In this Convention, with the exception of articles XXIV to XXVII, references to States

⁹⁴ Paragraph 3 of Article V of the Liability Convention, *supra* note 20, states, "A state from whose territory or facility a space object is launched shall be regarded as a participant in a joint launching."

⁹⁵ Interpretations of the meaning of the word "procure" might range from producing the financial backing for a launch to inducing a state to launch a space object in return for allowances for territory for military bases.

⁹⁶ Liability Convention, *supra* note 20, at art. V, para. 2. A launching state which has paid compensation for damages shall have the right to present a claim for indemnification to other participants in the joint launching.

⁹⁷ *Id.*

⁹⁸ Liability Convention, *supra* note 20, at art. IV.

⁹⁹ *Id.*

shall be deemed to apply to any international intergovernmental organization which conducts space activities if"¹⁰⁰ There follows a list of three conditions that must be fulfilled before the organization is held subject to the Convention: (1) a majority of the members of the organization must be parties to the Outer Space Treaty; (2) a majority must also be parties to the Convention; and (3) the organization must declare its acceptance of the rights and obligations stipulated in the Convention.¹⁰¹ The organization and those of its members that are parties to the Convention are jointly and severally liable for resulting damage.¹⁰² The Convention indicates by silence that states not parties to the Convention shall only be severally liable. The contention that membership in an organization subject to the Convention imputes liability under the Convention to the member state has not been considered.

There is a degree of protection from liability obtained by membership in an intergovernmental organization in that the claim must first be presented to the organization.¹⁰³ Only upon the organization's failure to pay the compensation within the stipulated time period do the member states that are parties to the Convention become jointly liable.¹⁰⁴ Although the organization may be regarded as a defendant in the first instance, it does not have the right to directly present a claim under the provisions of the Con-

¹⁰⁰ *Id.* art. XXII. Articles XXIV and XXVII are inapplicable to organizations. These articles are concerned with the signature, ratification, revision, amendment and withdrawal from the Convention. Organizations are accorded no rights in these matters.

¹⁰¹ *Id.*

¹⁰² *Id.* Article XXII states:

If an international intergovernmental organization is liable for damage by virtue of the provisions of this Convention, that organization and those of its members which are States Parties to this Convention shall be jointly and severally liable, provided however that:

- a) Any claim for compensation in respect of such damage shall be first presented to the organization.
- b) Only where the organization has not paid, within a period of six months . . . , may the claimant state invoke the liability of the members which are States Parties to this Convention

¹⁰³ *Id.*

¹⁰⁴ *Id.*

vention, but must establish a claim through one of its member states.¹⁰⁵

Individuals, companies, or other private entities cannot be held liable under the Convention, as they are not discussed within the context of the treaty. The Outer Space Treaty, however, provides that "[s]tates parties to the Treaty shall bear international responsibility for national activities in outer space, . . . whether such activities are carried on by governmental agencies or by non-governmental entities, . . ."¹⁰⁶ For states party to the Outer Space Treaty, responsibility for space activities carried out by non-governmental entities shall be imputed to the state. If states are parties only to the Liability Convention, and not to the Outer Space Treaty, the argument for imputation of responsibility is weakened.

In most areas of international law the concept of imputability imposes responsibility only for the acts of the agents and representatives of a state.¹⁰⁷ Acts of government officials are thereby distinguished from the acts of the individual citizens of a state. On this basis the argument is advanced that "the Outer Space Treaty in imposing responsibility on states for all national space activities, whether governmental or non-governmental, must be regarded as extending the concept of imputability [beyond the general scope of international law] and as such binding only on those states party to the Treaty."¹⁰⁸ If this is accepted, then the Convention does not provide for damage resulting from private launchings, if any, in time, occur. The alternate argument may be made that "the territorial criterion does not make a distinction between governmental and private launchings from a state's territory or facility, and both should, therefore, be regarded as covered by the Convention."¹⁰⁹ Further, the Outer Space Treaty served as a basis for the general principles of liability in international space law. Arguably, the principles first embodied by that treaty are now recog-

¹⁰⁵ By provisions of Articles VIII and IX only a state is granted the privilege to present a claim for damages.

¹⁰⁶ Outer Space Treaty, *supra* note 13, at art. IV.

¹⁰⁷ Foster, *supra* note 10, at 164.

¹⁰⁸ *Id.* at 165.

¹⁰⁹ N. MATTE, *supra* note 32, at 35.

nized as general principles of international space law binding on all states whether or not the state is a party to the treaty.¹¹⁰

III. SEARCH AND RECOVERY OPERATIONS: FINANCIAL RESPONSIBILITY AND TREATMENT OF THE WRECKAGE

A. *Recovery of the Wreckage*

The Liability Convention is concerned with compensation for damage caused by a space object. As search and recovery costs are not within the definition of "damage" as presented by the Convention, the determination of the financial responsibility for these operations is dependent on the terms of the Rescue Agreement.¹¹¹ Although the purpose of the Rescue Agreement is basically humanitarian in nature,¹¹² and primary importance is placed on the provisions for return of astronauts, Article V of the Rescue Agreement is concerned with the recovery and return of space objects. Paragraph five of that article provides: "[E]xpenses incurred in fulfilling obligations to recover and return a space object or its component parts under paragraphs 2 and 3 of this article shall be borne by the launching authority."¹¹³ Paragraphs two and three authorize the state having jurisdiction over the territory in which a space object is found to "take such steps as it finds practicable to recover the object or component parts"¹¹⁴ and to either return or hold such object(s) at the disposal of representatives of the launching authority.¹¹⁵ Ownership of the space object, however, remains with the launching state. Provisions in both paragraphs provide that these actions are to be undertaken "upon the request of the launching authority."¹¹⁶ This phrase gives rise to the contingency that if search and recovery operations were undertaken only on the initiative of the state in which they fell, the launching authority would not be liable for expenses. If an object were wrecked beyond repair, or of little intrinsic value, the

¹¹⁰ Foster, *supra* note 10, at 165.

¹¹¹ Riccio, *Astronauts and the Return of Objects Launched into Outer Space*, XII JAG L. REV. 142 (1970).

¹¹² *Id.*

¹¹³ Rescue Agreement, *supra* note 17, at art. 5.

¹¹⁴ *Id.* art. 5, para. 2.

¹¹⁵ *Id.* art. 5, para. 2.

¹¹⁶ *Id.* art. 5, paras. 2, 3.

launching authority presumably would not wish to expend the money to recover the object. In that case, if a state recovers the debris for its own purposes, for example in the hope of gaining information, the launching authority should not have to bear the cost of that recovery.

The Rescue Agreement recognizes the possibility that a space object, or its component parts may be of a hazardous or deleterious nature. In such a case, paragraph four overrides paragraphs two and three of Article V of the Rescue Agreement and establishes an affirmative duty for the launching authority to "immediately take effective steps, under the direction and control of [the state having jurisdiction over the territory in which the object is found], to eliminate possible danger of harm."¹¹⁷ If paragraph four is invoked, the launching authority could argue that its responsibility is limited to the expenses which it incurs. Paragraph five requires only "expenses incurred in fulfilling obligations . . . under paragraphs 2 and 3" to be borne by the launching authority.¹¹⁸

The phrase "launching authority" is used in the Rescue Agreement as opposed to "launching state" in the Liability Convention. For purposes of the Rescue Agreement, "launching authority" means the state responsible for the launching.¹¹⁹ International intergovernmental organizations are included within that meaning.¹²⁰ Although the phrase is not as clearly defined in the Rescue Agreement as in the Liability Convention, conceptual differences are not created by the use of the term "authority" instead of "state," and the two phrases should be equated.

The Liability Convention does make provision for the possibility that falling space objects may cause "large scale danger to human life or seriously interfere with the living conditions of the population."¹²¹ This provision does not establish a duty for the launching state immediately to "take steps to eliminate the possible danger and harm," but only requires the launching state to "exam-

¹¹⁷ *Id.* art. 5, para. 4.

¹¹⁸ *Id.* art. 5, para. 5.

¹¹⁹ *Id.* art. 6.

¹²⁰ *Id.* The international intergovernmental organization must declare its acceptance of the rights and obligations provided for in the Rescue Agreement and a majority of the states members of that organization must be contracting parties to the Rescue Agreement and to the Outer Space Treaty.

¹²¹ Liability Convention, *supra* note 20, at art. XXI.

ine the possibility" of lending assistance to the state which has suffered the damage.¹²² Under the article, other states which are parties to the Convention are also compelled to examine the possibility of rendering aid in the event of widespread danger.¹²³ An allocation of financial responsibility, should any state actually render aid, is not made.

B. *Return of the Space Object or Component Parts*

Upon recovery, the space object, or any debris, is to be returned to the launching authority at the request of that state. If requested by the state which recovers any object or its parts, identifying data must be furnished by the launching authority prior to the return.¹²⁴ The basis for this requirement is Article VIII of the Outer Space Treaty, which states: "[O]bjects that are launched into outer space or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to the State Party, which shall, upon request, furnish identifying data prior to their return."¹²⁵ Article VIII also provides that ownership of space objects is not affected by their presence in outer space or their return to earth, and jurisdiction and control of the object while in outer space remains with the "State Party to the Treaty on whose registry an object is launched into outer space"¹²⁶

Protective provisions as to the treatment of a space object before its return to the state of ownership are not present in the treaties governing international space law. The treaties neither authorize nor prohibit an examination of the space object by the scientists of the country in which it landed. Clearly, an examination to determine the potential danger of any object would not be questioned. A launching state, however, might protest if the purpose of the scrutiny were the discovery of technological data.

C. *Identification of the Space Object or Component Parts*

Identification of the wreckage of space objects has, to date, not been of great concern. All objects launched into space are tracked

¹²² *Id.*

¹²³ *Id.*

¹²⁴ Rescue Agreement, *supra* note 17.

¹²⁵ Outer Space Treaty, *supra* note 13, at art. VIII.

¹²⁶ *Id.*

by the North American Air Defense Center, located near Colorado Springs, Colorado.¹²⁷ Increased space traffic, however, has made the continuous tracking of every object impossible.¹²⁸ Concern over this problem led to the drafting of the Convention on the Registration of Objects Launched into Outer Space in 1975 to provide for the central registration of all objects launched into space. A marking system that would survive reentry into the atmosphere was not included in the requirements of the Registration Convention, due to technical impracticability.¹²⁹ The importance of the Registration Convention in regard to the imputation of liability for damage may be somewhat lessened by this omission. At present, low-orbital objects, with limited lifespans in space, are reportedly monitored continuously.¹³⁰ Theoretically, when one reenters the atmosphere, identification is possible. As to the exact nature of the object, the Registration Convention requires only that the "general function of the object be noted in the registry."¹³¹

IV. CLAIMS PROCEDURE UNDER THE LIABILITY CONVENTION

The Liability Convention only allows states to bring a claim for compensation.¹³² By virtue of Article VIII a state may present a claim for damage to: (a) its territory, property or nationals (whether they may be natural or juridical persons); (b) foreign nationals where they sustain damage in its territory provided that their state of nationality has not presented a claim; and (c) foreign nationals permanently resident in its territory provided that their state of nationality and the state in whose territory such foreign nationals suffered the damage have not presented claims or clari-

¹²⁷ NEWSWEEK, Feb. 6, 1968, at 14.

¹²⁸ *Id.*

¹²⁹ N. MATTE, *supra* note 32, at 182.

¹³⁰ *See* note 123 *supra*.

¹³¹ Convention on the Registration of Objects Launched into Outer Space (1976), 28 U.S.T. 695.

¹³² Liability Convention, *supra* note 20, at art. VIII. To bring a claim under the Liability Convention it is not necessary for a claimant state to have first exhausted the remedies available in the forum of the launching state. Nor does the Convention preclude a claimant state "from pursuing a claim in the courts or administrative tribunals or agencies of the launching state." A claim may not, however, be brought under the Convention if it is concurrently being pursued in the tribunals of the launching state. *Id.*

fied their intention of presenting claims.¹³³ By this provision individuals have the right to compensation through various states, notwithstanding that their state of nationality may be unprepared to submit a claim on their behalf in the event that the damage occurred outside of the state of nationality of the individual victim.¹³⁴ Article VIII also provides a system to avoid a multiplicity of claims.¹³⁵ The state in which the damage occurs may present the claims of all who sustain damage provided that the governments of foreign nationals involved confer this right on the claimant state either expressly or impliedly, as by inaction.¹³⁶ A problem exists since no time limit is set in which a state, either the state of nationality or the state where the damage occurred, must clarify an intention to present a claim. The state that wishes to make a claim on behalf of foreign nationals is thus left in an uncertain position.

Any claim for damage must be submitted to the launching state within one year following either the date of the occurrence of the damage or the identification of the launching state which is liable.¹³⁷ An exception to the time limit exists where the claimant state is unable to identify the launching state or is unaware that any damage has occurred.¹³⁸ The one-year period is to commence when these facts are learned.¹³⁹ The limitation period is never to "exceed one year following the date on which the State could reasonably be expected to have learned of the facts through the exercise of due diligence."¹⁴⁰ The exception does not apply to

¹³³ *Id.*

¹³⁴ The principles of liability of international space law do not apply to domestic claims. Thus, if a United States space object, such as Skylab, crashes to earth on United States soil, the victims of any damage could not recover from the government under the Liability Convention. The injured party would be limited to actions against the government under the Federal Tort Claims Act, 28 U.S.C. § 2674 (1976), or against the launching authority. At this time the launching authority would be either NASA or a branch of the military. Claims against NASA are brought under the NASA Act, 42 U.S.C. § 2473-13(A) (1976) and against the military under the Military Claims Act, 10 U.S.C. § 2733 (1976).

¹³⁵ Liability Convention, *supra* note 20, at art. VIII.

¹³⁶ *Id.*

¹³⁷ *Id.* art. X(1).

¹³⁸ *Id.* art. X(2)

¹³⁹ *Id.*

¹⁴⁰ *Id.*

cases in which the claimant has knowledge of the damage but not of its extent. Claims may be revised, however, until "one year after the full extent of the damage is known."¹⁴¹

"A claim for compensation for damage shall be presented to a launching state through diplomatic channels," as provided by Article IX.¹⁴² If the states involved do not maintain diplomatic relations the claimant state may request another state to present its claim.¹⁴³ If both the claimant and launching states are members of the United Nations, the claim may be presented through the Secretary General of the United Nations.¹⁴⁴

An alternative claim procedure is established and detailed in Articles XIV through XX of the Liability Convention to provide for the possibility that diplomatic negotiations will not result in a settlement within one year of the submission of the claim.¹⁴⁵ Either party may request that a Claims Commission be established to dispose of the matter.¹⁴⁶ The Claims Commission is to be composed of three members: one appointed by the claimant state(s); one appointed by the launching state(s); and the third member, the Chairman, to be appointed jointly by the parties.¹⁴⁷ If no agreement can be reached as to the choice of a Chairman within four months, that post shall be appointed by the Secretary General of the United Nations, at the request of one of the parties, within the succeeding two months.¹⁴⁸ The Chairman is to act as a single member of the Claims Commission if one party fails to appoint its member of the Claims Commission.¹⁴⁹

The Commission "shall decide the merits of the claim to determine the amount of compensation to be paid, if any."¹⁵⁰ As stated above, the decision of the Claims Commission will be made according to principles of international law, justice and equity.¹⁵¹ An

¹⁴¹ *Id.* art. X(3).

¹⁴² *Id.* art. IX.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.* arts. XIV-XX.

¹⁴⁶ *Id.* art. XIV.

¹⁴⁷ *Id.* art. XV.

¹⁴⁸ *Id.* art. XV(2).

¹⁴⁹ *Id.* art. XVI(1).

¹⁵⁰ *Id.* art. XVIII.

¹⁵¹ *Id.* arts. XIX(1), XII.

inherent weakness in this method of settlement is that the decision of the Claims Commission shall be final and binding only if the parties so agree.¹⁵² "Otherwise the Commission shall render a final and recommendatory award which the parties shall consider in good faith."¹⁵³ Without a provision for compulsory procedures in which the decision reached is to be final and binding on the parties, not subject to appeal, and to be executed without delay, the Liability Convention may not truly accomplish one of its main purposes as recited in the preamble. That goal is to "ensure the prompt payment under the terms of this Convention of a full and equitable measure of compensation to victims of such damage," indicating victims of damage caused by space objects.¹⁵⁴

VI. CONCLUSION

Scholars in the field of international law, through reference to general international legal principles and analogy to existing international agreements concerning other types of activity, anticipated the adoption of many of the major principles now embodied in the international agreements concerning activities in space.¹⁵⁵ The provisions of the treaties formulated by the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, therefore, generally set forth principles of international space law that have been previously recognized. There are, however, certain deficiencies in the international law governing space activities as defined by those treaties.

One problem is the lack of a single comprehensive treaty. Major legal aspects such as the financial responsibility for search and recovery operations and the treatment of wreckage are covered in the Rescue Agreement but are not dealt with by the pro-

¹⁵² *Id.* art. XIX(2).

¹⁵³ *Id.*

¹⁵⁴ Liability Convention, *supra* note 20, at Preamble.

¹⁵⁵ For example, the application of the principle of absolute liability for damage caused by space activities was supported prior to the adoption of that principle in the 1972 Liability Convention. See S. LAY & H. TAUBENFELD, *THE LAW RELATING TO THE ACTIVITIES OF MAN IN SPACE* 169-71 (1970); M. MCDUGAL, H. LASWELL & I. VLASIC, *LAW AND PUBLIC ORDER IN SPACE* 165 (1963). The possibility that certain limitations would be placed on the imposition of absolute liability was recognized. *Id.*

visions of the Liability Convention. A state does not necessarily join in acceptance of every treaty, and may choose not to recognize principles enunciated in a treaty to which that state is not a party.

There are deficiencies in the Liability Convention of 1972, which governs the majority of legal problems possible in the event of the fall of a space object. Primarily, the Liability Convention suffers from a lack of specificity, as, for example, in the failure to adequately define the term "space object,"¹⁵⁶ or in the failure to clarify the time limit within which a state must indicate its intention to present a claim under the Convention.¹⁵⁷ Objections were made at the time of the drafting of the Liability Convention that the decisions of the Claims Commission provided for in Article XIX would not be binding upon the parties involved.¹⁵⁸ Arguments were made that if the decisions of the Claims Commission were to be binding, states involved would be induced to negotiate a settlement prior to the establishment of the Claims Commission, and injured parties would be assured of a final settlement to their claim to which the state or states responsible would be bound.¹⁵⁹

It is obvious that the work of the Legal Subcommittee is far from complete. The Skylab event was not an isolated occurrence. Since the advent of the "Space Age" in 1957, more than 10,000 objects have been launched into orbit.¹⁶⁰ Six thousand have fallen back to earth; although most are consumed upon reentry into the earth's atmosphere, it has been estimated that as many as three objects per week survive to impact with the earth.¹⁶¹ Thus the legal problems discussed here are not concerns merely for academic speculation, but rather dilemmas of the utmost practical importance.

¹⁵⁶ See text accompanying notes 73-87 *supra*.

¹⁵⁷ See text accompanying notes 132-141 *supra*.

¹⁵⁸ See 21 U.N. GAOR, Committees (1st) (Agenda Item 33), U.N. Docs. A/C.1/PV.1819-A/C.1/PV.1826 (1971).

¹⁵⁹ *Id.*

¹⁶⁰ U.S. NEWS & WORLD REPORT, *supra* note 4.

¹⁶¹ *Id.*

