CALIFORNIA WESTERN
INTERNATIONAL LAW JOURNAL

VOLUME 1 FALL 1970 NUMBER 1

LEGAL LIABILITY RESULTING FROM SPACE ACTIVITIES

H. CUSHMAN DOW*

The question of legal liability for injury or damage arising out of space activities is presently unresolved. One of the reasons stems from the unresolved legal status of space itself. How far up or how far out national sovereignty extends is still an open question.

It is certainly true that the laws of many sovereign states and the terms of such International Conventions as the Paris Convention of 1919 and the Chicago Convention of 1944 provide for the sovereignty of respective states over the air space above their territory. However, the extent of that air space and the boundary between it and what we might refer to as "outer space" has not been defined. It has been the subject for years of considerable controversy, discussion and disagreement among legal writers of all countries. As Messrs. Lipson and Katzenbach point out in their excellent *Report to the National Aeronautics and Space Administration on the Law of Outer Space*,[1] a tabulation (admittedly not complete) of the proposals with respect to the altitude-boundary of space shows 18 separate heights ranging from 30 miles to infinity. Another legal writer has made a table listing 65 possible demarcations between air space and outer space. After pointing out that the various demarcation lines are because of different theories, such as the Haley-von Karman line of 52 miles, and the

* B.A. 1941 Yale University, LL.B. 1948 Harvard University. General Counsel and Vice President Convair Division, General Dynamics Corporation.

1. Lipson and Katzenbach, Report to the National Aeronautics and Space Administration on the Law of Outer Space, American Bar Foundation, 14 (1961).

atmospheric space group derived from versions of the Chicago Convention, he suggests that possibly the best line is at the lowest altitude in which an artificial satellite may be put into orbit around the earth at least once.[2]

While it is true that there has been no agreement between nations as to the boundary between air space and outer space, it does appear there has been at least tacit agreement that at some ill-defined point air space does become outer space and national sovereignty over such space does not exist. For example, there are many types of satellites now orbiting the earth in space ranging from communication satellites to various so-called "spy in the sky" satellites. No nation has yet asked permission to fly satellites at high altitudes over the territory of any other nation nor has any nation protested such overflights of its territory. It might also be observed that although the moon passes over the territory of numerous sovereign nations of the earth, no one has yet claimed title to the moon because of that fact.

Another reason for the unresolved liability question is the divergent views of legal writers all over the world on both procedural and substantive matters resulting from space activities. Some of the problems which are being considered in this area are the following:

1. The question of whether absolute liability or fault liability should be the legal standard.

2. The question of whether liability arising out of space activities should be unlimited or limited, and, if limited, in what amount.

3. The question of whether either through the United Nations or negotiations outside the framework of the United Nations between individual states, an international fund might be established from which rightful claimants could be paid.

4. The question of establishing an international agreement on safety standards, such as notification of space launches, and inclusion of safety equipment on space vehicles and their boosters to insure self-destruct, if necessary.

5. The question of international agreement on submission to the compulsory jurisdiction of the International Court of Justice with respect to liabilities arising out of space activities.[3]

2. Vosburgh, *Where Does Outer Space Begin,* 56 A.B.A.J. 134 (1970).
3. Lipson and Katzenbach, *supra* note 1.

The eminent authority, Andrew G. Haley, was intensely concerned with the liability problem and in his definitive work entitled *Space Law and Government*,[4] he devotes an entire chapter to considering the various aspects of it. One of his interesting suggestions was for the establishment of a system of compulsory insurance similar to Workmen's Compensation. An administrative agency within the framework of the United Nations would handle claims. Under this system, industry would have the advantage of a fixed cost and protection against excessive jury verdicts while the claimant would receive prompt settlement and right to compensation without having to prove fault. One of the concerns that he expressed in his work was the problem of experiments in space possibly constituting torts. He points out that the Soviets attacked several of the United States projects, such as Argus, which involved a higher altitude nuclear detonation in 1958 to create an artificial belt of radiation, and Westford, which involved the release of thousands of tiny needles in space for radio communication experiments. A similar problem will exist when the state of the art is advanced enough so that space vehicles can be used to change the weather instead of just observe it as is presently the case. As Mr. Haley put it so well, experiments can "create still another source of discord among the nations of the earth which have no trouble even now in finding things to quarrel about."

A German writer, Vladimir Mandl, has suggested that owners and operators of space vehicles will be subject to absolute liability without limitation with respect to all personal injury and property damage, except that liability toward passengers in such vehicles should be limited to fault, negligence and contractual breach.[5]

However, as Becker points out, the question of liability is made more complex by the different systems of jurisdiction around the world. While liability without fault is a view acceptable in the United States, it is not so considered under Germanic and Latin American jurisprudence.[6]

Another writer, Eric Weinmann, while feeling that imposing absolute liability for injury or damage arising out of space activities

4. A.G. HALEY, SPACE LAW AND GOVERNMENT (Meredith Publishing Co. 1963).

5. VLADIMIR MANDL, DOS WELTRAUMRECHT: EIN PROBLEM DER RAUMFAHRT, Berlin, Mannheim J. Bensheimer (1932).

6. R. Becker, The Lawyer and the New Dimension of Space, Remarks before the Inter-American Bar Conference, Miami, April 1959.

is realisitc, doubts that it will ever happen both because he feels that the risk from a falling spacecraft is small because it will be consumed on re-entry and because in the absence of any scientific evidence that the launcher can confine any incident to its own territory, no finding of negligence on the launcher's part could be established.[7]

There have been a number of considered legal expressions, apart from the question of absolute or fault liability, on the question of liability imposed upon governmental entities. A Soviet writer has expressed the view that, since under present conditions launching is a governmental activity, the government concerned must assume full responsibility for any loss or damage resulting therefrom.[8]

But an interesting differing theory has been advanced by Mr. Levitt, who writing in the Army, Navy, Air Force Register of July 19, 1958, suggested that since a satellite, like a meteor, is not subject to control, its fall should be considered an act of God and the launching state would therefore have no liability.

The recent Proceedings of the Ninth Colloquium on the Law of Outer Space held in Madrid, Spain, October 1966, again reviewed the liability situation and indicated the urgent need for a solution. I. de Rode-Verschoor, pointing out that the number of space objects is increasing at a rapid rate, stated that a convention should be entered into as soon as possible on damage caused by space activities, which he suggested could later be inserted into an international convention on general space law which because of the number and complexity of problems does not appear possible of early achievement.[9]

Both Dr. Scifoni and Mr. Machado took the position that liability arising from space activities should be based on the principle of "objective responsibility," thus excluding the guilt or fraud of the author of the act.[10]

It was pointed out that the 1933 Rowan Convention established this standard for aeronautical activities and it would be even more valid to use the same standard for space activities from which

7. Weinmann, *The Law of Space,* 35 FOREIGN SERVICE JOURNAL 22 (1958).
8. KOROVIN, INTERNATIONAL STATUS OF COSMIC SPACE (1959).
9. Proceedings of the Ninth Colloquium on the Law of Outer Space, International Institute of Space Law of the International Astronautical Federation, University of California School of Law, Davis, California, 103 (1967).
10. *Id.* at 104-6.

the hazards are greater because of larger dimensions of spacecraft, possible lack of crew and the highly inflammable fuel. Mr. Machado expressed the view that the determination of liability limits should be made through an international understanding and that any compensation must be available easily and quickly, perhaps through an international insurance fund.

The third reason that the liability problem is still unresolved has been the absence of any international treaty or convention. Fortunately, there have been some positive steps forward in this area.

On December 13, 1963, the General Assembly of the United Nations unanimously adopted a *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*. Paragraph 8 of this document reads as follows:

> Each state which launches or procures the launching of an object into outer space and each state from whose territory or facility an object is launched is internationally liable for a damage to a foreign state or to its natural or juridical persons by such object or its component parts on the earth, in air space or in outer space.

During discussion on this, representatives of various delegations, including the United States, pointed out that the provisions on liability were broad and that details of its application will need to be spelled out in international agreements. As of the same date, the General Assembly by resolution requested the Committee on the Peaceful Uses of Outer Space to prepare a draft International Agreement on Liability for Damage caused by Objects Launched into Outer Space. Subsequently, three separate proposals for such an agreement were submitted by the United States, Belgium and Hungary. As all legal writers have recognized, the questions at issue are difficult and intricate and therefore it can be expected that the agreement envisioned by the General Assembly will not emanate for considerable time to come. However, C. Wilfred Jenks wrote in his excellent book on *Space Law*[11] that with the adoption of the declaration of legal principles "Space law ceased to be a speculation of jurists and became a body of principles recognized by states." Mr. Jenks went on to point out the following:

1. Liability should be in principle irrespective of fault, with two exceptions:

11. C.W. JENKS AND F.A. PRAEGER, SPACE LAW (1965).

a) While no proof of fault by the launcher or operator should be required in determining damages due, examination should be made of the claimant's failure to show reasonable care. Mr. Jenks gives as an example an aircraft flying near a launching site without warning or at a time when a launching has been announced.
b) A distinction should be made between injuries occurring on the ground or at sea and that occurring in space. People on the ground or at sea are pursuing their normal activities but persons and property in space share in the risks of space activities, and it would seem fair to apportion the loss equitably. Losses in air space are somewhat intermediate, but seem more akin to occurrences on the ground or at sea.

2. Submission of an international claim resulting from activities in space should not be subject to prior exhaustion of local remedy that may be available. In this connection, the proposal of the United States in Article VI provides "the presentation of a claim shall not require exhaustion of any remedies in the respondent state which might otherwise exist."
3. The most difficult questions are where more than one state has some measure of responsibility as launching state, state procuring the launching or state from whose territory or facility the object is launched or in which an international organization is involved. The way it is being handled at the moment is in launching agreements similar to that between Australia, the United Kingdom and the European Organization for the Development and Construction of Space Vehicle Launchers.

The Institute of International Law adopted unanimously at Brussels on September 11, 1963, *A Resolution on the Legal Regime of Outer Space.* This provides, in paragraph 13,

> The state under the authority of which the launching of a space object has taken place shall be liable, irrespective of fault, for any injury, including loss of life, or damage that may result. Modalities of application of this principle may be determined by special conventions. Any limitation of the amount of the reparation due shall be determined in the same manner.

Paragraph 14 states,

> In all matters not provided for in the preceding paragraphs, states are bound by general International Law, including the principles of the Charter of the United Nations.

The Committee on the Peaceful Uses of Outer Space created by the General Assembly established a legal subcommittee which has been considering the three drafts of an international convention concerning liability for damage caused by the launching of objects into outer space submitted by Belgium, the United States and Hungary. The definitive article on the work of this subcommittee is that written by Paul Dembling, formerly National Aeronautics and Space Administration General Counsel and now General Counsel of General Accounting Office, together with his associate, Mr. Arons, appearing in *32 Journal of Air Law and Commerce*, No. 3, published by the Southern Methodist University School of Law (1966). In addition, Mr. Dembling was a member of the delegation from the United States to the third and fourth sessions of that subcommittee. The above referred to article sets forth the problems on the question of liability that arose during the meetings of the subcommittee. These may be briefly summarized as follows:

1. Defining the launching state, which of course becomes significant where two or more states are involved in a joint venture.

2. The question of absolute liability vs. fault liability. While there appeared to be general agreement that the principle of absolute liability should apply to damage caused on the ground or in air space, there were differences of opinion as to liability occurring in outer space, such as that involved where one satellite collides with another.

3. Conditions of exoneration from liability. One exception to exoneration which appeared to have general acceptance was where the claimant state is guilty of "willful or reckless misconduct." However, the formulation of this concept into specific language proved difficult and remains to be concluded. The other exception discussed was natural disaster or *force majeure*. The American and apparently majority view was that this should not be an exception, but it was included as part of the Hungarian draft, supported by the Soviet Union, and no agreement was reached.

4. Liability of international organizations. The principal questions involved in this discussion were, first, assuming that international organizations should be made directly liable for damages without necessarily looking to the separate states involved in the organization, is the liability of the organization primary and the member state secondary or could a claimant state make demand upon the international organization and its constituent states

at the same time or in the alternative. Secondly, there remains the problem of how to make an international organization liable. Obviously, it does not become liable merely because some of the member states are contracting parties to a treaty. It would appear that the international organization itself should become a party to any international treaty or convention in some manner, which has been suggested could be accomplished by filing a declaration with the Secretary General of the United Nations.

5. Joint and several liability. Agreement was reached that liability of launching states should be both joint and several. However, there were problems concerned with the appropriate language. Mr. Dembling is of the view that the wording should not pose any great difficulty.

6. Measure of damages. There was complete disagreement on what law should be applied to measure damage. The three drafts submitted to the committee were all different. It becomes quickly apparent that the law of the state in which the loss occurs could be used or, as in the United States' proposal, an international standard could be established. There is equal disagreement with respect to the persons to be covered involving such questions as the status of aliens within the claimant state, whether nationals or aliens of the liable state are protected under convention and whether a state could claim on behalf of its nationals suffering damages or injuries abroad. And finally, there is equal disagreement over the matter of covering damage caused by nuclear explosions. There apparently was considerable feeling that this should be covered in a separate article.

7. Limitation of liability. Since the general feeling had been that absolute liability should be imposed, there was a concurrent feeling that some limitation on this liability was equally necessary.

And while the above matters seem quite exhaustive, as Messrs. Dembling and Arons point out, there is still be inquired into at future sessions such procedural issues as the statute of limitations, currency in which payment shall be made and settlement of disputes under the convention itself.

While the work of the legal subcommittee of the Committee on the Peaceful Uses of Outer Space has been proceeding, there did emerge the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the*

Moon and Other Celestial Bodies[12] (Space Treaty), which was transmitted to the United States Senate for its advice and consent on February 7, 1967, and which was subsequently ratified.

Article VII of the Space Treaty provides as follows:

> 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 to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the moon and other celestial bodies.

During the Hearings before the Committee on Foreign Relations of the Senate there was considerable discussion about this Article. Senator Gore in particular was concerned that this Article encompassed damage beyond physical damage and specifically asked then Ambassador Goldberg if the Article applied to damage caused by electronic means, such as interference or jamming of signals from a communications satellite. It was then Ambassador Goldberg's view that considering the history of the language and the discussions involving it during its negotiation that its terms were limited to physical damage and loss of life. He did, however, point out that Article VII does not determine how a claim should be presented or settled, but that an additional Treaty on liability would have to be negotiated. Indeed, he made reference to an Adjudication Clause which the United States had originally included as part of Article XI which read "any disputes arising from the interpretation or application of this Agreement may be referred by any contracting party thereto to the International Court of Justice for decision." Upon objection, it was amended by referring to, "or an appropriate Arbitration Tribunal," and even this was rejected by the Communist world.[13]

Thus, while the Treaty itself is certainly a milestone in human affairs, it emphasizes the importance of the work of the Committee on the Peaceful Uses of Outer Space and its legal subcommittee. These efforts are continuing. Herbert Reis, alternate United States representative to the Committee, made a statement in the Committee on November 20, 1969, on "applicable law" re-

12. 18 U.S.T. 2410 [1967] 3.

13. *Hearings on the Treaty on Outer Space before the committee on Foreign Relations, United States Senate,* 90th Cong. 1st sess. at 38-40, 70-75 (1967).

lating to claims.[14] After referring to the still unresolved issues of whether any legal convention should provide for ceilings on liability, and whether it should create arbitration procedures for claims not resolved by negotiation, he set forth the position of the United States on "applicable law." By this he meant the reasonable rules as to what system of law will be applicable to guide claimant and launching states in arriving at settlements of claims. He went on to state that it was the near unanimous opinion of the Committee as well as the firm position of the United States that any legal convention supplementing the Space Treaty should require the application of the national law of the place where the injury occurred. This, he stated, is because restoration of the victim to the financial condition that would have been obtained, were it not for the accident, involves social and economic factors of the place where the victim lived and to use, as some had suggested, the law of the launching state would result in abrogating the Constitution and laws of the United States. Thus, while the debate on the principles of a legal convention continue, there is a growing realization of its immediate necessity.

Since the Space Treaty in Article VII apparently only commits the signatory powers to a general assumption of liability and no implementing convention on liability has yet been enacted, a final word should be said about the legal situation as it exists today in this country. In this area an excellent study was made in 1963 under the auspices of the Legislative Drafting Research Fund of Columbia University for the National Security Industrial Association entitled, *Catastrophic Accidents in Government Programs.* In this connection, I should like to observe with considerable pride that my company, General Dynamics, Convair Division, a pioneer in space activities for both the Air Force and the National Aeronautics and Space Administration (NASA), has had over 380 of its missiles and space boosters launched without any such accident. Our Atlas Booster, as the first Intercontinental Ballistic Missile in the Air Force inventory, was used to orbit the first four Astronauts in the Mercury Program, and since then has been constantly engaged in other space activities, such as launching of satellites, Venus and Mars probes, and together with our Centaur upper stage, the successful landing of the Surveyor Spacecraft on the moon. This does not mean that the hazard does not exist. It

14. Department of State Bulletin, Jan. 5, 1970, at 18.

does exist simply because of the nature of the tremendous force, nuclear or chemical, which must be used in transporting man and his possessions from his own environment. At the present time in the event of a space effort which involves a domestic loss, an injured party could proceed against the Government under the Federal Tort Claims Act. This has several limitations, as we all know, such as imposing liability only for acts of Government employees and excluding liability if the employee was performing a "discretionary function." The only other remedy available to a claimant is a proceeding against a Government contractor participating in the program. This is complicated by many factors such as the tiers of contractors and subcontractors involved, the problem of proof, the differing laws on liabilities between jurisdictions, and is further subject to the risk of not being able to obtain an enforceable judgment. While all contractors carry liability insurance, the amount available is restricted and it is entirely possible that a serious enough accident could exceed the ability of many contractors to respond in damages.

If the contractor is a production or utilization facility licensee of the Atomic Energy Commission, the Price Anderson Amendment to the Atomic Energy Act of 1954 provides indemnification arising out of a nuclear incident in excess of $500,000,000.[15] Even this does not cover all circumstances, but such a contractor is more protected than a contractor working for the Department of Defense or for NASA. Title 10 U.S. Code, Section 2354 provides for contractor indemnification of a Department of Defense contractor, but only if the contract involves research or development, if the claim arises out of direct performance of the contract and from a risk that the contract defines as "unusually hazardous." It further provides that payments may be made only upon approval of the Secretary of the Military Department involved; then only from funds obligated for the particular contract, funds available for research or development and not otherwise obligated, or funds appropriated for the payments. Title 50 U. S. Code, Section 1431-1435, as supplemented by Executive Order No. 10789, allows indemnification of Government contractors, but subject to the phrase "within the limits of the amounts appropriated and the contract authorization provided therefor," and therefore any claimant is subjected to the uncertainty of the status of funds at any particular

15. 42 U.S.C. § 2210.

moment. Furthermore, it does not appear to have been extensively implemented in government contracts.

Accidents from space activities occurring abroad present similar problems. An injured party could not proceed against the United States Government in an American Court, under the Federal Tort Claims Act, nor, because of sovereign immunity, could a proceeding be conducted in the local Court of the country where the accident occurred. The application of the Price Anderson Amendment as to foreign occurrences is severely restricted. And while there are some statutes permitting administrative payment of claims arising from acts of Government employees,[16] the ceilings on the amounts which can be paid are so low as to restrict their usefulness. Perhaps foreign citizens could prevail upon their governments to proceed against the United States before the International Court of Justice or through diplomatic channels. An injured foreign claimant can, of course, proceed against any contractor involved, but because of problems of conflicts of laws, differing theories of liability and procedural matters, such litigation would be difficult and at the same time the risk to an American contractor remains extant and perhaps even enhanced through medium of a foreign judgment.

Thus, the protection of the public, the protection of government contractors and the vital government programs upon which they are engaged, the promotion of international good will towards the United States, as well as the avoidance of political and diplomatic entanglements, require not only the prompt enactment of an International Convention on liability supplementing the Space Treaty, but also additional domestic legislation. The Space Age is here; international and private law must not lag behind.

16. 10 U.S.C. § 2734.