

COMMERCIAL SPACE ACTIVITIES UNDER THE MOON TREATY*

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I. INTRODUCTION

The Moon Treaty, on adoption, will establish the principle that the moon and its natural resources are the common heritage of mankind. The establishment of an international regime is contemplated to govern exploitation of such resources with "equitable sharing" by all States *in* the benefits derived from those resources, with "special consideration" for developing countries and countries contributing to the exploitation. This paper examines the apprehension of private enterprise to invest funds in a moon activity requiring sharing of profits with States that had not shared in the risks involved. In light of the Treaty's negotiated history, conclusions made are that the nature of the sharing has not yet been determined; that such must await a subsequent separate treaty negotiation for the governing international regime when exploitation "is about to become feasible," an eventuality perhaps thirty or more years from now; that in the interim, there is no moratorium on exploitation and States may authorize their governmental and nongovernmental entities to undertake exploitation of the moon's resources. Private sector planning for and investment in commercial space activities, with Government support, is encouraged.

II. INTERNATIONAL COOPERATION IN SPACE ACTIVITIES

A. *The Space Law Treaties*

The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (TOM), on December 5, 1979, was recommended by resolution of the United Nations General

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Assembly for signature and ratification.¹ Like its three predecessor treaties formulated by the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) since adoption in 1967 of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies² (OST), the TOM is an expansion of principles embraced in the basic OST governing space activity. The TOM carries forward the OST objectives of international cooperation in space activities, with all nations to share in the benefits of space exploration without regard to their level of economic or scientific development.³

B. Freedom from Sovereignty

The appeal of the OST for international accord in exploration and use by all States was strengthened by the omission of the historical concept applicable to discovery and exploration of land masses on Earth, viz: the obtaining of sovereignty upon "effective occupation" over a *terra nullius*. In lieu thereof, the OST proclaimed, "Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use, or occupation or by any other means."⁴ Without this provision, States which established settlements on celestial bodies or otherwise in space might well be reluctant to then surrender

1. G.A. Res. 34/68, 34 U.N. GAOR, Supp. (No. 46) 77, U.N. Doc. A/Res/34/68 (1979) [generally known as the "Moon Treaty," hereinafter cited as the TOM]. The text of the Treaty is contained in the Annex.

2. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *done* Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 (*effective* Oct. 10, 1967) [popularly known as the "1967 Treaty on Outer Space," hereinafter cited as OST]. The three interim predecessor treaties were: Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, *done* Apr. 22, 1968, 19 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119 (*effective* Dec. 5, 1968); Convention on International Liability for Damage Caused by Space Objects, *done* March 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762 (*effective* Oct. 9, 1973); Convention on Registration of Objects Launched into Outer Space, *done* Jan. 14, 1975, 28 U.S.T. 695, T.I.A.S. No. 8480, (*effective* Sept. 15, 1976).

3. See OST, *supra* note 2, at Preamble, art. I; TOM, *supra* note 1, at Preamble, arts. 2, 4.

4. OST, note 2 *supra*, at art. II. For a discussion of application of prior principles to space discovery and settlement in the absence of an international accord precluding vesting of sovereignty, see M. Menter, Jurisdiction Over Land Masses in Space, address at the American Rocket Society Space Law and Sociology Conference, Carnegie Endowment for International Peace Building, New York City (Apr. 24, 1962).

whatever inchoate sovereignty rights accrued by such settlements. Many an armed conflict emanated from conflicting sovereignty claims on Earth; this possibility in space was to be avoided. The time to resolve this foreseeable problem was before such space exploration and settlement could occur.

The TOM contains a similar recital against national appropriation of the moon.⁵ While some writers and States had contended that the OST Article II prohibition would preclude exploitation of the moon's natural resources, the prevailing view appears to permit such exploitation.⁶ It is believed that the intent of this provision was to preclude application of the historical concept of sovereignty attaching to exploration and establishment of dominion over newly discovered portions of the Earth.

III. THE PRIVATE SECTOR IN SPACE

A. Space Communications

Private sector commercial space activities by U. S. companies followed the enactment by the U. S. Congress of the Communication Satellite Act of 1962.⁷ The act established the Communications Satellite Corporation (COMSAT) which was authorized to create and operate, or in conjunction with foreign governments or business entities to operate "a commercial communications satellite system."⁸

B. Remote Sensing

Private sector ownership and management of a civil operational land remote sensing activity is currently being studied by the U. S. Government. Planning and development responsibilities therefor were assigned by the President on November 20, 1979 to the National Oceanic and Atmospheric Administration (NOAA) of the U. S. Department of Commerce.⁹ On June 20, 1980, the NOAA issued a document setting forth issues and options being con-

5. TOM, *supra* note 1, at art. 11, para. 2.

6. 1 MANUAL OF SPACE LAW 264 (N. Jasentuliyana, R. Lee eds. 1979).

7. 47 U.S.C. § 701 (1976).

8. *Id.* at § 731.

9. The Nov. 20, 1979 presidential directive was premised upon an Interagency Task Force study "Private Sector Involvement in Civil Remote Sensing," dated June 15, 1979. The Nov. 20, 1979 White House Release is reprinted as "Attachment A" to the NOAA June 20, 1980 Doc. "Planning for a Civil Operational and Remote Sensing System: A Discussion of Issues and Options."

sidered by the Federal Administration in the development of its 1982 fiscal year budget and legislative program.¹⁰

C. Congressional and Executive Interest in Future Space Endeavors

In the U. S. Congress 96th session, both houses of Congress have held hearings in good part to ascertain and encourage private sector involvement in space activities¹¹ and to evaluate the current U. S. Civil Space Policy. The Policy, announced by the President on October 11, 1978, increased participation by the private sector in space enterprises. Among other recitals, the announcement stated that the Policy was to "confirm our support of the continued development of a legal regime in space that would assure its safe and peaceful use for the benefit of mankind."¹²

There is no doubt that the Administration and the Congress desire to assure that the private sector, under Government aegis, will share in such space endeavors as envisaged by the concise apropos remarks of Ambassador Peter Jankowitsch, Chairman of the UN COPUOS,¹³ at the opening of the Committee's 1979 session:

We are now seriously considering daily flights to orbit which might serve and supply large technical facilities such as research laboratories, astronomical laboratories, earth resources observatories, manufacturing facilities or communication centres. We are also considering expanding direct-to-home television broadcasting through-out the world; and erecting large structures in space, stabilizing them and moving them about. The possible early demonstration of a large structure that could be part of a large

10. *Id.* at 119. Legislative proposals under contemplation include a bill to establish the institutional framework and governmental financial assistance for eventual private sector ownership and operation of a civil operational land remote sensing system.

11. See The National Space and Aeronautical Policy Act of 1979, S. 212, 96th Cong., 1st Sess. (1979); Space Flight Policy Act of 1979, S. 244, 96th Cong., 1st Sess. (1979); Earth Resources Information Corporation Act of 1979, S. 875, 96th Cong., 1st Sess. (1979); Space Industrialization Act of 1980, H.R. 7412, 96th Cong., 2d Sess. (1980).

12. White House Fact Sheet of Oct. 11, 1978, *reprinted in* SENATE COMM. ON COMMERCE, SCIENCE AND TRANSPORTATION, 95TH CONG., 2D SESS., SPACE LAW-SELECTED BASIC DOCUMENTS (2d ed.) 561 (1978). A White House Press Release of June 20, 1978 announced the Committee's establishment within the Executive Office of the President with the objective among others, of "[the encouragement of] domestic commercial exploitation of space capabilities and systems for economic benefit . . ." *Id.* at 559.

13. United Nations Committee on the Peaceful Uses of Outer Space [hereinafter cited as COPUOS].

solar experiment is under active consideration. And finally, we are examining the possibility of setting up larger, earth-like communities several hundred thousand miles up in space.¹⁴

D. *Activities in the Moon and other Celestial Bodies*

The TOM expressly recognizes that the private sector may engage in activities on the moon. In language patterned after Article VI of the OST, the TOM states that "non-governmental entities" under the jurisdiction of a State Party to the Treaty may engage in national activities on the moon. However, such activities are to be "only under the authority and continuing supervision of the appropriate State Party."¹⁵

It should be noted that by reason of express recitals in the initial article of the TOM, its provisions relating to the moon are also applicable to other celestial bodies other than the Earth, including "orbits around or other trajectories to or around" the moon.¹⁶ However, such orbits and trajectories "do not include trajectories and orbits of space objects in earth orbit only and trajectories of space objects between the earth and such orbits."¹⁷ In this paper, all references to the moon shall likewise be deemed to be applicable to other celestial bodies, unless it is otherwise apparent from the context.

IV. EXPLOITATION OF MOON RESOURCES

A. *The Common Heritage Principle*

The provisions of the TOM of most significance to commercial operations under the Treaty concern the exploitation of the natural

14. Report of COPUOS, 34 U.N. GAOR, Supp. (No. 20) 30, U.N. Doc. A/34/20 (1979).

15. TOM, *supra* note 1, at art. 14, para. 1. The wording of the prior Art. VI, OST was taken from para. 5 of 18 U.N. GAOR, Supp. (No. 15) 15, U.N. Doc. A/5515 (1964). Declaration of Legal Principles Governing Activities of States in the Exploration and Use of Outer Space. The wording was that proffered by the U.S.S.R. except for substitution on the suggestion of the U.S. Delegate of the term "non-governmental entities" for "non-governmental bodies corporate" 18 U.N. GAOR ____, ____, U.N. Doc. A/AC.105/PV.24 (1963). In a discussion leading to the formulation of this principle, the Soviet Delegate remarked:

The Soviet delegation considers it essential to point out that in this field it would be possible to consider the question of not excluding from the declaration possibility of activity in outer space by private companies, on the condition that such activity would be subject to the control of the appropriate State and the State would bear international responsibility for it.

16. *Id.* at art. 1, para. 2.

17. *Id.* at Preamble; Report of the COPUOS, *supra* note 13, at 11, para. 63.

resources of the moon. It was after a stalemate of seven years that a compromise permitted the attainment of a consensus on the present draft. This compromise is contained in Article 11, which states in its initial paragraph: "The moon and its natural resources are the common heritage of mankind, *which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article.*"¹⁸ (emphasis added). The compromise provision was the addition of the emphasized wording purporting to limit the derivation or meaning of "common heritage of mankind" to the TOM, rather than to the use of such phrase elsewhere.

A brief review of the development of the common heritage of mankind concept (hereinafter referred to as the "CHM") in the TOM may be helpful. The 1971 UN General Assembly session requested COPUOS and its Legal Subcommittee to consider, as a priority matter, the question of the elaboration of a draft treaty concerning the moon.¹⁹ In its request, the Resolution took note of "A Draft Treaty Concerning the Moon" submitted by the USSR to the UN General Assembly's First Committee.²⁰ This draft, however, was devoid of the CHM. Such concept had previously been proposed by Argentina during the 1970 COPUOS Legal Subcommittee Session in a proposal concerned only with the use of the natural resources of the moon and other celestial bodies.²¹ The concept was adopted by the United States in the draft proposal it submitted in April 1972²² at the COPUOS Legal Subcommittee Session which was considering the desirability of a TOM pursuant to the request of the UN General Assembly. The CHM was concisely stated in the U. S. draft as "The natural resources of the Moon and other celestial bodies shall be the common heritage of all mankind."²³

It would appear that the U.S., at the time of the submittal of the CHM had in mind the similar recital in the proposed Law of the Sea (LOS) seabed treaty. On May 3, 1972, the U.S. Representative to the Legal Subcommittee in a statement concerning the natural resources of the moon and other celestial bodies stated: "This [CHM] would parallel policy proposed by President Nixon

18. TOM, *supra* note 1, at art. 11, para. 1.

19. G.A. RES. 2779, 26 U.N. GAOR, Supp. (No. 29) 28, U.N. Doc. A/8429 (1972).

20. U.N. Doc. A/C.1/L/ 568. (?)

21. U.N. Doc. A/AC.105/C.2/L.71 and Corr. 1. (?)

22. U.N. Doc. A/AC.105/C.2(XI)WP12 Rev. 1 (1972).

23. *Id.* at para. 1.

two years ago . . . that all nations should regard the resources of the seabed . . . as the common heritage of mankind."²⁴

The U.S. introduction of the CHM met with mixed reception. The USSR opposed the CHM²⁵ until it accepted as a compromise the more limiting revised Article 11 which contained the additional circumscription to the CHM: "which finds its expression in the provisions of this agreement, in particular in paragraph 5 of this article."²⁶ Paragraph 5 provides:

States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible. This provision shall be implemented in accordance with Article 18 of this Agreement.²⁷

B. *The International Regime*

The international regime's main purposes as recited in Article 11, paragraph 7, are the orderly, safe development and rational

24. Statement by U.S. Representative Herbert Reis, contained in U.S. Mission release, Geneva, Switzerland, May 3, 1972, p.6. In an exchange of views, with the U.S.S.R. during the following year session of the Legal Subcommittee as to the legal substance of the CHM, the Argentine delegate observed that the UN General Assembly Resolution 2749 25 U.N. GAOR, Supp. (No. 28) 24, U.N. Doc. A/8028 (1971) adopted without dissenting vote, was "proof of the existence of this legal viewpoint common to all States, irrespective of their special internal features, their philosophical ideas or their policies" ____ U.N. GAOR, ____, 29-31, U.N. Doc. A/AC.105/115 (1973). The referenced Resolution in part declared: "1. The seabed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction . . . as well as [its] resources . . . are the common heritage of mankind." 25 U.N. GAOR, Supp. (No. 28) 24, U.N. Doc. A/8028 (1971).

25. See U.S.S.R. Working Paper, 28 U.N. GAOR ____, ____, U.N. Doc. A/AC.105/101, para. 21 (1973) reprinted in 1977 COPUOS Legal Subcommittee Report, 32 U.N. GAOR ____, ____, U.N. Doc. A/AC.105/196, Annex I, 11-12 (1977). The U.S.S.R. favored substitution of the prior used and understood phraseology "common province of all mankind," observing that under the OST celestial bodies "are available for the undivided and common use of all States, but not jointly owned by them. This is the essential feature of international law."

In 1976, Ambassador Piradov of the U.S.S.R., at the COPUOS, observed: "First, we are genuinely convinced that such a proposal is premature in the absence of the necessary objective foundations and factual material for it. Secondly, we have referred to the juridical and political vagueness and lack of specificity in the concept which has been put forward." 31 U.N. GAOR ____, ____, U.N. Doc. A/AC.105/PV 158, 8-10 (1976).

26. TOM, *supra* note 1, at art. 11, para. 1.

27. Art. 18 provides that the question of whether exploration is about to become feasible will be an agenda item of the UN General Assembly ten years after the TOM has come into force; further such question may also be considered by a review committee after the TOM has been in effect for five years, upon the request of one-third of the States Parties to the TOM with the concurrence of a majority of the States Parties. TOM, *supra* note 1, art. 18.

management of the moon's natural resources, the expansion of opportunities for the use of such resources, and an "equitable sharing" in the "benefits derived from the resources" by all States Parties, with "special consideration" being given to the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon as well as to "the interests and needs of the developing countries."²⁸

1. PRIVATE SECTOR CONSIDERATION

Intrinsic to the consideration of the international regime are questions relating to authorization for exploitation of the moon's natural resources, the nature and limitations of the international regime, and when such regime and exploitation may come into effect. In the United States, serious consideration is being accorded to assertions that the CHM will lessen the incentive of the private sector to risk capital investment in space ventures involving exploitation of the moon's resources. The purpose of any commercial venture being financial gain, the indefiniteness of the CHM is said to render the possibility of such gain as too speculative and uncertain, including an unacceptable possible interpretation for sharing profits from risk capital investments with parties that did not share such risk.

It must be recognized that unlike the seabed whose resources are readily identifiable and obtainable, many years of effort—perhaps thirty or more—and unknown costs will be expended before exploitation of the moon can be determined as "about to become feasible."²⁹

28. TOM, *supra* note 1, art. 11, para. 7.

29. Charles Sheffield, President, American Astronautical Society and Vice-President, Earth Satellite Corporation, in recent testimony stated "these parameters may not be known well enough for another thirty or forty years to encourage a private investment group to operation on a for-profit basis in the field of off-earth mineral exploration." *The Moon Treaty, Hearings Before the Subcomm. on Science, Technology and Space of the Senate Comm. On Commerce, Science and Transportation*, 96th Cong., 2d Sess. 92 (1980) [hereinafter cited as *The Moon Treaty Hearings*]. Frosch, Robert, NASA Administrator, at the same Hearing testified that "[a]ny exploitation of extraterrestrial resources will require the development of new major technologies, . . . that planetary exploration will be required in order to fill the gaps in our knowledge of the nature and distribution of extraterrestrial materials." *Id.* at 37. He also observed that "a number of evolutionary steps of technology would be required to accomplish a demonstration of a Space Materials System." *Id.* at 38.

For an excellent presentation of lunar resources available, materials separation and processing to be undertaken, *see* testimony of Edward Bock, Project Engineer at Convair Div., General Dynamics Corp., and of Dr. James R. Arnold, Department of Chemistry, Univ.

2. THE MORATORIUM ISSUE

Other questions have been raised as to the nature and authority of the international regime envisaged by the TOM and whether a moratorium on exploitation of the moon's natural resources is required pending establishment and functioning of such regime. Further questions remain as to the possessory interest of a State or its nationals to the area of the moon occupied during exploitation of natural resources and to the resources removed.

C. Interpretation Problems

A reading of the TOM text, without consideration of its negotiated history, can be misleading. TOM contains key words that are undefined and which may infer an unintended meaning. In the COPUOS and its two subcommittees, agreement on a matter under consideration is obtained by consensus; that is, agreement is not obtained until no further objection is made. As objections are made, piecemeal changes are suggested. While the intent of a change would be clear at the time made, a reader of the entire provision not having the benefit of the detailed consideration accorded the total effort may readily arrive at a conclusion not in accord with the intent of the provision.

With forty-seven States represented at COPUOS and its subcommittee meetings, with each annual meeting able to allocate limited time for consideration of a given agenda item, with language difficulties sometimes occurring, and with the need to coordinate with home offices on changes of substance, the pressure for consensus on a General Assembly priority requested item may lead to reluctance to seek substantial revision when a recited interpretation appears to provide an acceptable resolution. With many cooks in the kitchen, we may question the appearance of slowly baked pie when removed from the oven; while digestibility

of California at La Jolla. *Id.* at 147-64. See also Stanley Sadin, Dep. Dir., for Special Program Development at NASA's Office of Aeronautics and Space Technology, address at a Space Law Workshop, sponsored by the Association of United States Members of the International Institute of Space Law, at the Annual Meeting of the American Society of International Law, "The Moon Treaty: Should the United States Become A Party?" (Washington, D.C. 1980). After advising of the moon's resources and the method contemplated for their removal and transportation, Sadin observed that the most promising present utilization envisioned was in construction of a Solar Power System satellite space station. He cautioned, however, that this would first require many years of study and research.

may be difficult, it may nevertheless provide the needed sustenance.

1. THE VIENNA CONVENTION ON THE LAW OF TREATIES

In resolving questions raised as to the interpretation of provisions of a treaty or agreements incident thereto, Part III, Section 3 of the "Interpretation of Treaties" of the Vienna Convention on the Law of Treaties permits reference to UN documentation of the negotiated history and conclusion of the treaty, including agreements as to its interpretation.³⁰ It may be further noted that the "negotiated history" of a treaty includes "all manifestations of intention made during the course of negotiation . . . contained in the official records of the conference available to negotiators."³¹

30. U.N. DOC. A/Conf. 39/27 *opened for signature*, May 23, 1969, *reprinted in* 8 INT'L LEGAL MAT'LS 679 (1969). The U.S. has not yet become a party to the Vienna Convention; however, its provisions here applicable reflect customary international law, and are as follows:

Article 31

General rule of interpretation

- (1) A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.
- (2) The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
 - (a) any agreement relating to the treaty which was made between all the parties in connexion with the conclusion of the treaty;
 - (b) any instrument which was made by one or more parties in connexion with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.
- (3) There shall be taken into account, together with the context:
 - (a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;
 - (b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;
 - (c) any relevant rules of international law applicable in the relations between the parties.
- (4) A special meaning shall be given to a term if it is established that the parties so intended.

Article 32

Supplementary means of interpretation

Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:

- (a) leaves the meaning ambiguous or obscure; or
- (b) leads to a result which is manifestly absurd or unreasonable.

31. RESTATEMENT (SECOND) OF FOREIGN RELATIONS LAW OF THE UNITED STATES § 147 (1965).

2. CONTENDING INTERPRETATIONS

While the CHM, on introduction into the TOM, may have contemplated the concept as used in the LOS seabed treaty, it is clear that the revision accepted on the last day of the 1979 COPUOS session removed the LOS use as a binding interpretation and restricted the CHM meaning to the provisions of the TOM, particularly Article 11, paragraph 5. The question, however, remains as to what the latter may embrace. It will be recalled that in the referenced paragraph 5, the Parties "undertake to establish an international regime . . . to govern the exploitation of the natural resources of the Moon as such exploitation is about to become feasible."³² Further, by paragraph 7(d), Article 11, the Parties to the TOM agreed to an "equitable sharing" in the benefits derived from such resources, as previously related herein.³³

Views have been expressed by respected authors as to their belief of the meaning of the CHM as used in the TOM, ranging from application of the LOS purported use of CHM³⁴ (common ownership and profit sharing) to meaning the international cooperation that exists today in the equitable sharing of benefits of space applications with the international community.³⁵ Richard G. Darman, a lecturer in Public Policy and Management at the John F. Kennedy School of Government, Harvard University, in discussing Article 11 of the TOM, observed that the CHM "in and of itself, is but a vague phrase"; he noted that the international regime is similarly without specific definition, such essentially being left to future negotiations; and that neither the TOM nor the LOS seabed treaty negotiating text "refers to the other or to the other's specific domain."³⁶

Ambassador Aldo A. Cocca, who, as the Representative of

32. TOM, *supra* note 1, art. 11, para. 5.

33. *Id.* at art. 11, para. 7(d).

34. *The Moon Treaty Hearings*, *supra* note 29, at 105-132 (testimony of L. Ratinen).

35. U.N. General Assembly Press Release USUN-107 (79), Nov. 1, 1979 (statement by R.W. Petree to the U.N. General Assembly Special Political Committee in Consideration of the TOM draft) [hereinafter cited as Press Release].

Robert B. Owens, in testimony on the TOM, stated "our position in essence was that the common heritage concept . . . would simply parallel and conform to established space law, especially Articles I and II of the Outer Space Treaty . . . and that activities in such areas [of outer space] shall be for the benefit and interests of all countries." *The Moon Treaty Hearings*, *supra* note 29, at 13.

36. *The Moon Treaty Hearings*, *supra* note 29, at 168.

Argentina, first proposed the CHM at a COPUOS Legal Subcommittee Session in 1970, has recently written:

As you know, it is rather dangerous to crystallize in a definition the principle involved in a concept which is just being born in the new domain of Space Law, such as the 'common heritage of all mankind,' as it was established in the Moon Agreement. As the 'international regime' is concerned, I dare say it is not a matter of definition; I feel it must be the outcome of the implementation of the guidelines set forth in the agreement.³⁷ Similar caution has been suggested by USSR³⁸ and US³⁹ COPUOS delegates.

V. THE NEED FOR LAW AND ORDER IN SPACE

A. Avoidance of Anarchy

The OST has assured that unlike discovery and exploration on Earth, a nation's sovereignty shall not attach to space, the moon or other celestial bodies by reason of space exploration or other action. With the advent of the Space Shuttle, we are at the threshold of a great expansion in space activities. "Anarchy in space could be more dangerous than anarchy on Earth," observed the late Justice Kenneth B. Keating.⁴⁰ It is plausible that international controls be sought for the common good of all States. While a "regime" conceivably can be but an agreed set of govern-

37. Letter from Dr. Cocca to Mrs. Eilene Galloway, *reprinted in* SENATE COMM. ON COMMERCE, SCIENCE AND TRANSPORTATION, 96th CONG., 2D SESS., AGREEMENT GOVERNING THE ACTIVITIES OF STATES ON THE MOON AND OTHER CELESTIAL BODIES 58 (Comm. Print 1980).

38. Dr. Y.M. Kolossov, Alternate Head of the Soviet Delegation at the 1979 COPUOS session, on the last day of the session when the U.S.S.R. accepted the more limited CHM, observed: "Our delegation will make no hasty interpretation of the meaning behind each article of the new draft agreement . . ." 34 U.N. GAOR ____, U.N. Doc. A/AC.105/PV.203, at 21 (1979).

39. S. Neil Hosenball, who chaired the U.S. delegation at the 1979 COPUOS session, in response to questions at a Congressional Hearing on September 6, 1979, observed:

The world . . . may be a lot different when exploitation is proven feasible on a commercial scale, and that common heritage may mean something completely different then The definition of the Law of the Sea is being hammered out in the implementation of the exploitation of the natural resources Unlike the Law of the Sea, where we do have some information on the investment required where we do have technology and facilities . . . that can harvest the resources [of the seabed]. We're a long way from that in space activities. . . . So . . . it should not have a definition at this time. I don't think we know enough in a space context to try to define it. *International Space Activities, 1979: Hearings Before the Subcomm. on Space Science and Applications of the House Comm. on Science and Technology, 96th Cong., 1st Sess. 96-97 (1979)* [hereinafter cited as *Int'l Space Activities*].

40. 105 CONG. REC. A1822 (1959).

ing principles, the facts and circumstances may require a more institutionalized arrangement. Establishment of an international agency or authority, with defined powers and procedures⁴¹ to govern exploitation of the natural resources of the moon, should provide a needed control on behalf of all States. It would also serve to protect the biosphere⁴² and the existing balance of the environment as well as assure equitable sharing in the benefits derived from the exploited resources.

The esteemed Honorary Director of the International Institute of Space Law and founder of the Association of United States Members of the International Institute of Space Law, Mrs. Eilene Galloway, in recent testimony during a U.S. Senate subcommittee Hearing on the TOM observed:

The problem posed by the Moon Treaty is how to translate general guidelines that express value judgments into practical arrangements for the operation of scientific and technical facilities. And beyond that, how should fair arrangements be worked out between national and international relationships?⁴³

B. *The Role of the International Regime*

It will be in the international regime, and appropriate procedures, agreed upon in the contemplated subsequent international agreement⁴⁴ that will ultimately determine the breadth of the TOM's CHM and equitable sharing principle. While this agreement may be extremely difficult to conclude,⁴⁵ deferment of mak-

41. See Menter, *Legal Regime of International Flight*. PROCEEDINGS OF THE 21ST COLLOQUIUM ON THE LAW OF OUTER SPACE 126, 130-132 (1978). (This reference is to a discussion of utilizing the International Civil Aviation Organization (ICAO) as an model for future international control of space flight).

42. See TOM, *supra* note 1, art. 7, para. 1.

43. The *Moon Treaty Hearings*, *supra* note 29, at 179.

44. While the language in the TOM is not explicit as to a subsequent separate treaty, the negotiated history has several such recitals. For example, in his statement to the COPUOS Legal Subcommittee concerning the natural resources of the moon under the proposal advanced by the U.S. relative to exploitation of the natural resources of the moon, Herbert Reis, the U.S. Representative to the Subcommittee, observed: "Finally, we would need to contemplate a special treaty-drafting conference in the event of the discovery of commercially exploitable resources. . . ." A similar recital for a separate treaty was also made by Ambassador Richard W. Petree in his remarks on Nov. 1, 1979 to the U.N. General Assembly Special Political Committee, *supra* note 28, at 6.

45. Aside from the nature and procedures to be determined, there will be many other matters to be considered. For example, should benefit sharing be extended to activities to which the exploited resources are applied? If so, should a space station utilizing moon materials in its construction and operation be included? Does it extend to raw products and finished manufactured items from such space station? It should be noted that in response to

ing the determinations involved permits, at this time, the acceptance of the TOM principles and direction for international cooperation in undertaking activities on or about the moon, including research and development efforts for new products and processes, space stations and habitats and ascertainment of the feasibility of commercial exploitation of the natural resources of the moon. It is to be hoped that data will be forthcoming to provide a firm basis for specificity as to the type of international regime to be established and for defining the equitable sharing in exploitable resources.

It has been the reported position of some States and attorneys that exploitation of the natural resources of the moon would not be lawful under the present state of Space Law.⁴⁶ The doubt that has existed as to lawfulness of exploitation of the moon's resources will be removed by the TOM's providing for such exploitation. It is to be hoped that this provision will encourage private sector investment in such endeavors. The need to encourage such investment has been noted as a must item for subsequent conferences seeking to establish the international regime.⁴⁷

VI. PROPERTY RIGHTS ON THE MOON

A. General Prohibition

It may be noted that under the text of then Article X of the draft TOM, as adopted in 1973 by the COPUOS Legal Subcommittee Working Group, the wording of paragraph 2 read in pertinent part: "Neither the surface of the moon, nor, subject to the provisions of Article V, paragraph 2, their parts and natural resources shall become the property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity, or any natural person."⁴⁸

The referenced Article V, Paragraph 2, was to expressly authorize "the right to collect on and remove from the moon

a question by Senator Stevenson, during previously referred to Hearings on July 29, 1980, as to whether exploitation benefits would extend to a space station not on the moon, the Legal Adviser of the Department of State, Robert B. Owens, advised that it would not as the Moon Treaty took express note of the COPUOS interpretation that space objects in earth orbit only are not within the TOM (See Report of the COPUOS, *supra* note 14, at 11, para. 63).

46. *The Moon Treaty Hearings*, *supra* note 29 at 9 (statement of Robert B. Owens).

47. Reis, *supra* note 24, at 6.

48. COPUOS Legal Subcomm., *supra* note 25, at 19.

samples of its mineral and other substances," and, "in the course of scientific investigations also use minerals and other substances of the moon in quantities appropriate for the support of their missions."⁴⁹ It is apparent from the above quotations that the sole exploitation to be permitted was the removal of samples, and additional amounts of minerals and other substances appropriate for the support of scientific missions.

B. *The Exploitation Exception*

1. THE U.S. "IN PLACE" AMENDMENT

To ensure that the above phraseology would not preclude exploitation, removal and ownership of exploited resources for other than scientific investigation, the U.S. Delegate at the 1973 Legal Subcommittee session, on April 17th, advanced an amending proposal to have the opening sentence of the above quoted then paragraph 2 of Article X, read: "Neither the surface nor the subsurface of the moon or other celestial bodies, nor *any area thereof* or natural resources *in place* shall become the property of . . ." etc. The deletion of the phrase "subject to the provisions of Article V" eliminated the limited authorization for removal of only samples and mineral and other substances in support of scientific investigations. The addition of the words "in place" was explained by the U.S. Representative at the Subcommittee session: "to indicate that the prohibition against assertion of property rights would not apply to natural resources *once reduced to possession through exploitation* either in the prerogime period or, subject to the rules and procedures that a regime would constitute, following the establishment of the regime . . ."⁵⁰ (emphasis added).

The U.S. amendment was accepted and such recital constitutes Article II, paragraph 3 of the TOM. While a reader without knowledge of the negotiated history may question that the paragraph reflects authority to exploit and to own resources removed, such intent being clearly reflected in the negotiated history must govern.⁵¹

49. *Id.* at 50.

50. *Id.* at 16. This was the April 17, 1973 U.S. proposed amendment to the then Article X, TOM. To explain the words "in place," see Hosenball, *The United Nations Committee on the Peaceful Uses of Outer Space: Past Accomplishments and Future Challenges*, 7 J. SPACE L. 95, 103 (1979).

51. Vienna Convention on the Law of Treaties, *supra* note 30, at art. 31, para. 4; art. 32.

2. APPLICABILITY TO THE PRIVATE SECTOR

As the words "non-governmental entity or any natural person" were in the enumeration immediately following the insertion of the words "in place", the exploitation authorization and resulting ownership authority conveyed would appear to equally extend to the private sector, subject to requirements elsewhere in the TOM such as "only under the authority and continuing supervision of the appropriate State Party" recital of Article 14. This, however, is not an onerous limitation since all enterprises are required to meet applicable legislative regulatory government agency directives, for example, licensing and supervision of commercial air carriers, and coal mining.

C. *Assurances to Industry*

Industry need not fear an uncertainty premised on the assertions of some critics of the TOM that there is a moratorium on exploitation of the moon's resources. This apprehension is nurtured by a strained construction of Article 11, paragraph 5 which recites that States Parties "hereby undertake to establish an international regime . . . to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible." The negotiated history of the TOM, by recitals in the official record of the COPOUS and of the UN General Assembly, confirm that no moratorium is intended. Specific proposals for a moratorium in the course of the negotiations failed to obtain the required consensus. The consensus finally achieved on the last day of the COPUOS 1979 session resulted from a compromise in which the more limited CHM recital was accepted upon an express withdrawal of a proposal calling for deferment of exploitation pending the establishment of an international regime to govern such exploitation.⁵² The UN General Assembly, in its Resolution⁵³ commending the TOM and requesting that it be opened for signature at the UN, took specific note of the recital in the 1979 COPUOS Report that "the Committee agreed that Article 7 is not intended to result in prohibiting the exploitation of natural resources which may be found on celestial bodies other than the earth"⁵⁴

52. Press Release, *supra* note 35, at 7; Hosenball, *supra* note 50, at 100.

53. TOM, *supra* note 1, at 1.

54. Report of the COPUOS, *supra* note 13, at 11, para. 65.

VII. COMMERCIAL SPACE ACTIVITY

A. General

As previously indicated, several provisions of the TOM and the prior OST pertain to space activity by the private sector. While the TOM applies to activities relating to the moon and other celestial bodies, and to orbits around and other trajectories to or around them, the OST also includes all other space activities.⁵⁵ In the latter, the private sector generally would not be concerned with the TOM CHM and international regime limitation problems. However, both the TOM and prior space law treaties impose obligations and provide benefits to the private sector. The following discussion concerns the relationship between the private sector and government in their space activities, including obligations and benefits. Recitals herein shall include referral to the OST and other space law treaties believed appropriate.

B. Government Responsibility for Commercial Sector in Space

Both the TOM and the OST provide that Parties to the respective agreements shall bear international responsibility for "national activities" on the moon whether such activities are carried out by governmental agencies "or by non-governmental entities," and for assuring that national activities are carried out in conformity with the provisions of the international agreements.⁵⁶ These articles are designed to ensure responsibility for space activities, inherently international in nature, at the governmental level. The OST and the Convention on International Liability for Damage Caused by Space Objects⁵⁷ are concerned with damage caused by space objects, but have limited application to damage occurring on the Moon. This is recognized by the TOM, which envisages future consideration of further liability principles being formulated during the later review conferences contemplated of the TOM.⁵⁸

Compensation for injuries or damages may be presently available under a State's domestic legislation. In the United States, authority is provided the Administrator of NASA and the

55. OST, *supra* note 2, at art. 1.

56. TOM, *supra* note 1, at art. 14, para. 1; OST, *supra* note 2, at arts. VI, VII.

57. See note 2, *supra*.

58. See TOM, *supra* note 1, at art. 14, para. 2.

Secretaries of the military departments to administratively settle claims arising out of space activities.⁵⁹

C. Jurisdiction and Control of Personnel and Objects in Space

Each State Party to the TOM retains "jurisdiction and control" over its nationals, their space vehicles, equipment, facilities, stations and installations on the moon.⁶⁰ Similar jurisdiction under the OST over an object launched into outer space and the personnel (including foreigners) abroad, on a celestial body or otherwise in outer space, is retained by the State on whose registry the launched object is carried.⁶¹ This imposes on a State the requirement to ensure that it possesses the necessary legal authority to exercise such jurisdiction and control. Of course, the State of Registry could waive its jurisdiction in a particular case where another State, under the international law, may also have jurisdiction. Under the "nationality principle," a State may extend its jurisdiction over offenses by its nationals wherever they occur.

A sovereign is obligated under international law to protect its own and foreign personnel lawfully under its jurisdiction. The U.S. Congress is considering enactment of legislation to extend U.S. criminal jurisdiction over offenses committed aboard U.S. launched spacecraft and at places otherwise "outside the jurisdiction of any nation" where the offenses are committed "by or against a national of the United States."⁶² This jurisdiction, of course, would embrace offenses on the moon or otherwise in outer space. While more specific recitals in the U.S. Criminal Code are

59. Claims to \$25,000 may be settled within the agencies; claims above \$25,000, deemed meritorious, may be certified to the U.S. Comptroller General or to the Congress for payment consideration. 10 U.S.C. §§ 2733, 2734 (1976).

60. TOM, *supra* note 1, at art. 12, para. 1.

61. OST, *supra* note 2, at art. VIII.

62. S. 1722, 96th Cong., 1st Sess. (1980). The proposed "Criminal Code Reform Act of 1980" was favorably reported out of the Senate Judiciary Committee, with amendments, on January 17, 1980. Its House counterpart, H.R. 6915, 96th Cong., 2nd Sess. (1980) was favorably reported out of the House Judiciary Committee on July 2, 1980. While the short time remaining of the 96th Congress precluded resolution of differences between the Senate and House versions before adjournment the measure is certain to be reintroduced with likely enactment by the 97th Congress. A new, more limited measure is already under consideration as the "National Aeronautics and Space Authorization Act, 1982." H.R. 1257, 97th Cong., 1st Sess. (1981). This measure includes a proposed amendment to 18 U.S.C. § 7 (1976), by adding a subparagraph 6 thereto, to extend the Special Maritime and Territorial Jurisdiction of the United States to space flight. For a discussion of this possible approach, see Menter, *Jurisdiction Over Man-Made Orbital Satellites*, 2 J. SPACE L. 19, 22 (1974).

being sought, the NASA Administrator, under authority delegated to him in the National Aeronautics and Space Act of 1958,⁶³ as amended, on March 7, 1980, issued regulations vesting "absolute authority" in the Commander of the Space Shuttle to enforce order and discipline during all phases of a Shuttle flight, including authority to take action believed necessary for the protection, safety, and well-being of all personnel and on-board equipment and payloads.⁶⁴ A violation of the Shuttle Commander's orders would subject the offender to a fine of up to \$5,000 or imprisonment for one year, or both.⁶⁵ Further note is made that under existing U.S. law pertaining to active duty military personnel, such personnel are subject to U.S. jurisdiction under the Uniform Code of Military Justice for offenses committed thereunder wherever performing assigned duties.⁶⁶ The above recitals, of course, also embrace personnel of the private sector participating in space activities.

D. Ownership of Property in Space

Under Article 12 of the TOM, the private entrepreneur retains ownership of his space vehicle, equipment, facilities, stations and installations on the moon. Such property and personnel of the employer are to be accorded the benefits provided astronauts by Article V of the OST⁶⁷ and provided for space objects by the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched Into Outer Space.⁶⁸ Thus, if under the stated circumstances, personnel or property of a private company is found by another State Party to the TOM in other than its intended location on the moon, it should be rescued and returned to the responsible State or its representative. The latter State is to bear the expenses incurred in recovery and return of the property.⁶⁹ In the event of an emergency involving threat to the lives of such personnel, they may use the facilities and equipment of any State Party on the Moon.⁷⁰

63. 42 U.S.C. § 2455(a) (1976).

64. 45 Fed. Reg. 14,845 (1980) (to be codified in 14 C.F.R. § 1214.7).

65. 18 U.S.C. § 799 (1976).

66. 10 U.S.C. § 802 (1976).

67. TOM, *supra* note 1, at art. 10, para. 1.

68. Return of Astronauts Agreement, *supra* note 2, at art. 5.

69. *Id.* at art. 5, para. 5.

70. TOM, *supra* note 1, at art. 10, para. 2; art. 12, para. 3.

VIII. THE ERA AHEAD:
OBLIGATIONS AND OPPORTUNITIES

A. *Equity Responsibilities*

The moon and its natural resources are recited in Article 11 of the TOM as the CHM. Yet under the TOM, neither mankind, nor all States are entitled to share in the benefits of exploitation. The 'equitable sharing' is provided only for State Parties to the TOM. Such States are expressly precluded by paragraph 3 of Article 11 from having property rights in either the surface or subsurface of the moon. Ownership is provided over natural resources of the moon only when no longer "in place." Such ownership accrues to the successful exploiting State. The equitable sharing provided for is not of the resources exploited, nor a division "of" the benefits derived from the resources. Only a sharing "in" the benefits derived "from" the resources are required. This appears a more limited concept than mankind's common ownership of the moon and its resources.

Black's Law Dictionary defines "equitable," in part, as "just, fair and right, in consideration of the facts and circumstances of the individual case."⁷¹ The Dictionary narrates that Justinian is said to have defined 'equity' as "to live honestly, to harm nobody and to render every man his due."⁷² While the subsequent agreement for an international regime may establish criteria, it is conceivable that the share "due" to a non-contributing State may be determined to be zero. However, whether the OST concepts or a formula for a greater sharing in the benefits will govern must await the subsequent treaty. If a State Party to the TOM does not accept the subsequent treaty, it nevertheless remains obligated in carrying out its activities with the respect to the natural resources of the moon to do so in a manner compatible with the purposes sought by the international regime specified in Article 11, paragraph 7, of the TOM, including the "equitable sharing" principle.

In a recent presentation, Dr. Stephen Doyle, Program Manager for Telecommunications, Information and Space Studies of the Office of Technology, U.S. Congress, characterized the most recent of the evolutionary phases of Space Law as the "extrater-

71. BLACK'S LAW DICTIONARY 482 (5th ed. 1979).

72. *Id.* at 484.

restrial law phase." He marks its beginning with the UN General Assembly promulgation of the TOM in December 1979. The implementation of the new regime of "common heritage" is recited as a "major problem that will demand the best and most creative of our skills." He observed that the 19th century model of exploration and conflict cannot be tolerated in the 21st century. He states however, that "it must be understood that if there is to be no dominion by a few countries, there must be no dominion by the majority. . . ." "Equity" is stated as the "key concept" for realizing the use and benefit of space which is to be available to all nations regardless of their levels of economic development. "But that," Dr. Doyle states, "should not be read to mean that every nation has a right to share equally in benefits regardless of contribution." He further observed that "opportunities must be nondiscriminatory and there must be a possibility for all to contribute to and share in endeavors in space. Returns, however, must reflect contributions. There is no 'free lunch'."⁷³

B. Private Sector Investment Encouraged

In the recent Congressional hearing on U.S. Civil Space Policy, the President of the Northrop Corporation, Dr. Thomas O. Paine, a prior Administrator of NASA, narrated successful past and present ventures of private enterprise in space activities. He urged establishment of goals for the future, observing:

Private enterprise has now raised and invested more than \$1 billion in orbiting comsats, with a growth trend that indicates doubling in the next few years. In similar fashion, satellite remote sensing has grown . . . , initiating another new space industry⁷⁴ . . . , the routine conduct of opportunistic research in laboratories in space is an activity whose time has come We need to explore new ideas that utilize the availability of unlimited energy, ready sources of lunar and asteroidal materials⁷⁵ Now is the time to plan and initiate work on the essential initial orbiting bases.⁷⁶

73. S.E. Doyle, *Significant Developments in Space Law: A Projection for the Next Decade* (April 21, 1980) (a paper presented at the University of Mississippi Law Center Symposium on "Space Law in Perspective").

74. *United States Civilian Space Policy: Hearings Before the Subcomm. on Space Science and Applications of the House Comm. on Science and Technology*, 96th Cong., 2nd Sess. 9 (1980) (statement of Dr. Thomas O. Paine).

75. *Id.* at 13.

76. *Id.* at 14.

Dr. Paine further testified that we should continue to promote international participation in major space ventures as a positive step in maintenance of peace among the major powers, the further application of space systems to raise living standards around the world, and the sharing of costs and benefits of space activities among all countries.⁷⁷ Mr. S. Neil Hosenball, the General Counsel of NASA, chaired the U.S. Delegation to the 1979 COPUOS session. In testifying in House of Representatives Hearings on "International Space Activities, 1979," he observed that a review of the total records of the TOM negotiations over seven years clearly establishes that there has not been any limitation imposed on the commercial exploitation of the lunar surfaces or celestial body resources and that "nothing in the treaty in any way restricts such activity being carried out by industry, by private commercial entities."⁷⁸ Recitals of the Treaty have been categorized as "incentives" by Ambassador Richard W. Petree, U.S. Deputy Representative to the UN Security Council. He observed that by setting forth in Article 11, paragraph 7, the purposes governing exploitation of natural resources, "uncertainty is decreased and both State and private entities may now find it possible to engage in the arduous and expensive efforts necessary if exploitation of the natural resources is ever to become a reality."⁷⁹

C. Clarification of "Equitably Sharing"

The difficulty and importance to the international community of attaining the later agreement for an international regime is apparent. Realism would suggest a pragmatic approach by all interests. Without adequate inducement to States and, where applicable, to their "non-governmental entities" concerned, the effort to determine feasibility of moon resources exploration will falter. In countries where the private sector plays a predominant role in industrial production on a profit basis, such sectors must be assured that the risk is reasonable and within permissive limits.

It is believed that the early fears expressed by the private sector have been exaggerated. Nor should a requirement to share profits, should such extreme determination be within the authority of the international regime, itself be the sole basis of the private sector's refusal to advance risk capital in a national

77. *Id.* at 16.

78. *Int'l Space Activities*, *supra* note 39, at 95 (testimony of S.N. Hosenball).

79. Press Release, *supra* note 35.

endeavor for exploitation of the natural resources of the moon. U.S. industry has not declined participation in foreign government ventures with sharing of profits in high risk situations, such as in petroleum endeavors, viz: oil drilling, exploration, processing or refinement, production and distribution. Neither has it declined to risk capital in payment to the United States for leases to explore for oil in US owned lands, including seabeds and mountain shale, or for mineral rights exploration.

As previously indicated, it will be many years before exploitation of the moon's resources becomes feasible. It is reasonable to assume that costs involved would be recouped before any equitable sharing may begin. At the later exploitation stage, could not the sharing of profits be construed as a condition for participation in the project similar to the referenced foreign petroleum ventures, or as an overhead cost akin, in part, to overhead rental for the exclusive moon area utilized. As such exploitation is a national activity under the TOM, should not some tax considerations be accorded by the sponsoring government?

D. Government-Industry Cooperation

The great success of the United States space effort has been based upon the close cooperation between Government and industry. The Government policy is to retain a major space research and development endeavor until it becomes commercially feasible. Turnover to the private sector at that time would not necessarily terminate further research and development by the Government in such area. While the Government funds its research program, it calls upon industry to share in concept development and to produce and test necessary hardware.

In the development of a national capability to exploit the moon's resources, Governments will employ their industrial capability to achieve their goals. Costs therefore will primarily be borne by Government whether functioning through governmental or non-governmental entities. Additional incentives to industry may be manifold, *e.g.*, study grants, cost plus payments, and loan guarantees. In a recent legislative proposal, for example, Congressman Donald Fuqua, Chairman of the Committee on Science and Technology of the House of Representatives, has proposed legislation to encourage private sector interest in space activities participation. This measure, H.R. 7412, 96th Congress, 2nd Session, introduced on May 21, 1980, sought to establish a "Space In-

dustrialization Corporation" to provide Government secured investment capital for high technology space ventures which otherwise may exceed acceptable risk to private sector elements.⁸⁰

Chairman Fuqua has recently written that prospects for further improvement of goods and services "will move nations to expanded uses of the space environment that will reap countless economic and societal benefits."⁸¹ He further observed: "We are on the threshold of industrializing space and the role of private enterprise will determine the success of these endeavors"⁸²

E. Government Leadership and Support

Nations in the past, whatever their ideology, have not hesitated to bear the majority of, if not all, expenses incident to desired high risk endeavors. Where private enterprise exists, governments have tailored legislation on the subject concerned as an inducement for private sector participation (*e.g.*, in shipping, railroading, air carrier transportation, and atomic energy).

In the United States, both the Executive and Legislative branches of the Government are currently evaluating concepts to induce private sector participation in space activities. It is incumbent upon the private sector to advise the Government of its interests, capabilities and limitations as specific activities are addressed (including, should the U.S. become a Party to the TOM, recommendations for the future treaty to provide an international regime to govern exploitation of the natural resources of the moon). The Government in turn must assure industry protection from unacceptable risk until economic feasibility is apparent.

F. U.S. Consideration of Acceptance of the TOM

While U.S. leadership was the moving force in the UN's

80. H.R. 7412, *supra* note 11, was introduced on May 21, 1980 by Congressman Fuqua for himself and fifteen others. It was to have been cited on enactment as the "Space Industrialization Act of 1980." The bill provided for the establishment of a Space Industrial Corporation to promote new products, processes, services, and industries using the properties of space technology. The measure sought to provide a high degree of assurance that the private entity could depend upon security in handling competitive information, private ownership of patent and proprietary data, and the ultimate sharing in the benefits of the competitive venture. H.R. 7412 was a successor bill to H.R. 2337, 96th Cong., 1st Sess., also introduced by Congressman Fuqua.

81. Fuqua, *Space Industrialization: Some Legal and Policy Considerations for Private Enterprise*, 8 J. SPACE L. 1, 2 (1980).

82. *Id.*

favorable consideration and endorsement of the TOM, it is probable that the contending interpretations discussed above will preclude the U.S. from becoming a Party at the time of the TOM's entrance into force. The caution of private industry towards commitment of substantial capital in risk ventures before clear resolution of contending issues in exploitation of the moon's natural resources is recognized. Involved are questions of the validity of exploitation, title to (ownership of) exploited resources, possible sharing (CHM) of resulting benefits, role and time of coming into effect of the proposed regulatory regime, and the obligation of private sector participants if the international regime is not established.

Granted that the wording of the TOM raises serious questions as to interpretation, it is believed that the negotiated history of the TOM does substantiate the meaning intended by its drafters which accords with the prior Space Law treaties and is in the interest of U.S. private enterprise and the world community.

To assure that the issues raised are consistently resolved in accord with the meaning of terms and intent reflected in the negotiated history, the author suggests that the U.S. in actions supporting the TOM—such as in signing the TOM and/or during the Senate ratification process—should set forth its written “understanding” of each of the contending issues with reference to the negotiated history substantiating its conclusions. These “understandings,” under customary international law as well as under the Vienna Convention on the Law of Treaties, are considered as reservations.⁸³ Thus, an objection by another State adherent must specifically reject the U.S. recital of understanding to preclude entrance of the Treaty into force between them. If no such objection is made within one year, the U.S. understanding is deemed accepted.

G. *For All Mankind*

In the interests of avoiding seeds for conflict encountered through history on Earth, the world community tailored the OST to a new set of legal principles proclaiming outer space and its celestial bodies as the province of all mankind and that its exploration and use shall be carried out for the benefit of all peoples.

83. Vienna Convention on the Law of Treaties, *supra* note 30, at art. 19; art. 20, paras. 4(b), 5; art. 23.

Space activities, since the OST came into force in 1967, have brought great benefits to the world community. The private sector has participated and profited. It is believed that rather than limit private sector opportunities, the TOM will enhance them by opening new vistas with rewards, as in the past, dependent upon initiative, ingenuity and industrial capability, with government support tailored to high risk endeavors.

Continued international accord is essential for preventing friction in space. This is of equal concern to all States. Greater participation of non-space powers in space activity should better ensure bringing to fruition its many benefits for all mankind. Such cooperation should further assure peaceful coexistence in space and on our Spaceship Earth.