Appendix F

THE INTERNATIONAL LEGAL REGIME OF OUTER SPACE

Introduction

Few **human endeavors have occasioned the degree of international legal scrutiny given to the development of space technology. Because space activities generally involve technologies that do not respect national boundaries, new stresses have been placed on traditional international legal principles.** These principles, based on the rights and powers of territorial sovereignty, are often in conflict with the most efficient utilization of new space systems. In order to resolve the complex legal problems that have arisen in the space age, nations, both technologically advanced and developing, have been forced to rely increasingly on international cooperation.

The purpose of this appendix is to discuss the important legal principles and international organizations that have been developed to regulate the use of outer space. Additionally, it describes the possible effects that these principles and organizations may have on private sector interest and investment in specific space systems. It should be noted that since this discussion focuses exclusively on the international legal regime of outer space, the many complex issues involved in the domestic regulation of private investment in space technology are not discussed.

International Organizations

This appendix only discusses the activities of the Committee on the Peaceful Uses of Outer Space (COPUOS), the International Telecommunication Union (ITU), and the United Nations Education, Scientific and Cultural Organization (UNESCO). Though there are numerous other international organizations whose activites involve outer space to some degree, most are not involved in formulating of international law and policy.

Committee on the Peaceful Uses of Outer Space

COPUOS has been, and continues to be, the chief architect of the international legal regime of outer space. COPUOS was established by resolution of the General Assembly of the United Nations (U. N.) in 1958 to study the problems brought into existence by the advent of the space age,l COPUOS is composed of two subcommittees, one of which studies the scientific and technical, and the other the legal aspects of space activities. Since its inception, the Legal Subcommittee has been responsible for the formulation of five major treaties:

- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (1 967)[2]
- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968)[3]
- Convention on International Liability for Damage Caused by Space Objects (1 972)[4]
- Convention on Registration of Objects Launched into Outer Space (1 974)[5]
- Agreement Governing the Activities of States on the Moon and Other-Celestial Bodies (1979)6

With the exception of the 1979 Moon agreement, the United States has signed and ratified each of these international agreements.

COPOUS is currently conducting negotiations in the following areas:

- *Remote sensing.* COPUOS has been negotiating a statement of principles on remote sensing since 1979. Considerable disagreement still exists between states on this subject and it is unlikely that a consensus will be reached in the near future.
- Direct *broadcast satellites.* COPUOS has been involved in trying to reach agreement on a set of principles for direct broadcast satellites since 1968. However, there seems to be no easy solution to the debate betweeen states advocating

[1] U.N. **General Assembly Resolution 1348** (XIII) **"Questlon of the Peaceful Use of Outer Space, " Dec. 13, 1958.**

[2] **,°UST 241 O; TIAS 6347; Senate Report No. 8, 90th Cong. 1 st sess., April 17, 1967; Senate Committee on Aeronautical and Space Sciences, 90th Cong., 1st sess., staff report on "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, " committee print, 1967.**

[3] **19 UST 7570; TIAS 6599; "Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Space: Analysis and Background Data;" Senate Committee on Aeronautics and Space Science, 90th Cong. 2d sess., committee print, July 16, 1968.**

[4] **'24 UST 2389; TIAS 7762; Senate Committee on Aeronautics and Space Sciences, 92d Cong., 2d sess., staff report on "Convention on International Liability for Damage Caused by Space Objects, " committee print, 1972.**

[5] **TIAS 8480; Senate Committee on Aeronautical and Space Sciences; 94th Cong., 1st sess., staff report on "Convention on Registration of Objects Launched into Outer Space, " committee print, 1975.**

[6] **U. N. General Assembly Resolution A/34/68, Dec. 14, 1979; Senate Committee on Commerce, Science, and Technology, 96th Cong., 2d sess., "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, " committee print, 1980**

free **flow of information and those advocating a regime of prior consent.**

- *Nuclear power sources in space.* Since the Cosmos **954 accident in 1978, in which radioactive debris from a Soviet satellite fell on northern Canada, there has been increased international concern over use of nuclear energy to power satellites. COPUOS has focused its attention on four major issues: safety, prior notification, emergency assistance, and liability** for damages. To date, no international consensus has been reached.
- *Delimitation of outer space.* **The question of where air space ends and outer space begins has troubled international legal theorists since the beginning** of the space age. The Soviets have recently proposed that outer space should be considered to begin in the area of 100 to 110 km above sea level, **The United States has consistently maintained that no decision should be taken until a** more complete understanding of the scientific and technical characteristics of low-orbit satellites is obtained.
- *Military activities in space.* **COPUOS has periodically addressed issues relating to militarization; current treaties ban nuclear weapons and other weapons of "mass destruction. " Discussions of military activities have increased lately, now that both the United States and the Soviet Union are developing anti-satellite** devices and other weapons. **A** number of developing countries have objected to militarization, and in 1981 the Soviet **Union proposed that the General Assembly** discuss a draft treaty prohibiting the stationing of all weapons in outer space, with special reference to the U.S. space shuttle. The U.S. has objected to attempts by **COPUOS to take up this issue.**

International Telecommunication Union

ITU is an international, intergovernmental organization and the U.N.S' specialized agency for telecommunications.[7] The purpose of ITU is to coordinate and regulate international activities in the field of communications. Since radio communication is essential to all outer space activities, it was logical that ITU be charged with the task of allocating radiofrequencies for space as well as terrestrial communications. To this end, a World Administrative Radio Conference (WARC) was held in 1959 that resulted in the first international agreements applicable to space activities.

The basic governing documents of ITU are its Constitution and its Administrative Regulations. The Constitution is revised by the Plenipotentiary Conference when technological (and recently, political) changes reduce the effectiveness of existing provisions. The Administrative Regulations are updated more frequently through WARCS and Regional Administrative Radio Conferences (RARCS) and are the means by which the technical coordination and regulation of international communications is actually accomplished. Membership is open to all countries and currently ITU has 154 members. The formal results of RARCS and WARCS are reached by each country exercising one vote and, when ratified by the member states, they have the force of international treaties.

The primary function of ITU is to allocate the radiofrequency spectrum among competing services (e.g., fixed, mobile, aeronautical, maritime, and space) and to register the frequency assignments of its member states in order to avoid interference. The international Frequency Registration Board (IFRB) of ITU performs many of these important technical functions. IFRB records the frequency assignments made by different countries in accordance with WARC and RARC regulations and furnishes advice to ITU members on technical matters (e.g., the maximim practicable number of radio channels in those portions of the spectrum where harmful interference may occur). In 1973, the duties of ITU were enlarged by a modification of its Convention. This modification provided that IFRB was "to effect . . . an orderly recording of the positions assigned by countries to geostationary satellites. "[9]

ITU has been the major forum in the recent debates regarding the a priori grant of portions of the radio spectrum and the geostationary orbit to countries presently lacking space technology. This subject is discussed in greater detail in section **IV.**

UNESCO

Though UNESCO does not have a technical or regulatory role such as ITU nor a broad mandate similar to that of COPUOS to address international space issues, it has been active in the discussion of space-related problems. Some of its more important activities include:

- ***Convention on satellite signal piracy.*** UNESCO, together with the World Intellectual Property Organization, sponsored an international conference in 1974 which adopted the "Convention Relating to the Distribution of Program me-Carrying Signals Transmitted by Satellite''.[10] O States party

[7] **For a detailed look at ITU, see,** *Radiofrequency Use and Management: Impacts From the World Administrative Radio Conference of 1979,* **Office of Technology Assessment, 1982.**

[8] **International Telecommunications Convention (Geneva), Dec. 21, 1959; TIAS 4892, 12 UST 1761.**

[9] **International Telecommunication Convention, 1973, article 10(3); TIAS 8572.**

[10] **N.M. Matte,** *Aerospace Law,* **1977,** *PP.* **39-40.**

to the Convention agree to "take adequate measures" to prevent the distribution of "program e- carrying signals" by unauthorized personnel.

- *Satellite broadcasting and the free flow of information.* UNESCO has also been working on a "Declaration of Guiding Principles on the Use of Satellite Broadcasting for the Free Flow of Information, the Spread of Education and Greater Cultural Exchange". '[11] Strong objections have been voiced against this declaration on the grounds that instead of encouraging the free-flow of information, it encourages censorship. Many believe that this Declaration of Principles was used by its authors as a means to attract international attention to the "New World Information Order" (discussed infra, sec. III (c)(3)).
- *Technical assistance to member states.* UNESCO has worked with a number of African, Asian, and Latin American states, helping them to assess their general communication needs. UNESCO is presently conducting several long-range studies to determine the practicality of using regional satellite systems to supply educational and cultural development programs to certain developing countries.

The Status of Nongovernmental Entities

As the role of private industry varies within each of the nations of the world, and as it is those nations and not their private industries that enter into international space agreements, it is understandable that some confusion exists as to the legal status of private industry in outer space. This section will examine some of the practical and theoretical problems that arise when trying to fit the activities of private enterprise into a framework designed primarily to regulate the actions of states.

In the United States, it has been consistent government policy to encourage the involvement of private enterprise in its space programs. When President Eisenhower announced his administration's space policy in 1960, he stated:

> (T)o achieve the early establishment of a communication satellite system which can **be used** *on a commercial basis* **is** a national objective which will require the concerted capabilities and funds of both Government and *private enterprise . . .* **With regard to communication satellites, I have directed the National Aeronautics and Space Administration to take the lead within the Executive Branch both to advance the needed research and development and to** *encourage private enterprise* to **apply its resources toward the earliest practical utilization of space technology** *for commercial civil communications requirements* **(emphasis added).**

This enthusiasm for private enterprise was not shared by all nations. In 1962, the Soviet Union submitted to COPUOS a "Draft Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space. " **It was** suggested in the draft that, "All activities of any kind pertaining to the exploration of outer space shall be carried out solely and exclusively by States . . . "[13] The United States responded to this position by pointing out that pursuant to U.S. policy, as reflected in the Communications Satellite Act of 1962, private firms had already been given the right to engage in space activity. In order to reconcile this conflict, the United States proposed that states bear the responsibility for the launching of space vehicles, whether such vehicles be the property of the state or its nationals.[14] In this manner, the United States hoped to reassure other states that private activity could be controlled, albeit indirectly, through international regulation.

The principle of state responsibility for the actions of its nationals is incorporated in both articles Vi and IX of the 1967 Outer Space Treaty.[15] Although the 1967 Principles Treaty does not specifically grant private industry the right to undertake activities in outer space, the U.N. debates on this subject make it clear that such activities were contemplated by the drafters.

A few authors have suggested that though the 1967 Principles Treaty may sanction the *presence* of nongovernmental entities in space, article I can be read to prevent the *commercial use* of outer space. '[16] Article I states, in relevant part:

> **The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.**

It is argued that commercial use would be contradictory to article 1, in that its drafters intended the benefits of outer space exploration and use to flow *to* all mankind, and not to private investors. This somewhat technical argument finds little support in either the specific language of the 1967 Outer Space Treaty or its legislative history.

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[11] **U** .N. Document **A/AC, 105/1 04,** July 25, 1972.

[12] White **House Press Release, Dec. 30, 1960; see also,** D.D. Smith, **Communication** *via Satellite, 1976, p. 72.*

[13] U *N. Document* A/AC. 105/L.2; **U. N. Document A/5/81 Annex 3.**

[14] U.N. Document A/AC.105/L.5 **U, N. Document A/5/81, Annex 3.**

[15] See Article **VI of the Outer Space Treaty.**

[16] See, **for example,** Marcuff, *Traite' de Droit International Public de l' Espace,* **1973, p. 671.**

State Responsibility for Nongovernment Entities

Given that private enterprise may conduct activities in space for profit if the appropriate state will take responsibility for such actions, it becomes necessary to examine the nature of this responsibility. Some authors, in analyzing article VI of the 1967 Principles Treaty, have suggested that a state's responsibilities are extensive:

> (While no one would doubt the need for government control over space activity at its present stage, the second sentence of article VI would prohibit, as a matter of treaty obligation, strictly private, unregulated activity in space or on celestial bodies even at a time when such private activity becomes most commonplace. Although the terms "authorization" and "continuing supervision" are open to different interpretations, it would appear that Article VI requires a certain minimum of licensing and enforced adherence to government-imposed regulations. ' [17]

In addition to article Vi's general statement of responsibility, article IX of the Principles Treaty requires that if a state or its nationals are going to undertake any activity in space which "would cause potentially harmful interference with activities of other states," then the state planning the activity "shall undertake appropriate international consultation before proceeding with any such activity. "18 Article IX'S requirement that the international consultation shall precede the proposed activity is quite significant, in that it imposes an active duty to regulate rather than a merely passive duty to supervise. Under article IX a state has a duty to interfere with or prohibit altogether potentially harmful activities by its nationals at least until such time as the effects of the proposed activity are made known to the international community.

The Outer Space Treaty does not attempt to direct states as to how these responsibilities should be carried out. This is appropriate since a state's control over its nationals involves complex questions of domestic law. The 1967 Outer Space Treaty, on the other hand, was not written to supply an exhaustive set of rules to regulate the conduct of states, but rather to sketch the rough outline of a new international regime.

One of the more important attempts to delineate the responsibilities of states in outer space occurred in 1972 with the adoption by COPUOS of the "Convention on International Liability for Damage Caused by Space Objects." This treaty extends the concept of state *responsibility* to include the concept of *liability* for damage caused by space objects. Article II of the Liability Treaty establishes the principle that a launching state is absolutely liable for "damage caused by its space object on the surface of the Earth or to aircraft in flight. "[19]

Two points should be mentioned here. First, the 1972 Liability Convention does not grant either rights or responsibilities to nongovernmental entities. If the nationals of a launching state cause damage, it is the state damaged, under article VIII, which "may present to a launching state a claim for compensation. "[20] This somewhat formalistic approach to compensation is sufficient at this time since states exercise almost complete control over launch and tracking facilities and there is no "pure" private enterprise in outer space. However, as the activities of private enterprise increase in frequency and scope, new and more efficient procedures will have to be developed to handle the claims for compensation which are certain to arise.

A second point of interest concerning the Liability Convention is the fact that it applies, by its terms, only to "launching states" which are defined in article I as:

- a state that launches or procures the launching of a space object; and
- a state from whose territory or facility a space object is launched.

Under this scheme, if state A launches a space object for the nationals of state B, both states are considered launching states and have joint liability for damage under article V of the Liability Convention. This is the case even though under the language of article IX of the 1967 Principles Treaty it is state B that bears the international responsibility for the "potentially harmful" activities of its nationals. This problem is somewhat alleviated by article V of the Liability Convention that allows a state that has paid compensation for damages "to present a claim for indemnification to other participants in the joint launching. "

These rather complex international remedies are presently workable only because it is the activity of states and not individuals that predominates in space. As this situation changes a new legal regime, which more fully comprehends the role of the individual in space activities, will have to be developed.

Limitations on Nongovernmental Entities

Having discussed the status of private activity in space and the methods of control over such activity, it is important now to examine the limitations that the present legal regime of outer space places on the activities of the private sector. To answer this question requires an analysis of several recently articulated principles. These are the Principle of Nonappropriation

[17] Jasentuleyana and Lee, *Manual* of Space *Law*, vol. 1, 1979, p. 17.
[18] See Article IX of the Outer Space Treaty.
[19] See Article II of the Outer Space Treaty.
[20] See Article VIII of the Outer Space Treaty.

of Space Resources, the Principle of the Common Heritage of Mankind (CHM), and the New World Information Order.

PRINCIPLE OF NONAPPROPRIATION

The 1963 Declaration of Legal Principles included the statement that, "Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. "[21] With minor changes, this language is repeated in article **II of the 1967** Outer Space Treaty and article XI (2) of the proposed Moon Treaty. The legislative history of these instruments and the subsequent activities of states has revealed little controversy concerning the prohibition against appropriation by claim of sovereignty. However, this harmony of opinion has not recently been shared with regard to the prohibition against appropriation by means of use or occupation.

The issue of appropriation by "use and occupation" involves a number of complex considerations. Most ventures into space involve some degree of appropriation, since the placement of a satellite into orbit precludes the use by other states of that same orbit, Any alteration of the present "first come, first served" use of the geostationary orbit or in the rights of priority now recognized as applying to currently operating systems could have serious repercussions on the U.S. communications industry. Some third world countries have suggested that radiofrequency assignments and the incidental use of the geostationary orbit should be limited to the life of the satellite. This suggestion is contrary to the current practice in the United States. In the United States, **the** Federal Communications Commission licenses communication common carriers to provide a continuous service to the public. Some third world countries have argued that this method of continuous use is tantamount to an appropriation. As a result they advocate the a priori allocation of radiofrequencies and orbit positions (see sec. **IV** infra).

The proposed Moon Treaty recognizes the problems inherent in a "first come, first served" method of allocating resources and attempts to limit the effects of de facto appropriation on the exploration and exploitation of the Moon and other celestial bodies.[22] The recognition of the problem appears in article VIII where it is stated that states parties "shall not interfere with the activities of other states parties, " This section clearly grants an important right to "first users" of Moon resources. This right is then qualified by article IX'S statement that a "station shall use only that area which is required for the needs of the station" and article XI (3)'s statement that such stations "shall not create a right of ownership over the surface or subsurface of the Moon or any areas thereof. "

THE COMMON HERITAGE OF MANKIND (CHM)

Though the CHM principle is complex in its application, in theory it is quite simple. Basically stated, the principle maintains that there are certain resources, such as the minerals on the ocean floor and on the Moon, that are presently under the jurisdiction and control of no sovereign power. These resources, being finite and exhaustible, should not be allocated to the developed countries on a first come, first served basis, but rather, should be used for the benefit of all nations. Though this principle has recently received its greatest attention in relation to the Law of the Sea Convention, it has frequently appeared in discussions concerning the exploration and use of outer space.[23]

In 1958, when President Eisenhower announced his administration's space policy, he called upon states "to promote the peaceful use of space and to utilize the new knowledge obtained from space science and technology for the benefit of mankind."[24] Subsequent to this statement, the concept that space activities should be undertaken for the benefit of mankind appeared in the NAS Act of 1958,25 in important General Assembly resolutions on space and as article I of the 1967 Principles Treaty. Although these "common interest" clauses found their way into the major space treaties, there was considerable uncertainty as to their status within the body of international law. Some authors have suggested that these "common interest" clauses were merely pragmatic principles without legal force. Others believe that the placement of the "common interest" clauses within the operational part of treaties, as opposed to a mere statement of intentions in the preamble, indicated that such provisions must be regarded as binding.[26] **As a** binding principle it

[21] U.N. General **Assembly Resolution 1962,** article **XVIII, par.** 3.

[22] U.N. **General Assembly Resolution 34/68, "Agreement Governing the** Activities **of States on the Moon and Other** Celestial **Bodies, " Dec. 14, 1979.**

[23] R. B, Owens, **statement at hearings on the** Moon Treaty, "Agreement Governing the Activities of States on the Moon and **Other** Celestial **Bodies, " before the Subcommittee on** Science, **Technology, and Space of the Senate Committee on Commerce, Science, and Transportation, 96th** Cong., **2d** sess., **1980. Ambassador M C. W. Pinto of** Sri **Lanka has Interpreted the** CHM **principle to apply to the law of the sea** in **this manner: ''This (Common Heritage of Mankind) means that those (seabed) minerals cannot be freely mined. They are not there, so to speak, for the** taking. **The common heritage of mankind is the common property of mankind. . If you touch the nodules at the bottom of the sea, you touch my** property. **If you take them away, you take away my property. "**

[24] ''Introduction **to Outer Space," an explanatory statement** by **the President's Science** Advisory Committee, **1958, p. 1.**

[25] **C. Q.** Christol, **"The Legal Common Heritage of Mankind: Capturing an** Illusive **Concept and** Applying **it to World Needs, " XVIII the** *Colloquium on the Law of Outer Space, 1976,* **p. 42.**

[26] N. **M. Matte, "Aerospace Law: Telecommunications** Satellites, **" Center for Research of Air and Space Law,** McGill **University, p. 38.**

created an obligation among states "to be in some form responsive to the interest of developing countries, and to provide for some form of distribution of benefits derived from such (space) activities."[27]

The principle of CHM has generally been opposed by the private sector. The most common argument heard in this regard is that any attempt at international regulation of the profits derived from space will inhibit private enterprise from making the necessary investments in space technology. Advocates of this position often point to article Xl **(7)** of the proposed Moon Treaty's statement that one of the purposes of the international regime is to assure "an equitable sharing" of resources.[28] It is **argued that the concept of equitable sharing is inconsistent with the concept of profit, and** in the absence of the profit motive private enterprise cannot be expected to risk capital on space investments.

The most repeated criticism of the CHM principle is that it lacks proper definition. It is argued that its "novelty, generality, philosophical underpinnings—as opposed to legal—and uncertain historical pedigree" render it far too vague to act as a tool in the regulation of international conduct.[29] These criticisms are valid at least to the extent that they regard the principle's uncertainty, for except for article Xl of the Moon Treaty's suggestion of an international regime, nowhere are a state's duties under the CHM principle defined.

THE NEW WORLD INFORMATION ORDER

The New World Information Order is a principle espoused by the Soviet Union and certain third world countries that maintains that there is an imbalance in both the amount and kind of news emanating from the information and communication systems controlled by the Western industrialized nations. These countries allege that as a result of this imbalance the third world and communist countries have been portrayed in a distorted manner to the populations of the developed countries, while the populations of the developing countries have been subjected to the "cultural imperialism" of a capitalist, consumer-oriented society. The New World Information Order seeks to remedy this situation by: 1) encouraging the development of a third world information infrastructure; 2) controlling the West's access to developing countries; and 3) limiting the Western media's ability to disseminate information in developing countries. so

The long-term effects of this principle on the free flow of information throughout the world are, for the most part, beyond the scope of this report. However, the continued adherence to the New World information Order by a substantial number of Communist and third world countries could have important near-term effects in the field of satellite communications. Most notably, the Western developed nations can expect to encounter strong opposition to the previously used "first come, first served" method of allocating the electromagnetic spectrum and the orbital positions in the geostationary arc (discussed in greater detail below). In addition, private communications firms may encounter new tariffs and regulations designed to slow the flow of information and communications services to the third world. New tax laws have also been proposed which would require the payment of a portion of the assessed value of information flowing into or through a country. Future restrictions can also be expected on the establishment of ground stations and on access to the foreign transmission lines necessary for the terrestrial transmission of satellite data.

Communications Satellites

Not long after ITU began to regulate satellite communications certain international tensions arose concerning its methods of allocating what many believed to be scarce space resources.Jl Radiofrequencies that have been duly registered with ITU receive international recognition and protection. Therefore, early registration of a radiofrequency is given priority over later requests for the registration of the same frequency. Many developing nations have voiced opposition to this principle of priority on the basis that future access to the radio spectrum and positions in geostationary orbit, which are necessary for effective satellite communication, will be limited by the present activities of the developed nations.

Reflecting this concern, the ITU convention was modified in 1973 to state:

[27] Ibid., p. 39.

[28] Article XI (7) of the Moon Treaty states: "7. The main purposes of the international regime to be established shall include:

(a) The orderly and safe development of the natural resources of the Moon;
(b) The rational management of those resources;
(c) The expansion of opportunities in the use of those resources;
(d) An equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countires as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the Moon shall be given special consideration.

[29] C. Q. Christol, "The Common Heritage of Mankind in the Moon Treaty," paper submitted to symposium on "Space Activities and Implications, " Center for Research of Air and Space Law, McGill University, Oct. 16-17, 1980.

[30] B. Cowlan, "internationally Organizing for Space, " paper submitted to International Conference on Doing Business in Space, Nov. 12-14, 1981, reprinted in *ALI-ABA Conference Materials.*

[31] N.M. Matte, op. cit.

In using frequency bands for space radio services, Members shall bear in mind that radio frequencies and the geostationary satellite orbit are limited natural resources, that they must be used efficiently and economically so that countries may have equitable access to both **in conformity with the provisions of the Radio Regulations according to their needs and the technical facilities at their disposal .32**

There is considerable confusion in the international community as to what is meant by the "efficient and economical" use of radiofrequencies and the geostationary orbit. The developing states have argued that because these resources are limited, an a priori allocation should be made to assure that countries which presently do not utilize space may be able to do so in the future. The states with substantial space resources have generally taken the position that attempts to reduce space to an "international condominium" are neither efficient and economical nor sanctioned by international law.

It has been argued by the United States that the allocation of space resources on any basis other than use is inefficient because it reduces the incentive to adopt spectrum and orbit conserving technologies and patterns of use.[33] The United States and other developed countries maintain that through the creative use of the frequency spectrum, as seen in the adoption of 30/20 G Hz for communications, and the development of new space systems, such as large space platforms, the future needs of the developing countries can be easily met. However, some third world countries feel that it is not in their best interest to continue to rely on the developed countries to supply their communication needs. Several of these countries, notably India and Brazil, are in the process of developing an indigenous satellite communication capability. In the near future, the communication systems developed by these countries will be less sophisticated and therefore less efficient than those designed by nations already well versed in space technology. A priori allocation plans are attractive because the satellites they will be developing may require the type of orbital spacing presently utilized. The developing countries may argue that it is in their best interest to resist an international regime predicated on the development of advanced, resource-efficient technology because such a regime would render their indigenous technology obsolete.

There is some question as to whether a priori allocation plans might not be contrary to the letter and the spirit of the 1967 Outer Space Treaty. Article 2 of the treaty states:

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.

The developed countries have taken the position that the assignment of orbital positions to states would constitute an appropriation and therefore is forbidden by the Outer Space Treaty. The third world has generally argued that since the geostationary orbit is only useful in connection with communication satellites, and since ITU regulates the latter, it should also have jurisdiction over the former. The United States has opposed this extension of the power of ITU.

The subject of a priori allocation of radiofrequencies and geostationary orbit positions was addressed but not resolved at the latest WARC in 1979. This subject will be debated again at the 1983 RARC and the 1984 WARC where, it is hoped, a reasoned and practical solution can be found that will accommodate the needs of both the developing and the developed nations.

Direct Broadcast Satellites (DBS)

DBS are a new generation of communications satellites capable of transmitting signals strong enough to be picked up by individuals utilizing small (less than 1 m in diameter), home receiving dishes.J[4] This is to be contrasted with the currently operating communications satellites that transmit weak signals to large, fixed Earth stations that must then rebroadcast the signal to the public using terrestrial facilities.

The major advantage of DBS technology is that it does away with the need for an elaborate terrestrial distribution system, thereby making possible the transmission of programs to widely dispersed populations, remote areas, or to countries without a sophisticated communications infrastructure. The research and development necessary to realize DBS technology was undertaken by the National Aeronautics and Space Administration and proven in both the U.S. ATS-6 and the Canadian/U. S. CTS satellites. Presently, France, Germany, Luxembourg, and groupings of Arab and Scandinavian countries are planning for DBS systems or for multipurpose communications satellites able to directly broadcast.Js Some of these systems are planned for operational status by the mid-] 980's.

Though DBS technology offers the potential for large-scale educational, health and public service programing–a fact that was amply proven by the

J~Internat(ona/ *Telecommunication Convention, op. cit*

[33]Office of Technology Assessment, Op. cit., P. 30

Wee generally: "Policies for Regulation of Direct Broadcast Satellites," Federal Communication Commission staff report, September 1980.

JSBarbara Luxenberg, "Preliminary OK for Direct Broadcast Satellites, " Aeronautics and Astronautics, September 1981, p. 20.

U.S./India ATS-6 experiments–some have raised serious questions concerning the international regulation of this technology. The Soviet Union has expressed concern that DBS maybe used to spread propaganda or misinformation designed to create social unrest. Several third world countries have expressed the fear that this technology will be used by the Western, developed nations as a tool of cultural or economic imperialism. It is feared that commercial advertising by the developed countries might disrupt the social fabric of developing nations by creating a demand for consumer goods that is not consonant with national plans for social and economic development.

The Soviet Union, France, and numerous Third World countries have argued that the sovereign rights of a country prohibit broadcasting across national boundaries in the absence of a prior agreement with the receiving state. The United States has opposed this view and has advocated a policy of free flow of information. The opposition of the United States to the doctrine of prior consent has centered around four major themes that can be summarized as follows:qb

1. *There has been insufficient experience with broadcast satellites to determine what, if any, political constraints should be placed on their use.* In the DBS debates of the early 1970's the United States argued that it was unwise to fashion regulations without knowing the specific problems that would be caused by this technology. The ATS-6 experiments in India were frequently used as an example of the fact that the control over programing and distribution of DBS services could remain firmly within the local government of the receiving country, thereby obviating the need for international regulation. The United States still maintains that as experience with transborder DBS service grows, the fears of "cultural imperialism" presently harbored by many nations will diminish.
2. *Enactment of a set of political principles for DBS could inhibit the development of technology valuable to the third world countries.* Most of the technical problems with DBS have been, or are in the process of being solved. **The two major questions from a domestic U.S. perspective are how to configure DBS satellites to respond to specific markets and whether DBS offers a significant economic advantage over conventional means of broadcasting. Restrictive international regulations may make economically unjustifiable** the expenditures necessary to adapt DBS technology to the particular needs of developing countries. This is particularly true if the private sector is to play a significant role in this development.
3. *ITU regulations constitute a sufficient safeguard against unauthorized DBS transmissions.* Some U.S. experts argue that the need for technical coordination has obviated the need for political regulation. In addition to providing working definitions for the various types of DBS service and allocating frequencies to DBS, the ITU, in 1971, adopted Radio Regulation 428 A which provides:

   > **In devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries.**

   In the view of the United States, the ITU procedures are a sufficient safeguard against the misuse of DBS technology and are, in fact, a form of prior consent. The countries that do not accept this position argue that the ITU decisions deal only with the physical transmission of a satellite signal and do not address the right of countries to regulate the message content of foreign broadcasts.
4. *The prior consent principle undermines the concept of international free flow of information.* The United States has taken the position that the free exchange of ideas and information, as affirmed in article 19 of the Universal Declaration of Human Rights and other U.N. resolutions, should not be inhibited.q[7] Many U.S. experts believe that acquiescence in a prior consent regime for DBS would be an undesirable precedent that could be applied to other means of communication or dissemination of information. The DBS issue can be viewed as one aspect of a growing pattern of restraints being promoted under the umbrella of the New World Information Order.

In addition to the positions held by those advocating prior consent and the United States, a third, compromise position has been put forward in a joint proposal by the Canadian and Swedish Governments.[38] This proposal suggests that advance agreement would be necessary concerning the basic issue of broadcasts by the satellites of one country into the territory of another country. However, the content of the trans-

[36] The following four themes derived from: Wilson P. Dizard, "The U.S. Position: DBS and Free Flow," *Journal of Communication, vol. 30,* spring 1980, pp. 157-168.

[37] U.N. General Assembly Resolution 217 (III), Dec. 10,1948.

[38] "Draft Principles Governing Direct Television Broadcasting by Satellite," U.N. Document A/AC, 105/1 17, 1973.

missions would be left to the discretion of the broadcasting country. To date, this proposal has not gained substantial support of either the United States or the countries which advocate a prior consent regime.

Remote Sensing

The term remote sensing refers to the use of satellites capable of detecting reflected or emitted electromagnetic radiation for the purpose of gathering information about the Earth .39 Presently, the only civilian remote-sensing system is the Landsat system of the United States. Though this system is operated by the Government, there is considerable indication that the private sector may have a significant role to play in remote sensing in the near future. (For a more complete discussion of the private sector's role in remote sensing, see ch. 2) If the policy decision is made in the United States to encourage the private sector to take as active a role in remote sensing as it has taken in communications satellites, the Government must ensure the existence of a receptive economic and legal environment. The existence of a restrictive international regime could limit the private sector's ability to invest in this new technology.

There has been considerable discussion in the international community concerning what restrictions, if any, should be placed on the use and distribution of remotely sensed data. Some of the major principles being discussed are:

Prior consent. Some states have argued that countries planning to engage in remote-sensing activities should be required first to obtain the permission of the countries they intend to sense.

Restricted data dissemination. A recent joint proposal by the French and the Soviets has suggested that information gathered by remote sensing should not be transferred to third-party states without the prior consent of the state sensed.

Limited resolution. Some states have evinced concern regarding advances in remote-sensing technology that will allow extremely detailed observation. They feel that if such data were freely available from a civilian commercial system it might threaten the security and economic interests of the sensed state.

Unrestricted sensing. The United States has generally opposed the placing of restrictions on remote-sensing activities and data dissemination. The United States presently maintains a policy of free data dissemination and regularly supplies Landsat data to other governments, international organizations, private sector businesses and individuals.

It is helpful to analyze some of the legal arguments used to defend the positions that were articulated above. Basically, arguments that favor limiting remote-sensing activities are premised on the assumption that the rights of territorial sovereignty allow a state to protect itself from information gathering activities directed toward its own natural resources. There is very little in either traditional international law or i n the treaties which deal specifically with space that substantiates this assumption.

It is generally accepted that a sovereign nation may protect itself from information gathering activities within its borders, either on the ground or from the air. The legal basis for each of these manifestations of sovereignty is not necessarily applicable to outer space activities. Because traditional international law recognizes that the laws of a sovereign state apply to all within its borders, activities of foreign nationals may be controlled while they are physically within that state. Likewise, traditional international law, and article 2 of the Chicago Convention of 1944, recognize that a state has absolute sovereignty over the air space above its national boundaries,[40] Control over the activities of foreign nationals in both cases is predicated on the fact that such activities are accomplished within the sovereign territory of a state.

Remote sensing is problematic from a legal perspective because, on the one hand, it is an activity undertaken in space, and the 1967 Outer Space Treaty guarantees that space shall be "free for exploration and use by all States;" yet, on the other hand, the activity is directed toward the observation of territories under the control of separate sovereign states.

For this reason, many nations have argued that some form of international control is necessary to protect the interests of the sensed states and to prevent abuses that may result from the dissemination of remotely sensed data. The United States takes the position that restrictions on remote sensing would result in data being available to only those states having the financial and technical ability to provide their own space and ground systems. Furthermore, even if a country had the technology to fly a remote-sensing system, it would not be inclined to do so if it knew in advance that it would have to undertake the financially prohibitive and scientifically disadvantageous exercise of separating the billions of bits of remotely sensed data along political boundaries.

Jqs.. generally: National Academy of Sciences, *Resource Sensing From Outer Space,* 1977; N. M. Matte, H. DeSaussure, *Legal Implications of Remote Sensing From Outer Space,* 1976.

[40] 61 Statistics 1180, 15 U .N.T. S. 295.

OUTER SPACE TREATY

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies

Done at Washington, London, and Moscow January 27, 1967;
Ratification advised by the Senate of the United States of America April 25, 1967; .
Ratified by the President of the United States of ***America May 24, 1967;***
Ratification of the United States of America deposited at Washington, London, and Moscow October 10, 1967;
Proclaimed by the President of the United States of America October 10, 1967;
Entered into force October 10,1967.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, was signed at Washington, London, and Moscow on January 27, 1967 in behalf of the United States of America, the United Kingdom of Great Britain and Northern Ireland, and the Union of Soviet Socialist Republics and was signed at one or more of the three capitals in behalf of a number of other States;

WHERE.AS the text of the Treaty, in the English, Russian, French, Spanish, and Chinese languages, as certified by the Department of Stab of the United States of America, is word for word as follows:

ANNEX XIX

Treaty on Principles Gov
in the Exploration and U
the Moon and other Celes

Activities of States
ter Space, including
s.

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Having considered the report of the
Outer Space covering its work during 196
plished by the Legal Sub-Committee duri
from 12 July to 4 August and at New York

Noting further the progress achieve
among States Members of the United Nati

Reaffirming the importance of intern
activities in the peaceful exploration and us
and other celestial bodies, and the importa
this new area of human endeavour,

1. *Commends* the Treaty on Principle
in the Exploration and Use of Outer Sp
Celestial Bodies, the text of which is annex

2. *Requests* the Depositary Governme
and ratification at the earliest possible date

3. *Expresses its hope* for the widest p

4. *Requests* the Committee on the Peac

(a) To continue its work on the elab
for damages caused by the launching of ol
ment on assistance to and return of astrona
the agenda of the Committee;

(b) To begin at the same time the stu
tion of outer space and the utilization of
cluding the various implications of space

(c) To report on the progress of its
twenty-second session.

uittee on the Peaceful Uses of
in particular the work accom-
fifth session, held at Geneva
12 September to 16 September,
ough subsequent consultations

l co-operation in the field of
uter space, including the Moon
developing the rule of law in

erning the Activities of States
ncluding the Moon and Other
he present resolution;

open the Treaty for signature

ses of Outer Space.

n of an agreement on liability
into outer space and an agree-
id space vehicles, which are on

questions relative to the defini-
space and celestial bodies, in-
unications;

o the General Assembly at its

Inspired by the great prospects openi
man's entry into outer space,

Recognizing the common interest of
exploration and use of outer space for peac

Believing that the exploration and use
for the benefit of all peoples irrespective
scientific development,

Desiring to contribute to broad intern

ankind in the progress of the
purposes,

l co-operation in the scientific

as well as the legal aspects of the exploratio
purposes,

Believing that such co-operation will
mutual understanding and to the strength
States and peoples,

Recalling resolution 1962 (XVIII), enti
Governing the Activities of States in the E
which was adopted unanimously by the U
13 December 1963,

Recalling resolution 1884 (XVIII), c
placing in orbit around the Earth any obje
other kinds of weapons of mass destruction
celestial bodies, which was adopted unanim
Assembly on 17 October 1963,

Taking account of United Nations Ge
3 November 1947, which condemned propa
or encourage any threat to the peace, brea
and considering that the aforementioned re

Convinced that a Treaty on Principles
the Exploration and Use of Outer Space, inc
Bodies, will further the purposes and prin
Nations,

Have agreed on the following:

Article Z

The exploration and use of outer sp
celestial bodies, shall be carried out for th
countries, irrespective of their degree of ec
shall be the province of all mankind.

Outer space, including the Moon and
for exploration and use by all States withc
basis of equality and in accordance with i
free access to all areas of celestial bodies.

There shall be freedom of scientific in
the Moon and other celestial bodies, and
international co-operation in such investigat

Outer space, including the Moon and
to national appropriation by claim of soverei
or by any other means.

Article 111

States Parties to the Treaty shall carry
use of outer space, including the Moon and
with international law, including the Cha

interest of maintaining international peace and security and promoting international co-operation and understanding.

Article IV . .

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.

Article V

States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of their space vehicle.

In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.

States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts.

Article VI

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

Article VII

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.

Article VIII

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.

Article 1X

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.

Article X

In order to promote international co-operation in the exploration and use of outer space, including the Moon and other celestial bodies, in conformity with the purposes of this Treaty, the States Parties to the Treaty shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States.

The nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned.

.4rtic/2 *XI*

In order to promote international co-operation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in outer space, including the Moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively.

Article XII

All stations, installations, equipment and space vehicles on the Moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

Article X111

The provisions of this Treaty shall apply to the activities of States Parties to the Treaty in the exploration and use of outer space, including the Moon and other celestial bodies, whether such activities are carried on by a single State Party to the Treaty or jointly with other States, including cases where they are carried on within the framework of international intergovernmental organizations.

Any practical questions arising in connexion with activities carried on by international intergovernmental organizations in the exploration and use of outer space, including the Moon and other celestial bodies, shall be resolved by the States Parties to the Treaty either with the appropriate international organization or with one or more States members of that international organization, which are Parties to this Treaty.

.4rticle XIV

1. This Treaty shall be open to all States for signature. Any State which does not sign this Treaty before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America, which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force upon the deposit of instruments of ratification by five Governments including the Governments designated as Depositary Governments under this Treaty.

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification of and accession to this Treaty, the date of its entry into force and other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

Article XV

Any State Party to the Treaty may propose amendments to this Treaty. Amendments shall enter into force for each State Party to the Treaty accepting the amendments upon their acceptance by a majority of the States Parties to the Treaty and thereafter for each remaining State Party to the Treaty on the date of acceptance by it.

Article XV1

Any State Party to the Treaty may give notice of its withdrawal from the Treaty one year after its entry into force by written notification to the Depositary Governments. Such withdrawal shall take effect one year from the date of receipt of this notification.

Article XV1l

This Treaty, of which the Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

In witness whereof the undersigned, duly authorized, have signed this Treaty.

Done in ....., at the cities of London, Moscow and Washington, the ..... day of ..... one thousand nine hundred and ..... (1).

(1) The Treaty was signed in London, Moscow and Washington on January 27, 1967.