THE THIRD WORLD'S SEARCH FOR EQUITABLE ACCESS TO THE GEOSTATIONARY SATELLITE ORBIT

Ole Varmer *

INTRODUCTION

If a satellite is placed in orbit approximately 22,300 miles above the earth's equator it will remain stationary with respect to a point on earth because its orbit will be synchronized with the spin of the earth.[1] This geostationary orbit enables cost effective communications over vast distances via electromagnetic radio frequencies.[2] Currently, there are approximately 138 communication satellites relaying data, conversations, television pictures and photographs of the earth.[3] Satellite communications may be to the contemporary high-tech era what railroads were to that of the industrial revolution. In addition to plans for at least another 160 communication satellites,[4] the orbit may also be used for solar powered satellites, space manufacturing stations, colonial space stations, geostationary platforms[5] and military satellites.[6]

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* Benjamin N. Cardozo School of Law

[1] A geosynchronous satellite orbit is one in which the satellite's period of revolution around the earth is synchronized with the period of rotation of the earth on its axis. A geostationary satellite orbit is a circular type of orbit as opposed to one which is elliptical. *See* J. ANGELO, THE DICTIONARY OF SPACE TECHNOLOGY 88 (1982). *See also* M. BENKO, W. DEGRAFF & G. REIJNEN, SPACE LAW IN THE UNITED NATIONS 137 (1985). The geostationary satellite orbit is more economic and efficient than alternative orbits because it allows continuous communication with less costly earth station equipment, which need only be designed to receive radio transmissions from a single, fixed point. *See* MATTE, AEROSPACE LAW: TELECOMMUNICATIONS SATELLITES 74-85 (1982).

[2] The radio frequency spectrum is defined by the ITU to be that part of the electromagnetic spectrum whose frequencies are lower than 3000 Ghz. ITU Radio Reg., art. I, no. 6 (1982); *See* J. FAWCETT, OUTER SPACE 51-54 (1984).

[3] T. Netter, *Third World Seeks Its Place In Space*, N.Y. Times, Sept. 15, 1985, at E7, col. 1 (current plans for 160 more). At the end of 1984 there were 80 active telecommunications satellites. *See Second Report of the Advisory Committee for the ITU World Administrative Radio Conference on the Use of the Geostationary Satellite Orbit and the Planning of the Space Services Utilizing It* 2 (1985) [hereinafter *Second Advisory Report*]. *See also Efficient Use of the Geostationary Satellite Orbit*, U.N. Doc. A/CONF.101/BP/7 (1981) at 9 (fixed satellite uses of orbit), at 17-18 (historical demand and uses of orbit) [hereinafter *Efficient Use*].

[4] *See Second Advisory Report*, *supra* note 3, at 3.

[5] *See generally* D. SMITH, SPACE STATIONS: INTERNATIONAL LAW AND POLICY 2-15 (1979) (outline of types of space stations and platforms).

As a result, the geostationary orbit has become the hottest *res* in space and a highly controversial issue on earth.

The geostationary orbit and the radio frequency spectrum fall within the global resources of which lesser developed countries (LDCs) demand a more equitable distribution.[7] Under the New International Economic Order (NIEO), the LDCs seek equitable distribution of the world's resources so that all nations may benefit, not merely the more developed countries (MDCs), whose wealth, power and intellect are capable of depleting those resources before the LDCs can utilize them for their own growth.[8] A corollary to the NIEO is the New International Information and Communications Order, which views communications systems as an essential element for socioeconomic development, and which calls for their equitable distribution as well.[9] Based upon the experiences of developing nations, it appears that satellite transmission may be the most efficient and economical mode for the establishment of national and international communications systems.[10]

In order for the LDCs to take advantage of these satellite communications systems they must have access to both the geostationary orbit and the radio frequency spectrum. Because they have limited funds and financing they will need access to specific satellite resources which can be utilized by comparatively less expensive technologies.[11] In light of these problems, the LDCs protest that the United States and the Soviet Union are currently using fifty percent of the radio frequency spectrum.[12] They,

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[6] A. Mohr, *Antimissle Plan Seeks Thousands of Space Weapons*, N.Y. Times, Nov. 3, 1985, at A1, col. 6, cont. A18, col. 1 (chart on A18).

[7] *See* Arnopoulos, *The International Politics of the Orbit-Spectrum Issue*, 7 ANNALS OF AIR & SPACE L. 215, 216-19 (1982). *See also* Petersman, *The New International Economic Order: Principles, Politics and International Law*, in THE INTERNATIONAL LAW AND POLICY OF HUMAN WELFARE 457-61 (R. MacDonald, D. Johnson & G. Morris eds. 1978) (describing economic perspective behind NIEO).

[8] *See Declaration on the Establishment of a New International Economic Order*, G.A. Res. 3201, U.N. GAOR Supp. (No. 1) at 3, U.N. Doc. A/9559 (1974); *Programme of Action on the Establishment of a New International Economic Order*, G.A. Res. 3202, U.N. GAOR Supp. (No. 1) at 5-8, U.N. Doc. A/9559 (1974).

[9] *See* B. PLOMAN, INTERNATIONAL LAW GOVERNING COMMUNICATIONS & INFORMATION 217-18 (1982); Christol, *International Space Law and the Less Developed Countries*, in PROCEEDINGS OF THE NINETEENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 243 (1976).

[10] *See* MATTE, *supra* note 1, at 75 (satellite communications the most cost-effective medium for national and international communications).

[11] *See infra* text accompanying notes 98-106 (discussing the cost of technology and its relationship to equitable access).

[12] *See* Arnopolous, *supra* note 7, at 218-19; Christol, *Telecommunications, Outer Space,*

along with the other countries presently utilizing the spectrum, represent only ten percent of the world's population.[13] Therefore, the LDCs view the current situation as inequitable. This inequity, combined with their fear that the orbit/spectrum resource will soon fill up and be unavailable for their use, has resulted in a cry for planning and allocation of geosynchronous orbit and microwave resources to insure them a place in space.

This Note will review the application of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty)[14] and the Common Heritage of Mankind (CHOM) principle[15] to the orbit/spectrum resource. It will also analyze the regulation of the orbit/spectrum resource by the International Telecommunications Union (ITU),[16] particularly the orbit/spectrum allotment plan outlined at the 1985 World Administrative Radio Conference (WARC-ORB(1)).[17] The focus will be on whether the allotment plan put forward by the ITU is in accord with the Outer Space Treaty, the CHOM principle and the desires of the LDCs.

The first question to consider is whether the geostationary satellite orbit is "outer space" within the meaning of the Outer Space Treaty, which does not expressly define outer space.

I. THE GEOSTATIONARY ORBIT AS OUTER SPACE

The Outer Space Treaty was developed to provide a founda-

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and the New International Information Order (NIIO), 8 SYRACUSE J. INT'L L. COM. 343, 354-59 (1981).

13 *See* Arnopoulos, *supra* note 7, at 218-19.

14 Treaty on Principle Concerning the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, October 10, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347. *See infra* text accompanying notes 32-45 for discussion of the Outer Space Treaty.

15 *See infra* notes 46-64 and accompanying text.

16 *See infra* notes 65-83 and accompanying text. The ITU is a specialized agency of the United Nations. The basic functions of the ITU are carried out through periodic World Administrative Radio Conferences (WARCs) which are devoted to general and specialized subjects such as telephones, telegraphs, maritime and mobile radio operations and satellite communications. *See* A. BELENDIUK & S. ROBB, BROADCASTING VIA SATELLITE: LEGAL AND BUSINESS CONSIDERATIONS 9-11 (1979). *See generally* G. CODDING JR. & A. RUTKOWSKI, THE INTERNATIONAL TELECOMMUNICATIONS UNION IN A CHANGING WORLD (1982) (more detailed exposition of the ITU).

17 World Administrative Radio Conference, ORB-85, Doc. 328 (Rev. 2-E) (1985). *See* Noll, *Work Accomplished by the First Session of the World Administrative Radio Conference on the Use of the Geostationary Satellite Orbit and the Planning of the Space Services Utilizing it [WARC-ORB(1)], Geneva, Switzerland, Aug. 8 - Sept. 10, 1985*, 13 J. SPACE L. 173 (1985).

tion of legal principles for increasing activity in space. The drafters recognized that the document should be structured to endure the changes of time and that future technologies could drastically modify their contemporary notion of outer space. However, they determined that since there was no urgency for a definition of outer space, the problem should be left to some future agreement, or, acceptance of a precise limit through a rule of customary international law.[18] The principle ramification in drawing the line between air space and outer space is that national sovereigns will be able to assert their control over the air space above their respective countries, but not over outer space.

Since 1976, eight equatorial states have claimed national sovereignty over the segments of the geostationary orbit corresponding to the territorial boundaries above their respective countries.[19] They argue that the orbit is not outer space and therefore not subject to the principles outlined in the Outer Space Treaty, particularly the non-appropriation principle.[20] They also argue that "the geostationary synchronous orbit is a physical fact linked to the reality of our planet because its existence depends exclusively on its relation to gravitational phenomena generated by the earth, and that is why it must not be considered part of space . . ."[21] and that since the drafters of the Outer Space Treaty intentionally omitted any reference to satellites which were in orbit at that time, they did not intend that the treaty govern satellite activity.[22] Therefore, the geostationary satellite orbit is in the outer regions of air space and subject to the

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[18] *See Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space*, U.N. Doc. A/4141, Part III, Sec. III, para. A, at 14 (1959) [hereinafter *Report of the Ad Hoc Committee*]; Vereshchetin & Danilenko, *Custom as a Source of International Law of Outer Space*, 13 J. SPACE L. 22, 27 (1985); C. CHRISTOL, THE MODERN INTERNATIONAL LAW OF OUTER SPACE 438-39 (1982).

[19] *See* Bogota Declaration, International Telecommunications Union Doc. No. 81-E, Annex 4 (1977), *reprinted in* 2 MANUAL ON SPACE LAW 383 (N. Jasentuliyana & R. Lee eds. 1979) [hereinafter Bogota Declaration]. Article III of the Outer Space Treaty states that "[o]uter [s]pace . . . is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." Outer Space Treaty, 18 U.S.T. at 2413. Most of the equatorial states have ratified the Outer Space Treaty. U.N. Doc. A/AC.105/PV.184 (1978) at 58 (Philipines); U.N. Doc. A/AC.105/PV.184 (1978) at 72-73 (Kenya); U.N. Doc. A/AC.105/C.2/SR.366 (1982) at 4 (Colombia); U.N. Doc. A/AC.105/C.2/SR.372 (1982) at 4 (India). As signatories, they could not appropriate any of the orbital segments if the Outer Space Treaty's non-appropriation principle applies. Therefore, their argument that the geostationary satellite orbit is not outer space must precede any claim of sovereignty.

[20] Bogota Declaration, *supra* note 19, at 383.

[21] *Id.*

[22] *Id.*

sovereign control of nations.[23]

There are several flaws in this argument. First, it is generally recognized that use of the geostationary satellite orbit comes within the meaning of "use" under the Outer Space Treaty.[24] The fact that satellites were in orbit when the Treaty was drafted is evidence that the drafters intended to include it in the Outer Space Treaty. If it was the drafters' intent to exclude satellite activity they would have inserted language expressly doing so.[25] Second, a geostationary satellite's orbit is not a result of the gravitational pull of the earth, as claimed by the equatorial states. Rather, the orbit is the result of many different forces and phenomena.[26] Furthermore, the equatorial states cannot exercise their claim of sovereignty, because by the very nature of the geostationary orbit, its boundaries are indeterminable and the orbit cannot be effectively controlled. Finally, there is a general consensus among nations that the geostationary orbit is outer space and may be considered as such under customary international law.[27]

The eight equatorial states, as members of the ITU, are subject to its conventions and regulations which presently control the satellites of other countries utilizing the orbits under dispute.[28] Hence, the eight equatorial nations have acknowledged that strict principles of sovereignty do not apply to the geostationary satellite orbit, and the argument that the orbit is outer space

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[23] *See* Smith, *Space Law/Space WARC: An Analysis of the Space Law Issues Raised at the 1985 ITU World Administrative Radio Conference on the Geostationary Orbit*, 8 HOUS. J. INT'L L. 227, 230-38 (1986).

[24] *See Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space*, U.N. Doc. A/CONF.101/10 at 70 (1982) [hereinafter *Unispace 82*]; for an explanation of the Outer Space Treaty, *see infra* notes 36-41 and accompanying text.

[25] Telecommunications was cited as an example of an existing "use" of outer space by the French delegate to the legal subcommittee of the UN which drafted the Outer Space Treaty. *See* U.N. Doc. A/AC.105/C.2/SR.63 at 8; U.N. Doc. A/AC.105/C.2/SR.69 at 5; Dembling, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies*, in 1 MANUAL ON SPACE LAW 11 (N. Jasentuliyana & R. Lee eds. 1979).

[26] *See generally* Physical Nature and Technical Attributes of the Geostationary Orbit, U.N. Doc. A/AC.105/203 (1977) (noting the natural forces acting on satellites in the geostationary orbit: the attraction of the total mass of the earth, the oblateness of the earth, the ellipticity of the equator, the attraction of the sun and moon and solar radiation pressure).

[27] *See* Vereshchetin & Danilenko, *Custom as a Source of International Law of Outer Space*, 13 J. SPACE L. 22, 27 (1985).

[28] *See* The International Telecommunications Convention, Oct. 2, 1947, 63 Stat. 1399, T.I.A.S. No. 1901, 30 U.N.T.S. 316, at Annex I (listing signatories). *See also Unispace 82*, *supra* note 24, at 74 (setting out allocations as of 1981).

as a matter of customary international law is further strengthened.[29] Despite the lack of agreement on defining the precise boundary between air space and outer space, acceptance by most nations that the geostationary orbit is a part of outer space and, as such, is available for use by all States, is in accordance with the Outer Space Treaty.[30]

II. THE OUTER SPACE TREATY OF 1967

As man learned to reach outer space, the question as to what law would apply there became an immediate concern. In 1958, the United Nations established an Ad Hoc Committee on the Peaceful Uses of Outer Space. When that committee reported that serious conflicts could arise if States asserted exclusive rights over all or part of a celestial body,[31] the suggestion was made that some form of international administration be established.[32] As a result, the outer space committee became a permanent body of the United Nations, its findings producing several resolutions which eventually led to the Outer Space Treaty.[33] Although the Outer Space Treaty was unanimously approved by the General

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[29] *See supra* note 27 and accompanying text. The Committee on Peaceful Uses of Outer Space (COPUOS) is presently working on the delimitation of outer space and outer space activities. M. BENKO, W. DE GRAAFF & G. REIJNEN, SPACE LAW IN THE UNITED NATIONS 121-38 (1985).

[30] *See Unispace 82*, *supra* note 24, at 70.

[31] *See Report of the Ad Hoc Committee*, *supra* note 18, at 25. *See generally* Jessup & Taubenfeld, *The United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space*, 53 AM. J. INT'L L. 877 (1959); *United Nations Establishes Committee on Peaceful Uses of Outer Space*, 40 DEP'T ST. BULL. 24 (1959) (statements made by Henry Cabot Lodge, U.S. Representative to the General Assembly, together with the text of the resolution).

[32] *See Report of the Ad Hoc Committee*, *supra* note 18, at 26-27.

[33] G.A. Res. 1148, 12 U.N. GAOR Supp. (No. 18) at 3, U.N. Doc. A/4090 (1958) (provision for joint study of an inspection system designed to ensure that the sending of objects through outer space shall be exclusively for peaceful purposes); G.A. Res. 1348, 13 U.N. GAOR Supp. (No. 18) at 5, U.N. Doc. A/4190 (1958) (stressed need for international and scientific cooperation in the peaceful uses of outer space and that outer space should be used for peaceful purposes only); G.A. Res. 1472, 14 U.N. GAOR Supp. (No. 16) at 5, U.N. Doc. A/4190 (1959) (COPUOS became a permanent body of the General Assembly); G.A. Res. 1721, 16 U.N. GAOR Supp. (No. 17) at 6, U.N. Doc. A/5100 (1961) (stating that international law, including the U.N. Charter, applies in outer space, that outer space is free for exploration and use by all and that outer space is not subject to national appropriation). *See* C. CHRISTOL, THE MODERN INTERNATIONAL LAW OF OUTER SPACE 12-20 (1982); Hosenball, *The United Nations Committee on the Peaceful Uses of Outer Space: Past Accomplishments and Future Challenges*, 7 J. SPACE L. 95, 97 (1979). *See generally* Dembling & Arons, *Space Law and the United Nations: The Work of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space*, 32 J. AIR L. & COM. 329 (1966).

Assembly,[34] the Treaty has been characterized as "essentially a bilateral agreement between the United States and the Soviet Union to which eighty States have dutifully acceded."[35]

The Outer Space Treaty is a broad embodiment of principles that are in "the common interest of all mankind for the benefit and in the interests of all countries."[36] The Treaty provides that outer space should be open for exploration, used for peaceful purposes[37] and not be subject to national appropriation.[38] Within the freedom of exploration and use is the additional right of free access to outer space.[39] These primary principles, found in articles I and II, are directly applicable to the geostationary orbit as part of outer space.[40] As stated by United Nations Ambassador Arthur Goldberg:

> Article I make(s) clear the intent of the treaty that outer space . . . [is] open not just to the big powers or the first arrivals but shall be available to all, both now and in the future. This principle is a strong safeguard for the interests of those states which have, at the present time, little or no active space program of their own.[41]

There was concern that Article I might require the United States to make its communication satellites available for the benefit of all countries,[42] but Ambassador Goldberg pointed out that article I is a statement of general goals, and that separate international agreements would be required to cover the use of particular satellites.[43] The United States' position, as expressed by the Senate Foreign Relations Committee, was that "nothing in Article I, para. 1 of the Treaty diminishes or alters the right of the United States to determine how it shares the benefits and results

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[34] G.A. Res. 2222, 21 U.N. GAOR Supp. (No. 16) at 13, U.N. Doc. A/6316 (1966).

[35] MATTE, SPACE POLICY AND PROGRAMMES TODAY AND TOMORROW, THE VANISHING DUOPOLE at 41 (1980) (quoting 54 INT'L L. ASS'N. PROC. (The Hague) 422 (1970)).

[36] Outer Space Treaty, *supra* note 14, at preamble and art. I, 18 U.S.T. at 2412.

[37] *Id.*

[38] *Id.* at art. II, 18 U.S.T. at 2413. *See also* MATTE, SPACE ACTIVITIES AND EMERGING INTERNATIONAL LAW 249, 269-77 (1984) [hereinafter SPACE ACTIVITIES].

[39] Outer Space Treaty, *supra* note 14, at art. I, para. 2, 18 U.S.T. at 2412. *See also* SPACE ACTIVITIES, *supra* note 38, at 269-73.

[40] *See Unispace 82*, *supra* note 24, at 71-74.

[41] Statement by Arthur J. Goldberg, U.S. Representative to the General Assembly, before General Assembly First Committee (Political and Security), December 17, 1967, *reprinted in* 56 DEP'T ST. BULL. 78, 81-82 (1967).

[42] *Hearings on Executive D, Before the Senate Comm. Foreign Relations*, 90th Cong., 1st Sess., 31-37 (1967) (statement by Arthur J. Goldberg, U.S. Ambassador to the United Nations).

[43] *Id.*

of its space activities."[44] While the United States' position is that no legal rights are created by article I, it acknowledges that some obligation exists. As the Outer Space Treaty's principles are applied, rules of law will be generated and rights will become more defined. To this end the Outer Space Treaty requires that the application of its principles be in accord with international law, including the United Nations Charter.[45]

III. THE COMMON HERITAGE OF MANKIND PRINCIPLE

Nations derive power from their people, and international law derives "obligatory force from the will of all nations or many nations. . . ."[46] It thus follows that mankind is the ultimate "subject" of international law.[47] Mankind, as a collective entity, is not presently represented by an institution. However, the concept exists in the hearts and minds of people throughout the world and the principle is acknowledged in agreements among nations.[48] Historically, early explorers operated under a *terra nullius* rule which enabled them to acquire an unclaimed area after its discovery, provided that a sovereign established effective control over the area.[49] There were, however, areas such as light, air, rivers, water, the high seas and outer space which by their nature could not be captured and effectively occupied. In these areas the civil law doctrine of *res communes*, which meant that the area was common to all and was to be used and enjoyed by everyone, was applicable.[50]

The CHOM principle is an enlargement of the *res communes* principle to that of a *res communis humanitatus*. "[I]t seeks through agreement to achieve the goal of equitable allocation of . . . re-

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44 *Executive Report No. 8 to Accompany Executive D*, 90th Cong., 1st Sess., at 4 (1967).

45 Article III of the Outer Space Treaty states that "[p]arties to the Treaty shall carry on activities in the exploration and use of outer space . . . in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding." Outer Space Treaty, *supra* note 14, at art. III, 18 U.S.T. at 2413.

46 C. JENKS, THE COMMON LAW OF MANKIND 67 (1958) (quoting H. GROTIUS, DE JURE BELLI AD PACIS, LIBRI TRES (Classics of Int'l L. Ed. 1925)).

47 Matte, *Limited Aerospace Natural Resources and Their Regulation*, 7 ANNALS AIR & SPACE L. 379, 387-90 (1982).

48 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 5, 1979, G.A. Res. 3468, 34 U.N. GAOR Supp. (No. 46) at 77, U.N. Doc. A/3446 [hereinafter Moon Treaty]. United Nations Convention on the Law of the Sea, December 10, 1982, U.N. Doc. A/CONF. 62/122 [hereinafter Law of the Sea Convention].

49 *See* Western Sahara Case (Alg. v. Mor.), 1975 I.C.J. 6, 39.

50 *Id. Cf.* BLACK'S LAW DICTIONARY 1173 (5th ed. 1979).

sources and benefits with particular attention to the needs of the less-developed countries. This is the essence of the *res communis humanitatus* concept."[51] Under the CHOM principle, the geostationary orbit is not subject to a sovereign claim, and its resources should be used to benefit all mankind: both present and future generations. This requires efforts which both protect the area against unnecessary degradation and conserve its resources. To accomplish this, the CHOM principle contemplates the formation of an international regime to insure the realization of its objectives.[52]

The CHOM principle was first proposed to apply to the natural resources of the deep seabed by Ambassador Arvid Pardo of Malta, at the Third United Nations Law of the Sea Conference in 1967.[53] It was subsequently suggested to be applicable to the moon's natural resources.[54] In 1979, the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) promulgated the Moon Treaty, which in Article XI provided for the application of the CHOM principle to the moon and its natural resources.[55] While the moon was already subject to the principles of the Outer Space Treaty, that Treaty did not deal with the retrieval of natural resources. Upon the gathering and removal of moon rocks by United States astronauts, there was concern that a more detailed regime should be established for the conservation of the moon's natural resources. While the CHOM principle was incorporated into the Moon Treaty, it was not so clearly expressed in the Outer Space Treaty. The more important question here is whether the CHOM principle applies to the geostationary orbit and the radio frequency spectrum.

In addition to those treaties which have expressly incorporated the CHOM principle, there are treaties which express a similar spirit. For example, the Antarctic Treaty[56] recognizes in its preamble ". . . that it is in the interest of all mankind that

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51 C. CHRISTOL, *supra* note 18, at 286.

52 *Id.*

53 *See* U.N. Doc. A/6695 at 2 (1967).

54 *See* U.N. Doc. A/AC.105/C.2(XI)2 (1972). *See also* C. CHRISTOL, *supra* note 18, at 290.

55 *See* Moon Treaty, *supra* note 48, at art. XI.

56 Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, T.I.A.S. No. 4780. Antarctica is presently being used and studied by several nations. This cooperative use could be looked to for analogies on how to share the benefits of a resource subject to the CHOM principle. For a view that Antarctic resources and those of outer space are analogous, *see generally* N. MATTE, SPACE ACTIVITIES AND EMERGING INTERNATIONAL LAW 153-60 (1984).

Antarctica shall continue forever to be used exclusively for peaceful purposes. . . ."[57] Similarly, the Outer Space Treaty recognizes "the common interest of all mankind . . . [b]elieving that the exploration and use of outer space should be carried on for the benefit of all peoples. . . ."[58] Under these treaties neither Outer Space nor Antarctica are subject to sovereign control and the signatory parties have agreed that both should be used for the benefit of mankind.[59] While the treaties fail to detail the equitable allocation of resources by a formalized international regime, the spirit of sharing with mankind is evident and has played a role in the development of the CHOM principle. The Antarctic Treaty influenced the Outer Space Treaty, and both of these treaties influenced the Moon Treaty and the Law of the Sea Convention which expressly evince the CHOM principle.[60]

Considering the "common interest of all mankind" and the non-appropriation principle of the Outer Space Treaty, and the CHOM language in the Moon Treaty, there is substantial support for the application of the CHOM principle to the geostationary orbit.[61] There are, however, strong arguments to the contrary

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[57] *Id.* at preamble, 12 U.S.T. at 795.

[58] Outer Space Treaty, *supra* note 14, at preamble, 18 U.S.T. at 2411-12. The Antarctic Treaty was a model for the Outer Space Treaty. *See* Dembling, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, in 1 MANUAL ON SPACE LAW 4-5 (N. Jasentuliyana & R. Lee eds. 1979). The Antarctic Treaty states that Antarctica should be used for peaceful purposes, that there should be freedom of scientific investigation, an exchange of scientific information, as well as a prohibition against any nation making any additional claims of sovereignty. *Id.* at 4. The Outer Space Treaty contains provisions almost identical to those set forth above, indicating that the former was used as a source in creating the latter. Furthermore, the Nuclear Test Ban Treaty superseded the above-mentioned treaties' proposals for use of such areas for peaceful purposes in that it prohibited experimentation with nuclear weapons-test explosives on celestial bodies. *Id.* at 4-5.

[59] *See supra* note 58 and accompanying text. *See also* Antarctic Treaty, *supra* note 56, at art. IV (not subject to sovereign control); Outer Space Treaty, *supra* note 14, at preamble, 18 U.S.T. at 2411-12 (common interest of mankind) and at art. II, 18 U.S.T. at 2413 (non-appropriation principle). Under Article 31 of the Vienna Convention on the Law of Treaties, the preamble of a treaty is part of the context of the treaty for purposes of interpretation. Vienna Convention on the Law of Treaties, May 23, 1969, U.N. Doc. A/CONF.39/27 (1969), *reprinted in* 8 I.L.M. 679, 691-92 (1969). The preamble is the normal place in which to embody the Treaty's object and purpose. *See* I. SINCLAIR, THE VIENNA CONVENTION ON THE LAW OF TREATIES 127-28 (2d ed. 1984) (citing Fitzmaurice, *The Law and Procedure of the International Court of Justice 1951-54: Treaty Interpretation and other Treaty Points*, 33 BRIT. Y. B. INT'L L. 227-29 (1957) (for the legal character and effect of the preamble of a treaty)).

[60] *See* Moon Treaty, *supra* note 48, at art. XI; Law of the Sea Convention, *supra* note 48, at arts. 125, 136, 155, 311 and preamble.

[61] As early as 1952 it was proposed that "outer space and the celestial bodies would be the common property of all mankind, over which no nation would be permitted to

which state that this provision merely expresses the desire that space activities should be beneficial in a general sense and that there is no express requirement for states to share their benefits.[62] The fact that the Outer Space Treaty does not establish an international legal regime which requires the sharing of the benefits indicates that the Treaty does not expressly embody the CHOM principle. The spirit of the CHOM principle is, however, reflected in the Outer Space Treaty, even if not expressly set forth in the text, and may be applicable to outer space as a principle of international law under article III.[63]

While no regulatory regime has been established under the Outer Space Treaty, the geostationary orbit is presently being managed and regulated by the ITU and the United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space.[64]

IV. REGULATORY REGIMES OF THE GEOSTATIONARY ORBIT

A. *International Telecommunications Union*

The International Telecommunications Union is a specialized United Nations agency[65] which regulates international communications.[66] Its purpose is "to maintain and extend international cooperation for the improvement and rational use of telecommunications of all kinds. . . ."[67] While most modern

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exercise domination [and that] a legal order would be developed on the principle of free and equal use, with the object of furthering scientific research and investigation." Schacter, *Who Owns the Universe? Space Law Symposium, Special Committee on Space and Astronautics*, U.S. Senate, 85th Cong., 2d Sess., 8-17 (1959).

62 *See* Gorove, *The Geostationary Orbit: Issues of Law and Policy*, 73 AM. J. INT'L L. 444, 447-48 (1979). *See also* Gorove, *Freedom of Exploration and Use in the Outer Space Treaty: A Textual Analysis and Interpretation*, 1 DEN. J. INT'L L. & POL'Y 93, 101-04 (1971) (explaining the meaning of "benefit" under the treaty and arguing there is no requirement for sharing such benefits).

63 *See* Outer Space Treaty, *supra* note 14, at art. III, *reprinted* at note 45.

64 *See generally* Jasentuliyana, *Regulations Governing Space Telecommunication*, 1 MANUAL ON SPACE LAW 195 (N. Jasentuliyana & R. Lee eds. 1979).

65 The ITU became part of the United Nations pursuant to an agreement resulting from the 1947 Atlantic City Radio Conference. I.T.U., *supra* note 28.

66 The ITU was created in 1865 to deal with problems of communications over national boundaries through telegraph wires. As later discoveries led to radio service, the ITU expanded to cover those means of communication as well. In 1947, the ITU was incorporated into the basic UN structure as a specialized agency to supervise international telecommunications. *See* G. CODDING & A. RUTKOWSKI, THE INTERNATIONAL TELECOMMUNICATIONS UNION IN A CHANGING WORLD 3-26 (1982).

67 International Telecommunications Convention, Oct. 25, 1973, art. 4(1)(a), 28 U.S.T. 2497, 2512, T.I.A.S. No. 8572. The United States has yet to adopt the most recent 1982 Nairobi Convention revision which replaced the 1973 Convention. The substantive change to article 4, the purpose section, was the addition of the words: "to

organizations are based on a charter or constitution which is permanent upon adoption, the ITU Convention is totally readopted at each ITU Plenipotentiary Conference.[68] The ITU is presently operating under the Convention adopted at its 1982 Nairobi Conference, to which more than one hundred fifty nations are signatories.[69] Resolutions and recommendations are proposed at periodic World Administrative Radio Conferences (WARCs) for regulation of the radio frequency spectrum.[70] Once approved by member states, the regulations have the force of international treaties.[71]

In 1959, shortly after the first satellites were launched into space, the ITU asserted regulatory authority over satellite communications, based upon its authority over the radio frequency spectrum.[72] In order to avoid harmful interference with existing telecommunication systems, portions of the radio frequency spectrum were set aside for satellite communications.[73] At the 1971 WARC it was resolved that *de facto* occupation of the geostationary orbit by satellites did not entitle *de jure* ownership of that orbital position.[74] This compliance with the Outer Space Treaty's non-appropriation principle supports the argument that the Outer Space Treaty applies to the orbit of these satellites.

Since this early extension of authority, the ITU has continued to expand its regulatory authority over space communications and related issues. Access and use of the orbit/spectrum proceeded on a first-come, first-served basis viewed initially as "merely an extension of terrestrial communications which fell within the sovereign prerogative of individual states."[75] While this policy had been favored by countries with existing technologies, the ITU disavowed the first-come, first-served policy at the

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promote and to offer technical assistance to developing countries in the field of telecommunications." *See* 1 INTERNATIONAL TELECOMMUNICATIONS AGREEMENTS, PART III, 1982 ITU CONVENTION, art. 4.

68 *See* G. CODDING AND A. RUTKOWSKI, *supra* note 66, at 59-60.

69 *Id.*

70 *See* JASENTULIYANA, *supra* note 64, at 196 n.8.

71 *Id.*

72 *Id.* at 198.

73 *Id.* at 198-99.

74 *See* Final Acts of the 1971 WARC, July 17, 1971, 23 U.S.T. 1529, T.I.A.S. No. 7435. *See also* C. CHRISTOL, *supra* note 18, at 557-68.

75 Vallters, *Perspectives in the Emerging Law of Satellite Communications*, 5 STAN. J. INT'L STUD. 53, 76-77 (1970).

1971 WARC.[76]

Under Article 33 of the ITU Convention of 1973, it was agreed 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 . . . ."(Emphasis added).[77] At the 1973 Conference, Israel first proposed that the ITU assert the power to allocate the orbital positions.[78] However, that proposal was tabled and the members instead agreed that the ITU was only empowered to register the orbital positions currently being used by nations.[79]

At the 1977 WARC, the participating states shifted their position and concluded that a planning principle should be established to assure the right of equitable access to the limited geostationary orbit/spectrum resources.[80] This extension of the ITU's regulatory power over the geostationary satellite orbit is arguably inappropriate because it is outside the parameters of its Convention.[81] Authority to regulate the radio frequency spectrum, however, does not necessarily include the regulation of satellites relaying such frequencies, nor the slot of the orbital spectrum at which the satellite is located. As other uses of the orbit become a reality, it may become necessary to establish another regulatory regime to rule over such competing uses. Furthermore, additional and possibly conflicting uses may further complicate present concerns. The resolution of obtaining equitable access for satellite communications may provide guidance for future conflicting uses. It is therefore imperative that the meaning of equitable access not be unduly constrained to factors of physical access to the orbit/spectrum, but includes the economic ramifications and available alternatives to existing satellite communications. Groundwork on guidelines for superior use might be considered a factor for determining equitable access.

For the present, regulation of the geostationary satellite orbital positions by the ITU is not being contested. This extension of the ITU's power may be acceptable because of its intricate connection to satellite communications, and in the absence of al-

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76 *See* C. CHRISTOL, *supra* note 18, at 561. *See also* Rothblatt, *ITU Regulation of Satellite Communication*, 18 STAN. J. INT'L STUD. 1, 8 (1982).

77 ITU Convention, *supra* note 67, at art. 33, 28 U.S.T. at 2529.

78 *See* C. CHRISTOL, *supra* note 18, at 460-61.

79 *Id.*

80 *Id.* at 461.

81 *See* ITU Convention, *supra* note 67, at art. 4, 28 U.S.T. at 2512.

ternatives, such an extension of the ITU power may be justified as a matter of necessity and consent of the parties.[82]

B. *Committee On the Peacful Uses of Outer Space*

The Committee on the Peaceful Uses of Outer Space (COPUOS) established its authority over the geostationary orbit on December 15, 1983 under United Nations General Assembly Resolution 38/80.[83] Subsequently, COPUOS decided that it could consider the legal implications of the geostationary orbit without prejudice to the ITU.[84] In light of the technical expertise of the ITU and the wider political perspective of COPUOS, they may be able to complement each other by dividing the focus of their work.[85]

Presently, the ITU is regulating the geostationary orbit and therefore deciding what legal principles should be applied. The ITU principle of equitable access to the geostationary orbit is a term subject to wide interpretation and its meaning will only become clear after an agreement is made between LDCs and MDCs on an allotment plan at the 1988 WARC-ORB(2).

V. EQUITABLE ACCESS

A. *Background*

The ITU Convention does not define equitable access. The members, however, have agreed to establish a planning principle to ensure it.[86] While the first-come, first-served policy has been the established practice,[87] the LDCs' position is that a plan to allocate the orbit/spectrum resource is necessary to guarantee equitable access.[88] The existing users have operated under a first-come, first-served policy whereby access may be had to any

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82 *See* J. BRIERLY, THE BASIS OF OBLIGATION IN INTERNATIONAL LAW 83-88 (1958).

83 G.A. Res. 38/80, 38 U.N. GAOR Supp. (No. 47) at 98, U.N. Doc. A/38/47 (1983).

84 G.A. Res. 39/96, 39 U.N. GAOR Supp. (No. 51) at 106, U.N. Doc. A/39/51 (1985).

85 Qizhi, *Observations on the Main Issues of Space Law in the U.N.*, 10 ANN. AIR & SPACE L. 353, 363 (1985).

86 Radio Regulation Agreement, December 6, 1979 (unpublished).

87 Gorove, *supra* note 62, at 449. *See also* Robinson, *Regulating International Airwaves: The 1979 WARC*, 21 VA. J. INT'L L. 1, 11 n.8 (1980) (explaining problems with the use of the term first-come, first-served).

88 Levin, *The Political Economy of Orbit Spectrum Leasing*, 1984 MICH. Y.B. INT'L LEGAL STUD. 41, 45 (*a priori* allocation would leave orbit/spectrum resources underutilized). *See* Arnopoulos, *supra* note 7, at 220.

available orbital slot.[89] This policy is not only consistent with the Outer Space Treaty's principles of freedom of use and access, but also with Article 33 of the ITU Convention, provided there is no harmful interference with existing communications systems. Equitable access to the orbit/spectrum resource is thereby available when a potential user has sufficient technology and is ready to establish a communications system.

The MDCs favor an approach which would assign orbital positions when a state is ready to utilize them.[90] This approach has historically satisfied the need for access and would not discourage technological advances necessary for future access. The MDCs fear that an allotment plan would discourage investment into satellite communications necessary for the development of future technologies.[91] Furthermore, they argue that an allotment plan would be inequitable if a party ready to utilize the orbit/spectrum is denied access because the orbit/spectrum is allocated to a party not ready to use it.[92] This result would not only be unfair, it would also be an inefficient use of the orbit/spectrum in violation of Article 33 and in violation of the Outer Space Treaty's principles of freedom of use and access.

The LDCs are concerned that the technologically advanced MDCs will fill the limited orbit/spectrum resource under the first-come, first-served policy and as latecomers they would be denied access to economically feasible orbital positions.[93] The problems of overcrowding include satellite collisions and harmful interference in transmission of radio signals.[94] If the LDCs' concerns about overcrowding are well founded,[95] an allotment plan would guarantee their access to an orbital position. It has been proposed that as many as one thousand eight hundred satellites could theoretically function and co-exist in the geostationary orbit;[96] the problem foreseen is not one of physical crowding, but rather of harmful interference caused in the radio frequency spectrum by transmissions from a plethora of orbiting

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89 *See* Gorove, *supra* note 62, at 449.

90 *See* C. CHRISTOL, *supra* note 18, at 569-70.

91 *Id.* at 570.

92 *Id.*

93 *See Unispace 82*, *supra* note 24, at 69-70.

94 *See Efficient Use*, *supra* note 3, at 12-17.

95 *See supra* notes 3-6 and accompanying text.

96 *See* Christol, *The Geostationary Orbit Position as a Natural Resource of the Environment*, 19 INT'L LAW. 5 [hereinafter *Geostationary Orbit Position*].

satellites which would disrupt communications.[97] The MDCs propose that since crowding and interference problems will be overcome by technological advances,[98] the orbit/spectrum resources should remain open to access, thereby encouraging the participation of private investors who will develop these technologies.[99]

While technological advance is important to satellite communications, the incentive to develop future technologies is not necessarily deterred under an allotment plan. Rather, the plan more equitably distributes the burden to develop such technologies to all members, rather than to latecoming LDCs. The demand for new technology exists under either plan. Under the allotment plan the market for new technology immediately expands to include developed countries, while under prior policy these countries could not demand new technology until crowding affected their operations. Allocation of the orbit/spectrum resources provides a certainty and stability to participating nations and to the private satellite industry which may act as a catalyst to investment by both. While problems of overcrowding or interference would not change under the allotment plan, neither would the ability to profit from technological advancement. The result should be a more equitable shift in the burden to develop these technologies. Of course, there may be some time lag between discovery of the problems of the allotment plan and the development of technology, but the MDCs are in a better position to bear that burden.

Under the first-come, first-served policy, the late coming LDCs are put in the untenable position of being required to develop the technology which allows them to fit into existing locations and operate without interfering with existing users — the MDCs. Under the allotment plan, all interested members will be given the orbit/spectrum which corresponds to their geographical location and particular needs. The MDCs may have to relinquish or share some of the prime orbital locations that they presently occupy, and share the development of new technologies. While technological advances may keep pace with the demand for services, there will most likely be great costs in the development and implementation of new communication sys-

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97 *Id.* at 7.

98 *See Unispace 82*, *supra* note 24, at 17. *See also* C. CHRISTOL, *supra* note 18, at 570.

99 C. CHRISTOL, *supra* note 18, at 570-71.

tems.[100] How these costs should be distributed and who is in the best position to bear the burden should be factors in determining whether the access is equitable.

The cost of establishing a satellite communication system is directly affected by the orbital position and radio frequency allocated.[101] The distance and angle that the radio signals travel play a direct role in both the quality of communications, and the necessary level of satellite and earth station technology. While all the orbital slots are above the equator, the user wants access to the slot which most directly corresponds to the longitudinal geographic location of the transmitter-receiver stations it is to serve, thereby enabling the user to utilize less expensive technology without the loss of quality service.[102] In addition, several radio frequencies require various technologies to maintain a quality communication service which directly affects the cost of satellite and earth station equipment.[103] These technical and scientific factors have a direct impact on the economic viability of a communications system for the LDCs.

Given the technology currently available, the LDCs fear that unless the orbit/spectrum resource is allocated under an allotment plan, the MDCs will fill the prime orbital positions and frequencies which can be effectively utilized with relatively less expensive technology. Consequently, late-comers will be left with less advantageous orbit/spectrum positions that require superior technology at a much greater expense. These fears are well founded considering the costs involved.

For example, India and Indonesia sought access to orbital positions for domestic satellite systems.[104] The slots proposed were near slots then occupied by INTELSAT and STATIONAR.[105] The incumbents refused to adjust their antennae beams and earth station equipment so that the new satellite systems could operate without interference. As a result, India and Indonesia had to make costly design adjustments. Moreover, both nations still had problems with the quality of the service, which was substantially under the satellites' total capacity.[106]

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100 *Report of the CCIR Conference Preparatory Meeting*, Summer 1984, at 46 (detailing the great costs in development and implementation of new technology).

101 *See* G. BLEAZARD, INTRODUCING SATELLITE COMMUNICATIONS 142-47 (1985).

102 *Id.* at 141-65.

103 *Id. See* Rothblatt *supra* note 76, at 15-16 (1982).

104 *See* Levin, *supra* note 88, at 57-58.

105 *Id.*

106 *Id.* at 58.

B. *1985 WARC-ORB(1): A Plan for Equitable Access*

The LDCs believe in the principle that "[t]he planning methods shall guarantee in practice . . . equitable access to the geostationary satellite orbit and the frequency bands . . . taking into account the special needs of developing countries and the geographical situation of particular countries."[107] The MDCs contend, however, that equitable access would be guaranteed in practice when a country is prepared to use the orbit. Furthermore, allotting a position to a country unprepared to use the slot would violate article I of the Outer Space Treaty, especially if another country is prevented from accessing and using the orbital slot.[108] Additionally, an inefficient and uneconomic use of the orbit would result, thereby violating article 33 of the ITU Convention.[109]

Under the 1973 ITU Convention, access was to be allocated according to countries' "needs and the technical facilities at their disposal."[110] While this language supports the MDCs' position, the language was later removed and substituted with the words "taking into account the special needs of the developing countries and the geographical situation of particular countries."[111] This revision destroys the argument that a country's need for access is solely defined by its technological capabilities to use the orbital position. Indeed, the change seems to reflect the intent that some deference must be given to the fact that some countries lack technical facilities. The deletion perhaps indicates that efforts should be made to make present technology available to LDCs so that they can achieve access to the orbit/spectrum resource. To guarantee such access, the plan provides that each ITU member has at least one allotment of an orbital position and the requisite radio frequency spectrum.[112] Since the allotment is not permanent and is only to last ten years,[113] it does not conflict

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[107] *Addendum to Report to the Second Session of the WARC Conference*, Doc. 324 (Rev. 1)-E, 15 Sept. 1985, 3.2.1 (Guarantee of access and equitability) [hereinafter WARC-ORB(1) Report].

[108] Article I of the Outer Space Treaty states that "outer space . . . shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law. . . ." Outer Space Treaty, *supra* note 14, at art. I, 18 U.S.T. at 2412. *See supra* notes 37-40 and accompanying text.

[109] *See supra* text accompanying note 78.

[110] ITU Convention, *supra* note 67.

[111] 1982 ITU Convention, art. 33, par. 2, *reprinted in* I INTERNATIONAL TELECOMMUNICATIONS AGREEMENTS, PART III at 23.

[112] *See* WARC-ORB(1) Report, *supra* note 107, at 3.3.4.3.

[113] *Id.* at 3.3.4.6. This paragraph was adopted at the Seventeenth Plenary Meeting

with the non-appropriation principle of the Outer Space Treaty. A duration period tied to the expected lifetime of the satellite would result in a more efficient and economic use of the satellite utilizing the orbit/spectrum resource.[114] Forcing changes in orbital position and frequency would result in an inefficient use of the orbit/spectrum, thereby violating article 33 of the ITU Convention. At the 1988 WARC-ORB(2), the debate on the designation of a ten year period will continue, hoping to remove or qualify the duration so as to adhere to article 33.

The allotment plan will take into account the special needs of developing countries and the geographical situation of particular countries.[115] Taking into account the geographical needs of particular countries may be viewed as a concession to the equatorial states claiming sovereignty over the orbital slots above their respective countries.[116] However, this actually appears to be directed towards technical considerations that a country's geographical situation may present.[117] The special needs of developing countries call for consideration of their lack of advanced technology, their poor economic position and their need for communication systems. This would reflect the concerns of the New International Communications Order and would be consistent with the CHOM principle which gives particular attention to the needs of LDCs.[118] While the LDCs have succeeded in incorporating this consideration as an element of equitable access, the MDCs counter by calling for consideration of existing users.

In the guarantee of access the allotment plan must consider existing systems[119] which are defined as those "recorded in the Master International Frequency Register; [those] for which the coordination procedures have been initiated; or [those] for which information relating to advance publication was received by the

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when there was insufficient participation for a valid vote. Corrigendum 1 to Doc. 324 (Rev. 1)-E, 15 Sept. 1985.

114 *Geostationary Orbit Position*, *supra* note 96, at 8-10. The present life expectancy of a satellite is approximately ten years. However, this may double or triple with the advance of technology and allow a more efficient and economic utilization of satellites. When defining an equitable principle that should endure indefinitely, the drafters should avoid incorporating specific enumeration of what is equitable at a given point in time. Instead, they should incorporate the underlying reasons and objectives used to arrive at the ten year figure. *Id.*

115 WARC-ORB(1) Report, *supra* note 107, at 3.2.1.

116 *See* Smith, *supra* note 23, at 230-38.

117 *See* WARC-ORB(1) Report, *supra* note 107, at 3.2.4.

118 *See supra* notes 46-54 and accompanying text.

119 WARC-ORB(1) Report, *supra* note 107, at 3.2.5.

International Frequency Board before 8 August, 1985."[120] In order to accommodate new systems, the existing systems may have to make adjustments.[121] This requirement, in addition to addressing the lack of cooperation that India and Indonesia encountered when they sought access to establish their communications systems,[122] would further the free use and access principle of the Outer Space Treaty. Whether this will result in efficient and economic use under article 33 must be considered as new circumstances arise.

Allowing new services furthers the efficient use of the orbit/spectrum until there is harmful interference. The economic costs resulting from adjustments to avoid interference may prove to be considerably high. In light of the principle of equity the question is who should bear such costs. Periodic multilateral planning meetings are to be a principal part of the procedure for gaining access to the orbit/spectrum resouces.[123] "The overall aim of these improved procedures shall be to guarantee in practice for all countries equitable access to the orbit/spectrum resources in the relevant bands . . . [while] at the same time protecting existing systems."[124] The consideration of existing systems is again cited in the guidelines for improved procedures,[125] and is likely to be heavily lobbied for by the United States and other existing users at the 1988 WARC-ORB(2) as an essential element of equitable access. Consideration of existing users equitably counterbalances the CHOM consideration of the special needs of developing countries in the search for equity in access to the orbit/spectrum resources. Only after such a balancing, and in light of efficient and economic use of the orbit/spectrum resources, could access be considered equitable for all interested parties. Also, "[t]he planning method must preserve the rights of other services having equal primary status in the bands to which this method is to be applied. This will necessitate the adoption and application of appropriate sharing criteria."[126] The equal right to utilize orbit/spectrum resources is consistent with the free access and use principles of the Outer Space Treaty since it will

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[120] *Id.* at 3.3.4.9.

[121] *Id.* at 3.2.5.

[122] *See supra* notes 104-06 and accompanying text.

[123] WARC-ORB(1) Report, *supra* note 107, at 3.3.5; *Id.* at 3.3.5.1.

[124] *Id.* at 3.3.5.2; Corrigendum 1 to Doc. 324 (Rev. 1)-E, 15 Sept. 1985 (grandfather clause for existing systems).

[125] WARC-ORB(1) Report, *supra* note 107, at 3.3.5.3(e).

[126] *Id.* at 3.3.3, 3.2.2.

also further the efficient and economic use required under article 33 and will maximize utilization of the orbit/spectrum. Although the sharing of resources is consistent with the CHOM principle, there should be additional language suggested at the 1988 WARC-ORB(2) that sharing technology may also satisfy the sharing criteria. This sharing would be in accordance with the CHOM principle and the suggestions of the 1982 UNISPACE Report that a transfer of technology is necessary in order for LDCs to gain access to the orbit.[127] Part of the sharing criteria should also include "burden-sharing" which is one of the guidelines for the improved procedures.[128]

Applying such a principle to the problems encountered by India and Indonesia would mean that the existing user would have to make adjustments to enable the new user access to the orbit/spectrum resources. The new user would have to share the burden of the economic costs of such an adjustment. In the alternative, there should be an option for existing users to remain and share their satellite capacity. The new user could also utilize different orbit/spectrum resources and the existing user could share the burden of such an adjustment by making the required technology available or sharing the burden of the increased economic costs to the new user. There must be flexibility in the planning method to allow satisfaction of burden-sharing by transfer of new or alternative technologies. This would comply with the CHOM principle while equitably distributing the orbit/spectrum resources, and would result in an efficient and economic use in accord with article 33. This adjustment to the planning method would comply with the recognized need for flexibility, [129] and would be most appropriately considered at the multilateral planning meetings.[130]

The planning method must be flexible enough so that parties negotiating over conflicts are able to consider foreseeable alternatives available under present technology and unforeseeable alternatives which may develop in the future. In addition, the planning method for equitable access to the orbit/spectrum resources should not preclude consideration and negotiation of factors not directly related to them. For example, if an LDC seeks access to an orbital slot which is presently occupied, the

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[127] *Unispace 82*, *supra* note 24, at 50, 59-62.
[128] WARC-ORB(1) Report, *supra* note 107, at 3.3.5.3c.
[129] *Id.* at 3.2.7.
[130] *Id.* at 3.3.5.

existing user should be able to examine the LDC's communication needs and have the opportunity to suggest alternate communication technology which would provide equivalent service at an equivalent price. The individual nation's communications needs are a primary factor in determining equitable access, as well as the availability of systems, such as fiber optic cables, which could be utilized without displacing the existing user. To avoid inefficient use of the orbit/spectrum resources, the scope of equitable access should not be limited to those resources.

CONCLUSION

The LDCs presently appear to view equitable access to mean an allotment of orbit/spectrum resources which will enable them to use affordable technology in a communications system necessary for national development. The LDCs will most likely need to act collectively in financing a communications system or seek cooperation from the MDCs. At the 1988 WARC-ORB(2), the MDCs will most likely succeed in sustaining firm principles to prevent waste of the orbit/spectrum resources and in obtaining assurances that use of the resources will not become inequitable for existing users.

Presently there are several examples of states sharing the orbit/spectrum resources for the benefit of mankind: INTELSAT through Project Share allows the use of spare transponders for the transmission of health and education programs to rural areas,[131] there is an Ireland-Jordan exchange which is used for training researchers and field workers in water management,[132] the United States is exchanging lectures on virology, immunodiagnosis and other health studies with African nations[133] and China is broadcasting university lectures on health, education and culture.[134] The planning criteria must be flexible enough to encourage such uses of spare transponder capacity.

The planning should also be flexible enough to handle the changing uses of the orbit which are now on the horizon. As the orbit is filled, there will be disagreement as to which uses should be preferred and which within the communications field should be given priority. Competition between communications, solar

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131 Aviation Weekly & Space Technology, Aug. 26, 1985, at 64-65.

132 *Id.*

133 *See* Levin, *Foreign and Domestic U.S. Policies - Spectrum Reservations and Media Balance*, 6 TELECOMMUNICATIONS POL'Y 123 (1982).

134 *See* Aviation Weekly & Space Technology, *supra* note 131.

power, military and other uses will raise difficult problems of international law to which the equitable access principle must adapt. The meaning that is given to equitable access remains to be seen. However, as applied, the principle of equitable access will provide a precedent for the management of limited resources which are not subject to sovereign control such as Antarctica, the deep seabed and other *res communis humanitatis*.