

¹⁴⁰ Skolnikoff, *supra*, note 115, at 160.

¹⁴¹ *Ibid.*, compare P. D. Neseros, "The Proposed International Sea-Bed Authority as a Model for the Future Outer Space International Regime," 5 *Annals Air & Space L.* 549 (1980).

CHAPTER 10

The Definition/Delimitation of Outer Space, the Use of the Geostationary Orbital Position, and the 1976 Bogota Declaration: Policies and Prospects

1. INTRODUCTION

The definition/delimitation of outer space, per se, has long been receiving the formal attention of COPUOS. In the past it was not thought to be as complex a subject, or having the same priority for resolution, as the exploitation of the natural resources of the Moon, or direct television broadcasts (DTB), or remote sensing, among others. This changed on December 3, 1976 when eight equatorial States issued in Bogota, Colombia, a five-point declaration relating to the geostationary orbit or geostationary orbital position.¹

The space-resource States from 1957 onward had developed the unprotested practice of transiting their space objects at orbital levels, including orbits as low as approximately 90-100 miles above the surface of the Earth. The expectation had developed from such practices that the lower orbital level constituted a prima facie basis for the fixing of a low-level boundary between air space and outer space. Operating on this basis the space-resource States had engaged in the exploration, use, and exploitation of the space environment, including access to orbital heights and the use of such orbital positions. The well-being of all States seemed to be properly served through this continuing practice respecting the indicated activities.

The 1967 Principles Treaty had been relied on to assure free access to and free and equal exploration, use, and exploitation of orbital positions. While restrictions were imposed by the Principles Treaty on certain uses and activities, no spatially-measured limitations were placed on the areas in which space objects could be orbited. Further, it had been considered,

pursuant to the free and equal use regime of the 1967 Treaty that geostationary orbital positions were available to natural and juridical persons, including States. However, such positions were not considered to be objects or areas subject to exclusive individual or national use or jurisdiction and were to appertain to the international legal regime of *res communis*. Claims of national sovereignty to outer space, including orbital positions, were excluded by the 1967 Treaty. Nothing, it was believed, had been lost by the absence of a formal international agreement establishing a fixed boundary, nor was it thought that anything would be gained through a formal agreement on this matter. The Bogota Declaration made it necessary to reconsider these outlooks and to accord the subject of definition/delimitation a higher priority at COPUOS.

A number of factual and policy issues having legal consequences have arisen concerning the definition/delimitation problem. The question as to the need for a formal definition has been raised. Phrased differently, it has been asked if benefits would be derived from such a definition. Implicit in this inquiry was the view, since there were widely shared policy preferences concerning the right to orbit space objects at low levels, and since space objects had been in continual use since 1957, that a rule of customary international law had come into existence by 1976 on the subject of boundaries. More specifically, a belief had arisen that the existence of the right to orbit, as confirmed by practice, had carried with it the establishment of a lower boundary for space. This was considered to be at the lowest practical level at which space objects could safely remain in orbit. However, this view was not universal. At issue was the question of the presence of *opinio juris*.

From the perspective of achieving a degree of certainty, as reflected in the terms of written agreements, it is possible to make a case for a formal international agreement on definition/delimitation. Through such an approach the views of all of the members of the UN, as opposed to just the resource States, could be consulted. Such consultation necessarily would have to take into account the most propitious time for making such a determination.

One of the functions of arriving at a formal definition would be to allow for an open examination and assessment of the wants, needs, interests, and values of all the negotiators. As they would examine the subject they could assert concerns relating to the specific goals set out in the 1967 Principles Treaty, including references to free and equal use, exploration, and access. They could identify the need to protect national security, thereby taking into account the means for engaging in

reconnaissance and surveillance, including areas in which foreign space objects would not be permitted to transit while moving toward, remaining in, and returning from orbit.

In arriving at agreement attention could be given to the right of peaceful return of a space object to Earth following its leaving the area defined as outer space. This relates to the right to enter the sovereign airspace of a foreign State and involves the conditions of such transit.² Among the concepts that have gained acceptance for the oceans, which might have application to transit by space objects through the airspace of a foreign State are "innocent passage," "right of transit," and "freedom of transit." Considerations flowing from such concepts require an assessment of the spatial areas in which a State will be able to exercise national sovereignty.

Also to be considered must be the general utility of a formal definition/delimitation. An openly arrived at and simple definition of a factual situation would allow for the normalization of expectations. As it becomes more apparent that the space environment contains important resources, such as minerals, solar energy, geostationary and other orbital positions, bases for radio and television broadcasts and for remote sensing, and essential scientific data and information, there are practical reasons for achieving a formal agreement. Such an examination would necessarily focus on the subject of a "definition" of what constituted air space and outer space. Since the negotiators would also be pursuing the issue of "delimitation," it would require that a decision be made whether that term was synonymous with "definition" or whether "delimitation" would suggest a reconsideration of the types of space-environment activities engaged in by States and codified in the 1967 Principles Treaty.

In the process of arriving at policy determinations on the foregoing matters States would be obliged to ask how scientific and technical conditions relating to the use of space may change over time. If important changes were to be anticipated there would be a need to consider how the terms of the international agreement might be later modified.

Before issues of substance can be considered it will be necessary to determine in which forum the decision is to be taken. Undoubtedly the UN is the forum best suited to deal with the subject of definition/delimitation. This was forecast by the Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space in 1959.³

2. EARLY UN CONCERNS FOR DEFINITION/ DELIMITATION, 1959-1969

The Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space in 1959 had identified the issue of definition/delimitation as one needing attention. It noted that to the extent that publicists had given attention to the subject that no consensus existed. The Committee reviewed a number of prospects, taking into account the possibility that the boundary for air space might not be the same as that for outer space, and concluded that it could only make some general observations. The physical characteristics of air and aircraft were not considered as providing a sound basis for arriving at a position. It was also noted that "further experience might lead to the acceptance of precise limits through a rule of customary law."⁴

The Ad Hoc Committee offered two approaches. These were later to be identified as a spatial and a functional approach to the fixing of a boundary. First, the Committee considered both a precise, spatial demarcation and, alternatively, a tentative range "within which the limits of air space and outer space would be assumed to lie."⁵ In the ensuing years there has been strong support for the spatial, i. e., scientific or geometrical, approach. Second, the Committee examined a functional approach, when it identified the possibility of fixing a boundary or boundaries designed around "the nature and type of particular space activities."⁶ This approach would treat air space and outer space as a unitary whole on the premise that space objects would employ both mediums in the course of their leaving and returning to Earth. In keeping with a functional approach it was suggested that intergovernmental agreements could be negotiated allowing for "a given activity by reference not only to altitude and 'vertical' position but also to trajectory, flight mission, known or referred instrumentation, and other functional characteristics of the vehicle or object in question."⁷ The practical capabilities of the space object would be the basis for an international legal regime, which would have as its purpose the facilitation of such capabilities. This approach has also received strong support.

The Committee noted that the conclusions reached by it concerning the right to explore, use, and exploit the space environment, including the right to have access to it, did not require the defining of a boundary. Thus, it concluded there was no need to list the matter of definition/delimitation as needing priority treatment. This view was apparently shared by the United States, the Soviet Union, and other members of COPUOS during the period between 1957 and 1963, since none of the draft proposals which came before that body made any reference

to definition/delimitation. Further, the General Assembly Resolutions, adopted upon the recommendation of COPUOS, failed to make any mention of a boundary between air space and outer space until 1966, when reference was made to this subject in Resolution 2222.

COPUOS did place the subject of definition/delimitation on its agenda in 1967. This subject had been occasionally raised at the UN prior to that time. These casual observations, based as they were on national preferences without the benefit of present-day scientific and technical facts, covered a broad set of choices. Thus, a Chilean proposal in 1958 would have allowed national sovereignty in space to extend to the infinite.⁸ Also in 1958 a criteria based on the gravitational pull of the Earth was identified and rejected by Italy.⁹ The same position was advanced by Peru.¹⁰ Peru also stated that since the presence of U. S. and Soviet satellites in orbit had not elicited protests that this meant that States had not asserted claims to sovereignty in outer space. However, the view that unprotected State activity was establishing a spatial area identifiable as outer space was rejected by Sweden. Its representative observed in 1958 that "the fact that no protests had been made in no way meant that general agreement on the altitude at which outer space began had been accepted."¹¹

Discussions at the UN in 1959 reflected additional outlooks. Sweden expressed opposition to establishing the boundary of outer space on the basis of effective control.¹² The French representative observed that "it might be possible to establish . . . an international zone between airspace and outer space, in which the exercise of exclusive sovereignty by the subjacent State could be limited."¹³ This position had previously been characterized by the Philippine Islands as arbitrary.¹⁴ In 1959 the United Kingdom suggested that delimitation could be achieved through fixing "some arbitrary level at the top of the atmosphere layers."¹⁵ Favor for a theory founded on conditions of the atmosphere was also expressed by Austria,¹⁶ Brazil,¹⁷ Italy,¹⁸ the Netherlands,¹⁹ and Peru.²⁰

At this early stage the United States, as it continued to urge through 1982, identified the need to approach the boundary questions with the "utmost flexibility and freedom of action with regard to future events."²¹ At the same time the Canadian Office of External Affairs indicated that "early consideration must be given to establishing rules determining the limits of national sovereignty in space."²²

In 1961 Italy favored fixing the boundary at the practical point to which "aircraft could fly and balloons rise."²³ On the other hand, several States stressed the need for obtaining

international agreement as the means for fixing an outer space boundary. Argentina indicated that the matter should be resolved "only by means of an international agreement establishing agreed limits which were the same for all States and taking into account, *inter alia*, the factor of national security."²⁴ The same position was accepted by the Byelorussian S. S. R.²⁵

When the Legal Sub-Committee of COPUOS held its first session in 1962 several States expressed the view that definition/delimitation should be considered. They couched their interest in the words "Demarcation between Outer Space and Atmospheric Space."²⁶ In 1967 the Legal Sub-Committee, aware of the terms of General Assembly Resolution 2222 (XXII) of 1966 requesting that a study be undertaken on questions relative to the definition of outer space, placed the issue on its agenda. The item bore the title "Study of Questions Relative to the Definition of Outer Space."²⁷ Reflecting new outlooks in the intervening years the title assigned to the agenda item has been modified. Thus, in 1977 it became "Matters Relating to the Definition and/or Delimitation of Outer Space and Outer Space Activities."²⁸ This was changed again in 1978 to read: "Questions Relating to the Definition and/or Delimitation of Outer Space Activities, also Bearing in Mind Questions Relating to the Geostationary Orbit."²⁹ Again changed in 1979 it became "Matters Relating to the Definition and/or Delimitation of Outer Space and Outer Space Activities, Bearing in Mind *inter alia*, Questions Relating to the Geostationary Orbit."³⁰

Although the UN undoubtedly possesses the qualifications to be the principal world institution to deal with this subject, it should be noted that the ITU has increasingly manifested an interest in the political-legal aspects of the exploration and use of the space environment; for example, it already has given meaning to the expression "deep space." This has been determined to mean the distance between Earth and the Moon, namely, about 240,000 miles or 384,000 km. The ITU's World Administrative Radio Conferences have become important forums for discussions on orbital positions.

The means whereby the UN deals with the issue of definition/delimitation may on its own account provide an issue that will have to be resolved. The traditional practice would be for COPUOS to arrive at a consensus which would be reported to the General Assembly so that it might adopt a unanimous resolution on the subject. Because COPUOS contains within its membership five of the equatorial States which issued the Bogota Declaration, namely, Brazil, Colombia, Ecuador, Indonesia, and Kenya, it may be difficult to gather the required support within that body to bring the matter to the attention of the General Assembly. If this should prevent the General Assembly from

recommending through a resolution the adoption of a treaty on definition/delimitation, it may be necessary to examine alternative processes. It may become necessary to determine the desirability of seeking direct access to the General Assembly. This would subvert the purposes of the General Assembly in establishing COPUOS as its instrumentality for the consideration of space environment matters. Since the competence of the ITU is essentially limited and technical, it is doubtful if it would be appropriate to look to it for a decision on definition/delimitation. It would be possible, however, for States acting independently of the UN or other international organizations to make identical, unilateral proclamations in which they would specify their common perceptions of what they consider to be the existing customary international law on this subject. In drafting such a declaration the interested States could make use of the views expressed by scholars and by formulations initiated by professional groups, such as the International Law Association, the *Institut de Droit International*, and the International Institute of Space Law.

An assessment of all of these basic issues can be best effected through an examination of positions put forward at the United Nations. The views of scholars and of professional groups also have considerable relevance. The purpose of such inquiries will be to identify the prospects for some kind of formal agreement or statement relating to definition/delimitation and the substantive provisions of such an agreement.

3. EARLY VIEWS OF SCHOLARS

Scholars writing in the late 1950s and the early 1960s expressed an interest in both the spatial and the functional approach to definition/delimitation. Following an assessment of the writings of more than 50 persons who had expressed opinions on the subject Tang has reported that their preferences fell into two major categories.³¹ Category one placed emphasis on a spatially-measured boundary theory, either limited or unlimited. The authors favoring a limited boundary theory made reference to effective control, physical characteristics of space, the practice of States, the gravitational pull theory, the need for national security, political and economic considerations, and a theory of zones. Category two dealt with a functional approach as an alternative to the above. In Tang's view the support for a functional approach was rather mixed, since although it received nominal support it was specifically rejected by only two of the sampled writers.³² The effective control approach, which was classified within the spatial category, obtained the largest disapproval. A clear pattern did not emerge from the writings examined. In fact

Tang's "most important conclusion was that none of the above-mentioned approaches has been accepted by an overwhelming number of writers."³³ His research also indicated that few of the writers disclaimed the need for an urgent approach to the subject. Nonetheless, it was his own view that such diverse outlooks militated against a universal, international agreement fixing a boundary in the immediate future. He considered that any international agreement on this subject would be heavily influenced by security considerations. In his summation he stated: "We have a congeries of various teachings advanced by publicists. Some theories are derived from attempts at universal, law-making conventions or international agreements; some of them proceed from relatively specific declarations as to the immediate height of a State's sovereignty, usually being stated on a numerical basis; some have been induced by analogy from the general, customary rules of international law in other supposedly cognate areas such as the law of the high seas; some stem from the various nature of space activities, whether scientific in nature and created for peaceful purposes, or else created more or less ad hoc in response to the pressing and immediate need for reconnaissance satellites."³⁴ These comments, resulting from the specific sample of writers under survey, were paralleled in studies prepared by the UN Secretariat for COPUOS in 1970 and 1977 entitled "The Question of the Definition and/or the Delimitation of Outer Space."³⁵

Despite some initial support for a functional approach to the definition/delimitation problem, a pronounced trend began to emerge in the late 1960s in favor of a spatial norm. In 1968 Farwell suggested the adoption of a boundary on the order of 100 miles above the surface of the Earth. This proposal was based on the view that this elevation constituted not only the lowest feasible altitude of orbit but also that it was the lowest technically desirable and feasible altitude of orbit.³⁶

Contributing to support for a spatial approach to definition/delimitation was the resolution adopted by the International Law Association in 1968. It urged that the term "outer space" as contained in the 1967 Principles Treaty "should be interpreted so as to include all space at and above the lowest perigee achieved by the 27th January 1967 when the Treaty was opened for signature, by any satellite put into orbit, without prejudice to the question whether it may or may not later be determined to include any part of space below such perigee."³⁷ This conclusion was influenced by an assessment of the views of scholars published by Goehuis in 1966. Their writings supported the conclusion that customary international law had developed denying to States a claim of sovereignty at the lowest levels where space objects were able to orbit.³⁸

4. THE 1967 PRINCIPLES TREATY AND THE DEFINITION/DELIMITATION OF OUTER SPACE

The Principles Treaty established an international legal regime for the space environment without providing a specific definition/delimitation of outer space, per se.³⁹ This was neither unusual nor abnormal. Valid and effective legal regimes exist respecting the ocean's territorial waters without either a treaty base or a basis in customary international law fixing a single and uniform measurement. At the current Third United Nations Conference on the Law of the Sea no single and uniform measurement has been established for the point where the deep seabed and ocean floor begin and where the limits of national jurisdiction end.⁴⁰ Despite a series of treaties beginning with the 1919 Paris Convention and culminating in the 1944 Chicago Convention,⁴¹ none of the treaty-based rules of international law applicable to air space have fixed its upper boundary. The 1959 Antarctica Convention did not prescribe the metres and bounds of that Continent insofar as the Convention applied to a spatial area.⁴² Following the 1967 Principles Treaty the UN has been the source for the successful negotiations of three other space-environment agreements, namely, the 1968 Rescue and Return Agreement,⁴³ the 1972 Liability for Damages Convention,⁴⁴ and the 1974 Convention on Registration of Objects Launched into Outer Space.⁴⁵ In none of these agreements was the area of application defined. Thus, when they come to be applied in concrete cases it may be possible for a diversity of opinion to arise concerning their territorial sweep. But this has not compromised their utility. However, the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies does contain spatial definitions.⁴⁶

The 1967 Principles Treaty was written on the premise that it was not necessary to fix with precision a boundary between outer space and air space in order to establish an effective legal regime for the former. Prior to 1967 science and technology had not supplied either enough or sufficiently definitive data as to where such a boundary might be drawn. Further, absent such data it was not considered wise to attempt a choice between competing criteria arguably applicable to the establishment of a boundary. Lacking such information, and concerned over possible security matters relating to uses of the space environment, all of the factors for a political-legal judgment relating to an identified boundary were not considered to be sufficiently understood for a determination to be made. Despite this a number of proposals had been made by States and individuals prior to 1967. That these proposals had not been acted on was indicative of the need to obtain a further

understanding of wants, needs, interests, and values prior to making a decision respecting definition/delimitation.

The principal function of the 1967 Treaty was to establish a legal regime in which all States were to have the right to engage freely and equally in the exploration, use, and exploitation of the space environment. Such freedom, coupled with the right of free access, has come to mean freedom to engage in practical applications based on the premise of international cooperation. It was contemplated in 1966 that all of the foregoing would take place without a fixed and formal definition/delimitation of outer space. Subsequent experience has proven the validity of this approach. As aided and abetted by the provisions of Article 2 of the Treaty, stipulating that the space environment--however it might be defined in a spatial or functional sense--would be immune from claims of national sovereignty, and that appropriation could not result from such claims or by means of use or occupation, or by any other means, the basic provisions of Articles 1 and 3 of the Treaty have been realized. The practices of the space-resource States since 1959, and particularly after the entry into force of the 1967 Principles Treaty, have established important legal rights and duties respecting free and equal exploration, use, and exploitation of and free access to the space environment.

It is true that during the 1966 negotiations attention was drawn to the matter of providing a definition/delimitation. When the U. S. Senate Committee on Foreign Relations was examining the terms of the Principles Treaty the question was asked: "What is the distinction between outer and any other space, inner or any other space? What is the distinction, the definition, of outer space?"⁴⁷ Mr. Goldberg, the principal U. S. negotiator replied that no attempt had been made in the treaty to define the limits of outer space. He stated that the treaty was one of general principles and that it would be necessary to "go on and define more carefully what the definition of outer space is."⁴⁸ He also called attention to the fact that General Assembly Resolution 2222 (XXI) of December 19, 1966, which contained the treaty, included within its terms a request to COPUOS to begin "the study of questions relative to the definition of outer space and the utilization of outer space and celestial bodies. . . ."⁴⁹

5. NEGOTIATIONS BETWEEN 1967 AND 1976 RELATING TO DEFINITION/DELIMITATION

When the Legal Sub-Committee turned its attention to definition/delimitation in 1967 it received from France a submission bearing the title "Proposals Concerning Questions Relative to

the Definition of Outer Space and the Utilization of Outer Space and Celestial Bodies, Including the Implications of Space Communications."⁵⁰ At this session the Legal Sub-Committee drafted a questionnaire in which it invited the Scientific and Technical Sub-Committee to examine the issue and to draw up a list of relevant scientific criteria.

During its 1967 session the Legal Sub-Committee briefly considered the problem of defining outer space. The representative of Czechoslovakia stated that in effecting a definition it would be necessary to take into account the principle of national sovereignty.⁵¹ This perspective was supported by Romania.⁵² The Australian delegate expressed doubt as to the formation of a simple all-embracing definition. Nonetheless, it was considered desirable to obtain all relevant scientific and technological data for use.⁵³ The spokesman for Bulgaria saw the need to take into account cultural, economic, political, and social considerations as well as fundamental technical matters.⁵⁴ The Indian representative indicated that the definition should focus on the need to protect the use of outer space for peaceful purposes. Other considerations, such as practical, scientific, and theoretical ones, should also influence the definition.⁵⁵ The Japanese representative called attention to the prospect that outer space would probably be used for many purposes and that it might be desirable to have different definitions for the variety of purposes to be served.⁵⁶

National members of the Scientific and Technical Sub-Committee also briefly debated the subject in 1967. The French delegate, in submitting a working paper using the spatial-measurement approach to a definition, suggested an altitude of 50 miles or 80 km. This was supported on the grounds of simplicity. It was also noted that an alternative approach would be to define spacial activities rather than to fix a boundary line.⁵⁷ The issue of definition was considered to be one of urgency.⁵⁸ The spokesman for Czechoslovakia pointed out that there would undoubtedly be an increasing number of space activities over time and that this would make it difficult to pursue the second approach suggested by France.⁵⁹ This position was supported by the Swedish delegate who forecast the development of multipurpose space objects. Sweden favored the lowest possible altitude as the boundary between air space and outer space.⁶⁰ A Canadian working paper using a mathematical formula suggested as alternative linear measurements a height above the Earth of either 100 or 64 km.⁶¹ Italy suggested a height of 100 km.⁶² Iran favored the same figure.⁶³ Both the United States and Argentina saw no immediate need to arrive at a definition.⁶⁴

Arguments favoring a limiting definition were seen as: (1) It

would preclude the making of unjustifiably large claims in the name of national sovereignty to superjacent air space. (2) It would avoid reliance on existing air law treaties allowing for the contention that space activities violated national air space. (3) Conflicting claims as to the location of air space boundaries could produce international tension and controversy. (4) A definition would allow for international cooperation in the use of the space environment and would encourage technological innovations. Arguments against a definition at that time were: (1) The absence of a definition had not produced international discord, and this development did not appear to be likely. (2) An attempt to effect a definition might lead States to make exorbitant claims respecting boundaries. (3) An overly high boundary would impede some space activity. (4) If a high boundary were agreed to in a formal document, it would be difficult at a later date to revise the boundary downward, since States would not be willing to give up newly acquired areas of national sovereignty. (5) Science and technology may demonstrate over time that increasingly lower boundaries are feasible. This would be in the general interest. (6) The acceptance of an arbitrary line, which would be difficult to monitor, might provoke a number of technical but unverifiable complaints.⁶⁵

At its 1968 meeting the Legal Sub-Committee took note of the 1967 Report of the Scientific and Technical Sub-Committee.⁶⁶ The latter indicated that it had not found it possible at that time to "identify scientific or technical criteria which would permit a precise and lasting definition of outer space."⁶⁷ It was further noted that "a definition of outer space, on whatever basis, was likely to have important implications for the operational aspects of space research and exploration and that it would continue its consideration of the matter at future sessions."⁶⁸ In 1968 the representative of Italy called attention to the relationship between scientific and technical considerations and those of a juristic nature. In accepting the inability of the Scientific and Technical Sub-Committee to identify at that time scientific criteria, he, nonetheless, called for a practical approach to the subject. Since law was not an exact science it was his view that "a practical conventional definition could be reached, even if only on a temporary basis, in order to avoid confusion and conflict."⁶⁹ The representative of France offered a formal definition to the effect that "outer space shall be taken to mean space more than 80 kilometres above sea level."⁷⁰ Support for the French proposal was announced by Italy. Participating in the debate were the representatives of Austria, Australia, Belgium, Canada, Czechoslovakia, Poland, Sweden, the United States, and the Soviet Union. While there was some support for the view that the final definition should take conventional form, the

majority of the representatives indicated that it would be premature to arrive at a definition at that time.⁷¹ Comparatively little attention was given to the subject because of negotiations relating to the subjects of rescue and return and liability for damages.

At the 1969 meeting of the Legal Sub-Committee the representative of Italy again urged the need to take a practical approach to the subject of definition/delimitation in the absence of fixed scientific criteria. In his view the 1967 Principles Treaty could not be suitably implemented without determining the altitude at which national sovereignty ceased. In urging the formation of a treaty on the subject he suggested that the line "should be set between 120 and 150 km which was higher than the one proposed before. Such figures would have the advantage of leaving a greater margin for errors of navigation, which might be particularly frequent in a region in which no tangible delimitation existed."⁷² During the same session the United States again put forward the position announced in 1967 that the subject of delimitation was not an urgent one and that it would be "premature to adopt any final conclusions."⁷³ This viewpoint received the support of several States particularly on the ground that it was necessary, before taking a decision, to have the benefit of whatever technical conclusions the Scientific and Technical Sub-Committee might have arrived at. At this time several references had been made to the possibility of an 80 km boundary line. Austria offered the following observation: "Satellites might be placed under the authority of an international organization for activities carried out in the interests of all mankind (reconnaissance, establishment of meteorological stations, and so on) and would have to fly over the earth at a fairly low altitude, below the proposed 80-km limit; a legal system should therefore be provided whereby such objects could fly around the earth without being charged with a violation of sovereignty, even if they flew at an altitude below 80 km."⁷⁴ The Legal Sub-Committee also received proposals from Belgium and France that the Secretary-General should prepare a background paper "on the question of the definition and/or delimitation of outer space" taking into account all relevant data.⁷⁵ It was agreed that this assessment should be made.⁷⁵ At its 1969 meeting the Scientific and Technical Sub-Committee did not consider this subject.⁷⁶

Although the subject of definition/delimitation remained on the agenda of the Legal Sub-Committee during 1970 through 1976 not a great deal of attention was given to it. However, the sub-committee was made aware in 1970 of a host of critical issues that were relevant to the subject. This took the form of a detailed background paper prepared by the Secretariat entitled "The Question of the Definition and/or the Delimitation of

Outer Space."⁷⁷

The 1970 and 1977 background papers consisted of a general assessment of the issue, an examination of views expressed in UN organs, an analysis of both the spatial and the functional approach, and conclusions. The 1977 paper also contained a valuable specialized bibliography.

The background papers identified 10 suggestions relating to a spatial approach to the subject. These were entitled: (1) "Demarcation based upon the equation of the upper limit of national sovereignty with the concept of 'atmosphere'"; (2) "Demarcation based on the division of atmosphere into layers"; (3) "Demarcation based on the maximum altitude of aircraft flight (theory of navigable air space)"; (4) "Demarcation based on aerodynamic characteristics of flight instrumentalities (von Karman line)"; (5) "Demarcation according to the lowest perigee of an orbiting satellite"; (6) "Demarcation based upon the earth's gravitational effects"; (7) "Demarcation based on effective control"; (8) "Demarcation based upon the division of space into zones"; (9) "Demarcation based on a combination of various spatial approaches and other proposals"; (10) "The question in general of fixing a boundary between air space and outer space."⁷⁸ The functional approach, since its focus was considered to be unitary, did not lend itself to a variety of separate suggestions.⁷⁹

Brief attention was given to the subject by the Legal Subcommittee in 1971.⁸⁰ It was not discussed during 1970, 1972, and 1973, while in 1974 some delegates recorded their views in the general exchange. Such topics as liability for damages, the proposed Moon Treaty, and the Registration Convention pre-empted all of the available time. In 1975 the subcommittee gave attention to the subject with some representatives expressing the need for an early consideration of the matter.⁸¹ In order to assist in a further understanding of the problem the Secretariat published a study in 1976 prepared by a working group of the Committee on Space Research (COSPAR). In the report it was acknowledged that new data had somewhat modified former conclusions as to the lowest perigee of a space object.⁸²

At its 1976 meeting the Legal Sub-Committee allocated portions of two days to a consideration of the issue. The representative of France stated that "the need for a definition and delimitation of outer space had not seemed evident, for it had been felt that the meaning of the term was clear and that it could not give rise to differences of view."⁸³ However, he perceived forces producing changes of attitude. Among these was the increase in space activities which was necessitating the making of distinctions between air and space law.

Moreover, there had been diversifications in space activities necessitating a "precise" delimitation of air space and outer space. Technological advances were predicted. It was his further view that a considerable amount of time would be required to obtain a formal agreement, and that a set of approved prescriptions would be required so that unilateral decisions of questionable value would not be applied to the settlement of disputes. He dismissed the argument that it was impossible to define outer space because the concept was too vague. He proposed the following methodology: "Identify the common elements emerging from the views expressed and the proposals put forward, define a set of problems and establish provisional criteria for definitions, and then go into each concept more deeply as a means of tackling the substance of the problem."⁸⁴

At the same session the representative of Italy observed that one method for obtaining a definition would be to proceed empirically. Another would be to attempt a definition on an *a priori* basis. Although Italy had previously suggested a boundary at the 90 km height, it was submitted that technological innovations favored an empirical approach. Nonetheless, it was considered that national economic and political interests would have to be weighed and that there was at that time an urgent need for a thorough discussion of the matter.⁸⁵ The representative of Argentina reminded the subcommittee that the COSPAR working group had concluded that satellites placed in an elliptical orbit could retain a position between 90 and 100 km above the Earth's surface, and that this had resulted in a recommendation of a 100 km boundary. However Argentina considered it necessary to gain more scientific and technical data before arriving at a decision.⁸⁶ The representative of Belgium called attention to a working paper that had been submitted by his country to the Scientific and Technical Sub-Committee entitled "Natural Boundaries in Space." Belgium proposed a definition based on aeronomic considerations, namely, on the physical composition of the various atmospheric layers surrounding the Earth. This had resulted in a proposal for a boundary at 100 km even though the methodology was not the same as COSPAR's lowest perigee approach.⁸⁷

At the 1976 meeting of the Legal Sub-Committee the representative of Iran stated that the need for a definition had become relevant by reason of the terms of the 1967 Principles Treaty which rendered the concept of national sovereignty inapplicable to outer space. Further, since the COPUOS sponsored treaties had not included spatial definitions, there was a need to clarify the scope of the applications of these instruments. He also called attention, as others had done, to the fact that the COSPAR proposal has fixed an outer limit for outer space at the apogee or the orbit of the Moon, namely, 384,000 km. His

concern was more for a fixing of the lower than the higher limit.⁸⁸ At the same meeting the representative of Indonesia noted that the nature of the many different activities being carried on in outer space made the matter of definition an important one even though Article 7 of the 1967 Principles Treaty had implied the existence of a boundary between air and outer space. He rejected the need for an upper boundary for outer space saying there were but two zones. These consisted of the atmosphere and outer space. Attention was called to the following criteria: "first, the definition and delimitation of outer space must be based not on a particular altitude, but on the requirements of outer space technology; that could be achieved through closer co-operation with the Scientific and Technical Sub-Committee. Second, a fixed classification of space flights was essential for the future development of outer space activities. Third, the geographical scope of regulations governing air space and outer space should be clearly defined, especially since spacecraft must sometimes pass through the national air space of a third State before reaching outer space."⁸⁹ The Legal Sub-Committee in 1976 heard varying opinions on whether this subject should be treated as a priority agenda item at that time.⁹⁰

During the period of 1970 through 1976 the Scientific and Technical Sub-Committee gave almost no attention to the definition/delimitation issue. It was only in 1976 that the subcommittee took note of the view expressed by COPUOS that it could assist the Legal Sub-Committee in clarifying the definition/delimitation problem. This led the subcommittee to express a willingness to be of assistance, but indicated that it was in need of "more specific guidance regarding the purposes for which these criteria should be reviewed."⁹¹

From 1970 through the 1976 meeting of COPUOS priority was given to obtaining agreement of a Damages Convention, on remote sensing, on direct broadcasts, and on the Moon Treaty. The peaceful uses of the space environment during this period had been neither helped nor hindered by the absence of an agreement fixing the boundaries between air space and outer space. There was a disposition on the part of many States to allow practical scientific and technological capabilities to control the impulses urging an *a priori* formal definition. Until somewhat more definitive facts were at hand it was considered that there was no reason to assign the highest priority to the subject. Although the foregoing facts and influences had not induced COPUOS to assign a priority to an assessment of the issue of definition/delimitation, this did not mean that many of the same or similar interests and values had not been under consideration. These had taken the form of challenges to the free and equal use of and free access to the space environment.

6. CHALLENGES TO THE FREE AND EQUAL USE OF AND FREE ACCESS TO THE SPACE ENVIRONMENT

The formal guarantees of free and equal exploration, use, and exploitation of and free access to the space environment contained in Article 1 of the 1967 Principles Treaty have long been considered to be among the most important provisions of the Treaty. Although the conduct of space activities by the space-resource States, both before and following the entry into force of the Treaty, fully complied with the terms of the agreement, yet the Treaty did not provide a formal definition/delimitation of outer space. The absence of a defined boundary, measured, for example, from a given height above the ocean, has allowed for the assertion of preferential claims to spatial areas and the resources located within such areas.

Influencing the outlook of some States have been both the provisions and omissions of the Principles Treaty and also Article 33 of the 1973 International Telecommunication Convention. Paragraph 2 of that Article stated that "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."⁹² Paragraph 2 also provided that such resources "must be used efficiently and economically so that countries or groups of 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."⁹³

The foregoing provisions raise substantial questions relating to the meaning of that part of par. 2 of Article 33 reading "geostationary satellite orbit are limited natural resources." First, it must be determined if the expression "geostationary orbit" is to be preferred to "geostationary orbit." Second, there is a need to clarify the meaning of "limited," "natural," and "resources." These terms, particularly in the context of claims for exclusive national rights relating to the use of geostationary satellites, must take account of Articles 1 through 3 of the Principles Treaty.

a. Nomenclature: Geostationary Orbit vs. Geostationary Orbital Position

A choice needs to be made between the terms geostationary orbit and geostationary orbital position. Both expressions have been frequently employed. For the reasons given below it has been concluded that "geostationary orbital position" is both more

descriptive and precise. This term more specifically identifies the spatial area occupied by each space object as it comes under the influence of natural and man-made forces following its entry into orbit. As the result of the interaction of these combined forces the space object is in orbit. However, because the space object has a relationship with other space objects--both natural and man-made--it can be best identified by calling attention to its orbital situs.

Since each space object is situated in a specific position both in respect to other space objects and to the Earth, Sun, and Moon, at the beginning it was common to refer to the occupancy of slots, segments, and arcs in the orbit. The fact of orbiting has also been described as being "essentially a regime of satellite flight paths. . . ." ⁹⁴ Acceptance of the term "geostationary orbital position" can be supported by the fact that human influences can control natural forces affecting the orbital path of a space object. The result of such control has been to impose on a satellite in orbit a much more specific position than would be the case where no such human influences were at work.

Attention has increasingly been called to the use by such objects of a given position in the totality of the geostationary area. Such use, and the occupancy of given but not absolutely fixed positions, has been affected by both natural and man-made influences. Thus, it has been pointed out that natural forces include the attraction of the total mass of the Earth, the oblateness of the Earth, the ellipticity of the equator, the attraction of the Moon and the Sun, and solar radiation pressures. ⁹⁵ Human influences include the selection of the amount of energy to be employed in the launch of the space object, the design of the vehicle including the determination of its mass, and the pre-launch selection of the position to be occupied by the object, as well as other scientific and technological considerations. It is the combination of all of these forces which allows for the maintenance of a consistent, but not an absolutely fixed, position in outer space.

With the successful placing of space objects into geostationary orbit attention has been increasingly called to the use by such objects of given positions in the totality of the geostationary area. For example, in referring to the success of telecommunication systems, it has been noted that they are engaged in "the use of the geostationary orbit." ⁹⁶ Such specific uses of given areas has resulted in the emergence of the terminology "geostationary orbital positions." ⁹⁷ Acceptance of this expression can be drawn from the observation that "one cannot speak of the orbit without a satellite," ⁹⁸ or the view that an orbit is "something more than a mere route for satellites," and more

accurately described "as a region in space." ⁹⁹ When the term "orbital slot" was more commonly used than it now is, that expression focused on the "particular segment of space along the geostationary orbit into which a satellite may be placed without causing interference to other satellite systems." ¹⁰⁰

Each space object in the system in fact occupies a discrete spatial and unique geographical area. In doing so it is in a position in the flight path or orbit in the totality of the geostationary area. Thus, while "geostationary orbit" has achieved common use, it is submitted that what is intended by such language is the use by space objects of positions in the geostationary orbit, e. g., geostationary orbital positions. This approach received the approval of the ITU in 1973 when Article 10.3 of the Convention assigned to the International Frequency Registration Board the duty to effect "an orderly recording of the positions assigned by countries to geostationary satellites."

An assessment of the context in which the term "geostationary orbit" has been employed, with the accompanying emphasis on the utilization of space objects in a relational context, allows for the conclusion that what is more specifically meant is that the space object, while at a height of 22,300 miles, is in or occupies a geostationary orbital position. The descriptive and functionally correct term "geostationary orbital position" will be accepted. In doing so it should be pointed out that this expression has been increasingly used at the meetings of COPUOS and the ITU as well as having received both express and implicit support by commentators.

b. Nomenclature: The Meaning of
"Limited," "Natural," and
"Resources"

The meaning to be accorded to the foregoing terms contained in Article 33 of the ITU Convention will measurably affect the claims by States to access to and use of the geostationary orbital position. The term "limited" as applied to geostationary orbital positions must be interpreted in the light of possible physical limitations on the number of space objects that can function efficiently at one time when such objects are in geostationary orbital positions. When the joint factors of functional efficiency and the physical number of space objects which can be accommodated at one time are properly assessed, certain conclusions can be drawn. Affecting these considerations are the physical areas that are available to geostationary satellites, and of major importance, the dynamic science and technology which allows for effective station-keeping.

Past assessments of the number of geostationary satellites that might be functionally efficient at any one time have been impeded by a "string of pearls" analogy. This approach, which has been mechanistic and unrelated to space science and technology, had assumed that it was necessary to lock geostationary satellites into locations separated by two degrees at a distance above the Earth of exactly 22,300 miles. More recently it has been accepted that such an analogy, based on such computations, was seriously in error. However, the experts have not been able, particularly in the light of scientific and technological developments, to indicate precisely how many space objects can be in geostationary orbit at a given point in time.¹⁰¹

The capacity of the space environment to accommodate efficiently operating geostationary satellites is affected by the fact that such space objects are not all in the same circular orbit. Gehrig has pointed out that "the space occupied by geostationary satellites is an annulus-like three-dimensional corridor in which satellites travel at different speeds, altitudes and inclinations to the plane of the Earth's equator."¹⁰² He concluded that generally "the availability of physical space is not a matter of concern."¹⁰³ However, "orbit limitation is a problem of electromagnetic interference between satellites using the same frequency band of the radio spectrum."¹⁰⁴ This has been supported by the statement that "the saturation of the geostationary orbit is determined by the limited number of communication channels which are available."¹⁰⁵ However, assumed technical limitations on the number of space objects that can occupy geostationary orbital positions, and the linked use of the radio spectrum, can also be discounted with the emergence of antenna farms on board satellites as well as developments relating to laser and microwave beams.¹⁰⁶

Other commentators have also reached the conclusion that technological innovations would render a space object more versatile while occupying an orbital position. Thus, Ferrer has indicated that the geostationary orbit "is not a natural limited resource."¹⁰⁷ It has also been pointed out that neither the geostationary orbital position nor the radio spectrum are limited in the same way that non-renewable resources are restricted.¹⁰⁸ Because these resources are constantly renewing and are non-depletable, it has been noted, if they are to be effectively and economically used by a State or a communication's service, that "cooperation and coordination with other States and services" would be required.¹⁰⁹

In determining whether the geostationary orbital position is limited it is necessary to be aware of the perfection of station-keeping procedures by launching States. This technique

allows for the presence of a very large number of space objects in geostationary orbital positions at any given time. Consequently the continuing advances of modern science and technology, coupled with current management practices, has provided some evidence of the fact that such orbital positions are not nearly so limited as some have imagined. Perhaps it is more accurate to say that orbital positions, from the point of view of effective use, are more finite than limited.

The issue has also been raised whether the geostationary orbital position is a "natural" resource. In the absence of a formal definition/delimitation of outer space and following the rejection by equatorial States of the view that customary international law has fixed a low boundary between air space and outer space, these particular States have considered that they possess national sovereignty over "natural" resources consisting of geostationary orbital positions within the geostationary orbit. The space-resource States, on the other hand, have taken pains to point out that scientific facts do not support the contention that such orbital positions are totally "natural" resources, since the presence of satellites in such positions depends on more than simply natural causes. While it is true that the area in which a space object is engaged in transit is a part of the natural environment, yet it is not necessary to treat the orbital position as a natural resource. This is because the use of the position is not exclusively related to the gravity of the Earth and other celestial bodies affected by the forces of gravity.

Equatorial States in December, 1976, in support of their claims of sovereignty to areas occupied by the geostationary space objects of non-equatorial States, asserted that the existence of the orbit depended exclusively on its relation to the gravitational phenomena generated by the Earth.¹¹⁰ This assessment of the factual situation came under attack by the U. S. representative to the Legal Sub-Committee in 1977. At that time it was pointed out that the assertion that a geostationary orbital position possessed a special physical relationship to an underlying State was without foundation in scientific fact. The U. S. representative stated: "The characteristics of the orbit are dependent to a substantial degree not only on the gravitational field of the Earth but also on the velocity, altitude and azimuth of insertion of the satellite. The gravitational field around the Earth is derived from its total mass and, except for small effects, is independent of the detailed characteristics of the Earth's surface. If gravity were the exclusive force acting on a satellite in geostationary orbit, the flight path of that satellite would be a vertical drop to the surface of the Earth. We know, of course, that this is not what happens."¹¹¹ Because the equatorial States had placed

heavy reliance on the alleged physical relationship between the space object and the adjacent State the United States observed that in the geostationary orbit, as in others, "the satellite's path through space is not determined by any single factor but rather is affected by a combination of factors, including at least the energy imparted by the launch vehicle, the mass of the spacecraft, the altitude at which it moves above the Earth, the forces of gravity of the Earth, the Moon and the Sun, and the radiation pressure of the Sun. Consequently, the geosynchronous orbit is essentially a regime of satellite flight paths, not a physical natural resource."¹² Thus, the United States asserted that there was neither a valid scientific nor legal basis for a unilateral claim of exclusive national sovereignty over the geostationary orbit. The legal premise was that the codification of the practice under the 1967

Principles Treaty had resulted in principles applicable to the geostationary orbit. All of these reasons precluded the making of "any claims of national sovereignty over that orbital position."¹³ Reference was also made to the fact that the introduction of the term "use" into Article 1 of the Principles Treaty had been effected to insure that space activities would consist of more than scientific exploration. Thus, the contention of the equatorial States that the 1967 Treaty contained a gap or omission relating to commercial satellite communications activities was considered to conflict not only with the terms of the treaty but also the intent of the drafters. Such a gap was held to be both non-existent as well as an undesirable prospect for the future.¹⁴

In 1978 the foregoing position was affirmed at the highest level in the United States. In a White House Press Release it was stated that "The United States rejects any claims to sovereignty over outer space or over celestial bodies, or any portion thereof, and rejects any limitations on the fundamental right to acquire data from space."¹⁵ The release also stated: "The United States holds that the space systems of any nation are national property and have the right of passage through and operations in space without interference. Purposeful interference with space systems shall be viewed as an infringement upon sovereign rights."¹⁶

Interestingly, prior to the issuance by the equatorial States of the Bogota Declaration on December 3, 1976, the United States had advised Colombia that its proposed action would violate existing international law. Thus, on October 21, 1976, the U. S. Ambassador to Colombia had notified the Colombian Ministry of Foreign Relations that exclusive claim to a geostationary orbital position founded merely on a physical relationship between that position and the Earth was not viable. It was also noted that the 1967 Treaty contained the expression

"use," and this had been designed to allow for peaceful commercial uses of the space environment. It was also clearly stated that the decisions of the ITU had established no precedents respecting monopolistic uses, since the ITU's technical radio regulations "in no way endorse or furnish any basis for claims of national sovereignty over those locations or orbits."¹⁷

While it is true that the area in which the space object is engaged in transit when in a geostationary orbital position is a part of the natural environment, yet it is not necessary to treat the orbital position as a natural resource. As noted, this is because the use of the position is not exclusively related to the gravity of the Earth. Further, the position is not dependent on the political boundaries marked out on the surface of the Earth.

There has been a general predisposition to accept the view that the orbital position is a "resource" despite the differences respecting the issue whether it is an international or a national resource. This conclusion has been attributed to the characterization contained in Article 33 of the 1973 ITU Convention.¹⁸ Thus, upon analysis the language of Article 33 can be deemed to control the relations of the members of the ITU. However, in the larger sense there are serious difficulties in accepting the proposition that the geostationary orbital position is either a substantially limited or a totally natural resource.

As a result of the opposing positions of the equatorial States and the space-resource States considerable attention has been given since 1976 to policy preferences. The space-resource States have vigorously identified their preference for free and equal exploration, use and exploitation of and free access to outer space. Some of the non-resource States have expressed a preference for allocations to them by the ITU of orbital positions. The equatorial States from 1975 onward, and with increasing vigor after December 1976, asserted monopolistic and sovereign claims to the geostationary orbit and the orbital positions located in this spatial area.

c. Challenges at the ITU Relating to the Use of Geostationary Orbital Positions

The ITU, rather than COPUOS, was the first international forum to turn its detailed attention to the use of geostationary orbital positions. The ITU, because of its concern for the efficient and economical use of both radio frequencies and the geostationary satellite orbit and equitable access thereto by

countries,¹¹⁹ has given substantial attention to the use of the geostationary orbital position.

In keeping with its function of providing a coordinating process for the allocation of radio frequencies, including those used in connection with space objects, the ITU convened a World Administrative Radio Conference, Space Telecommunications (WARC ST) in 1971.¹²⁰ Because of the practical relationship between space telecommunications and the geostationary orbital position the ITU was authorized by its members to undertake to deal with the use of the latter.

Two options were available to the 1971 WARC ST respecting use of the geostationary orbit. First, the ITU could have been empowered to allocate an orbit upon application, even though the applicant State might not have the capacity to use it. Secondly, and in the view of States which considered the first option to be wasteful, there was the possibility that a State might make use of the orbital position, subject to the duty to relocate the space object as required. The second option was accepted as a voluntary procedure, pursuant to par. 639 AF of Spa-2 of the 1971 Regulations.¹²¹ Thus, pursuant to par. (b), if difficulties were to arise because of over use of the orbit, consultation could take place to "explore all possible means of meeting the requirements of the requesting administration, for example, by relocating one or more of its own geostationary space stations involved, or by changing the emissions, frequency usage (including changes in frequency bands) or other technical or operational characteristics."¹²² Pursuant to par. (c), if the foregoing procedures failed to resolve difficulties among potential users, the concerned States were to "together make every possible effort to resolve these difficulties by means of mutually acceptable adjustments, for example, to geostationary space station locations and to other characteristics of the systems involved in order to provide for the normal operation of both the planned and existing systems."¹²³

The 1971 WARC ST in Resolution No. Spa 2-1,¹²⁴ however, did accept the view that the registration with the IFRB of a national assignment of a radio frequency would not establish any permanent priority for the registrant over a particular frequency. The Resolution, entitled "Relating to the Use by all Countries, with Equal Rights, of Frequency Bands for Space Radiocommunication Services," linked the subjects of radio frequencies with satellite orbital slots.

In the preamble provisions of the Resolution it was noted that "all countries have equal rights in the use of both the radio frequencies allocated to various space radiocommunication

services and the geostationary satellite orbit for these services." The Preamble also referred to the view that "the use of the allocated frequency bands and fixed positions in the geostationary satellite orbit by individual countries or groups of countries can start at various dates depending on requirements and readiness of technical facilities of countries."

The States then resolved:

1. that the registration with the ITU of frequency assignments for space radiocommunication services and their use should not provide any permanent priority for any individual country or groups of countries and should not create an obstacle to the establishment of space systems by other countries;
2. that, accordingly, a country or group of countries having registered with the ITU frequencies for their space radiocommunication services should take all practicable measures to realize the possibility of the use of new space systems by other countries or groups of countries so desiring. . . .¹²⁵

This Resolution was designed to promote the "coordinated use of the special frequencies available for satellite systems."¹²⁶ The foregoing Resolution has been construed to mean that registration of national assignments with the IFRB does not accord to the registrant a permanent priority concerning the registered frequencies. Thus, Rankin has concluded that "registration of a space services frequency assignment with the ITU does not provide the individual registrant with any permanent priority claim over that particular frequency, and that it is not to be viewed as a barrier to the establishment of space systems by other countries."¹²⁷

Support for this viewpoint is also found in Recommendations of the 1971 Conference. Thus, Recommendation No. Spa 2-1 entitled "Relating to the Examination by World Administrative Radio Conferences of the Situation with Regard to Occupation of the Frequency Spectrum in Space Radiocommunications"¹²⁸ accepts the proposition that nation-states should be enabled to establish the telecommunication links which they deem necessary. This view is based on the conclusion that "technology is steadily and rapidly evolving and that the best possible use should be made of resources in space radiocommunications."¹²⁹ The rule of priority rights to frequencies is conditioned by the judgment that such frequencies must be used in the "most efficient manner possible consistent with developing technology and that such assignments are relinquished when no longer in use."¹³⁰ The focus of this Recommendation was clearly on the efficient

and economic use of radio frequencies. Thus, the ITU Administrative Council was invited to seek consideration by the next World Administrative Radio Conference of "*all aspects of the use of the frequency band(s) concerned including, inter alia, the relevant frequency assignments recorded in the Master International Frequency Register and to find a solution to the problem.*"¹³¹

In keeping with the terms of Article 33 of the ITU Convention an attempt was made at the ITU Conference in 1973 to extend the powers of the ITU beyond the ministerial function of allocating the radio frequency spectrum so as also to encompass allocations of the geostationary orbit. If this move had been successful it would have empowered the ITU to allocate the use of such orbits to regions in the same fashion that the ITU has been allowed to allocate the use of radio services to regions. The regional allocation of radio services includes fixed, mobile, broadcast, aeronautical, maritime, and space-based frequencies. There are three such regions, and within each region the affected States make the final assignments. It is the function of the States which are members of the ITU, to make the actual assignments of frequencies. After a State has made such assignments it notifies the International Frequency Registration Board (IFRB) of the ITU of the action that has been taken. It then becomes incumbent on the IFRB to record or register the national assignment.¹³² A 1973 proposal of Israel would have extended the powers of the ITU to allocate geostationary orbital positions and also to register the positions occupied by States at the geostationary level.

The acceptance of the Israeli proposal, relating to the allocation by the ITU to States of geostationary orbital positions, would have modified the traditional practices of States, pursuant to the 1967 Principles Treaty, of assigning for use on a unilateral basis the orbital positions best suited to their needs and on the basis of the technical facilities at their disposal. Resource States, including the United States, opposed this portion of the Israeli proposal, and ultimately it was tabled. However, that portion of the proposal relating to the registration or recording of orbital positions was adopted. In 1973 Article 10, par. 3, of the ITU Convention dealing with the functions of the IFRB was amended so as to allow the IFRB to effect "an orderly recording of the positions assigned by countries to geostationary satellites."¹³³ Further, the IFRB was authorized to furnish advice to members "with a view to the equitable, effective, and economical use of the geostationary satellite orbit," and it was instructed to perform any additional duties "concerned with the . . . utilization of the geostationary orbit. . . ." ¹³⁴ The result of the 1973 deliberations was that the ITU was not empowered to make allocations of

orbital positions, but it was allowed to engage in the function of registering such positions as States acting on their own initiative assigned to their national operating entities.

The 1973 Conference, by emphasizing in Article 33 of the Convention the freedom of access by States to the space environment, gave its support to Articles 1 through 3 of the 1967 Principles Treaty. The 1973 Conference by according new powers to the IFRB did not impose constraints respecting the free and equal use by space objects of the geostationary orbital position. The ITU was not empowered to allocate, regulate, or control the use of orbital positions.

The ITU hosted the World Administrative Radio Conference, Broadcast Satellite (WARC BS) in 1977. The participating States concluded that a planning principle should be established in Region 2, consisting of the Americas. This principle indicated that States in that region "have the right of access to the geostationary orbit spectrum in order to fulfill their requirements."¹³⁵ Since Article 33 of the ITU Convention establishes the right to "equitable access," the 1977 decision cannot be construed to create preferential rights for States. If anything, the quoted language is supportive of the free and equal use and free access provisions of the 1967 Principles Treaty. This decision was consistent with the ITU's position that the geostationary satellite orbit, like the radio-frequency spectrum, was a natural resource "to be exploited for the benefit of all and are not subject to appropriation."¹³⁶

In 1977 the ITU emphasized that the general principles governing its activities included "the effective use of the orbit/spectrum and the equal rights of all countries." It should be noted, however, that at the 1977 WARC BS Conference the ITU made plans for submissions to the 1979 World Administrative Radio Conference of a proposal, which, if accepted, would allow the ITU to allocate geostationary orbital positions, as well as radio frequencies to Region 1 and 3 States for channels in the 12 GHz band. The 1977 Conference also prepared a "plan" for the consideration of a Region 2 Conference prior to 1982 in which the Conference would be asked to allocate radio spectrums in the 11.7-12.2 GHz band and orbital positions at geostationary levels that would not be in conflict with others previously made.

The ongoing challenges on the part of certain equatorial States respecting geostationary orbital positions were reflected in the Final Protocol of the 1977 Conference. Six of the original signatories to the 1976 Bogota Declaration were joined by Gabon. Not joining in the 1977 Protocol were Brazil and Indonesia. These seven countries stated that they were not

bound by Conference decisions regarding the location of geostationary satellites in segments of the orbit over which they claimed sovereign rights. They claimed that the use of such orbital positions would require the prior consent of the subject State and would be subject to their municipal laws. They also reserved the right to take steps lawful under their respective constitutions to preserve and secure the observance of their rights.¹³⁷

The ITU was again asked to deal with the right to have access to geostationary orbital positions at the 1979 WARC. In Resolution BP, entitled "Relating to the Use of the Geostationary Satellite Orbit and to the Planning of Space Services Utilizing It," the decision was taken to convene another WARC not later than 1984. The agenda of that conference was to include means to obtain "equitable access to the geostationary-satellite orbit and the frequency bands allocated to space services."¹³⁸

Despite the ITU's continuing interest in the allocation of geostationary orbital positions, which is based on the fact that critically important radio and television transmissions do, and microwave transmissions of solar energy in the future might, emanate from space objects at geostationary heights, a number of reasons have been advanced why the ITU should not engage in such allocative activity. First, the first three Articles of the 1967 Principles Treaty would have to be reconsidered with a view toward their amendment, if an organization were to be granted authority to allocate orbital positions. Further, such an instrumentality would have to be equipped not only with a very high degree of technical competence, but it also would have to possess a considerable amount of political authority, particularly if the issue of compliance with allocations were ever raised.

Second, there is the possibility identified at the 1971 WARC ST Conference by the United States that an orbital allocation "would inhibit the development of the geostationary orbit as a natural resource."¹³⁹

Third, as was urged by the United States in 1971, an allocation plan would possibly have a "detrimental effect on the conservation of the geostationary orbit."¹⁴⁰ It was feared that a premature and even excessive amount of regulation could thwart innovative uses of space objects and might even impose constraints on their development.

Fourth, as suggested above, an institutional allocation of a permanent orbital position would violate the free and equal use and free access provisions of the 1967 Principles Treaty and also the prohibition against a national appropriation by claim

of sovereignty or by any other means. An interference with the free and equal use and free access provisions of Articles of the Principles Treaty by the ITU is prohibited by the expression "by any other means" contained in the same Article.

Finally, the destruction of the free and equal use regime by the granting or establishment of private property or public sovereignty preferences would render unnecessary any attempt at achieving a definition/delimitation of outer space. The effort to secure a boundary is based on the proposition that the spatial area above the proposed boundary would be subject to the *res communis* principle. The establishment by an international organization of exclusive priorities or preferences for space objects engaged in geostationary orbits would not only violate the free and equal use concept at that level. It would also allow for the allocation of comparable preferences or priorities at lower levels. If this were to be the case, exclusive operating areas would come into being. Although fixed by the ITU, such allocations would have the same quality of exclusivity as in the case of a national assertion of sovereignty in all areas superjacent to the claiming State. A boundary between sovereign air space and outer space would not be required if a State were to be accorded in outer space those exclusive rights which appertain to sovereignty.

d. Challenges at the UN Relating to the Use of Geostationary Orbital Positions

(1) Occasional challenges between 1969 and 1976. With the development of telecommunication satellite systems in the 1960s, following the successful ascent of Syncom 2 to a geostationary orbital position in July, 1963, concerns developed respecting the duration of such space objects in geostationary orbital positions. Speculation developed whether the use of such spatial areas might give rise to claims by launching States that would run contrary to the prohibitions against the acquisition of sovereignty contained in Article 2 of the 1967 Principles Treaty.

This concern surfaced at a meeting of the UN Working Group on DBS in June, 1969. The French representative in calling attention to the rule of non-appropriation stated that "the very use of geostationary satellites can be regarded as an 'appropriation' of the equatorial orbit which is a privileged portion of space."¹⁴¹ The French view, that such a thing as *de facto* occupation might be permissible, led to an expression of the views of the United States in which a clear distinction was made between the use of an orbital position and the

appropriation of it. It was the U. S. position that "the use of space or a celestial body for activities that are peaceful in character and compatible with the provisions of the Outer Space Treaty is, by definition, entirely legitimate. Using a favorable orbit for a legitimate activity cannot reasonably be classified as a prohibited national appropriation in the sense of Article 2."¹⁴² Subsequently the French conclusion was seen as inadmissible under both treaty and customary law since "the prohibition of the Space Treaty refers to appropriation by means of use."¹⁴³ However, the U. S. position was criticized by a Soviet writer on the ground that, even though space activities were pursued with a "peaceful aim," the use of geostationary orbits might still be subject to other limitations.¹⁴⁴

The successes being achieved by way of satellite communications led to a brief consideration of geostationary orbital positions by COPUOS in 1974. In its report it took note of changes made in 1971 by the WARC ST radio regulations, which became operative in 1973. COPUOS acknowledged that the new regulations included provisions "to ensure that the positions of satellites launched into geostationary orbit can be adjusted, if necessary, to accommodate future uses of the orbit by other satellites."¹⁴⁵ In 1975 the UN Secretariat prepared a study entitled "Reports Pertaining to the Use of Satellites of Positions in the Geostationary Orbit."¹⁴⁶ It contained statements supplied by ICAO, WMO, and the ITU. The latter called attention to Resolution Spa 2-1 of the 1971 WARC ST and particularly to "studies and standardization relating to the uses of the geostationary satellite orbit."¹⁴⁷

In 1975 Colombia, an equatorial State, aware of the presence of non-Colombian telecommunications satellites in geostationary orbital positions above equatorial States, initiated a campaign seeking to deny to such space objects the right to make use of such positions. In an address to the members of the First Committee of the General Assembly on October 13, 1975, the Colombian representative, relying on the provisions of Article 33 of the 1973 ITU Convention, asserted that the geostationary orbital "arc" was a natural resource. This was followed by the contention that the natural resource appertained to the sub-jacent State. In the case of Colombia it was a part of the third dimension of the sovereignty of that State.¹⁴⁸ Proceeding on the premise of national sovereignty over the geostationary orbital position, the statement was made that it was within the power of Colombia to implement a moratorium on the allocation of orbital positions pending the conclusion of international agreements regulating the subject. The Colombian representative also stated that no mention of a geostationary orbit had been "included in the conception of outer space alluded to in . . ." the 1967 Principles Treaty.¹⁴⁹ This expression of

dissatisfaction with the terms of that agreement was the first formal challenge to the free and equal exploration, use and exploitation and free access provisions of the basic space law treaty. Colombia advanced the same theme at the First Committee of the General Assembly again in 1976. Support for the Colombian proposals was expressed by both Ecuador and by Panama.¹⁵⁰

(2) Sovereign claims to the orbit resource: The Bogota Declaration of December 3, 1976. As described above in connection with the definition/delimitation debate, one way to invalidate the free and equal exploration, use, and exploitation and free access regime of the 1967 Principles Treaty would be to establish private property or public sovereignty preferences in those areas immediately superjacent to national territory and above sovereign air space. A second means to eliminate the problem of definition/delimitation would be to allow for the establishment of sovereign and preferential rights over the natural resources of outer space, including acceptance of the contention that the geostationary orbital position is not only a natural resource but also a limited natural resource.¹⁵¹

Both approaches were formalized on December 3, 1976, by the principal equatorial States in their Bogota Declaration. In this document they asserted sovereignty at heights where geostationary space objects are engaged in orbit as well as over geostationary orbital positions. In this manner they announced positions in conflict both with the terms of the Principles Treaty and with the proposals before the ITU relating to the use of orbital positions. In their declaration they identified "their" outer space as consisting of areas in which space objects are presently in free orbital transit. Since satellites orbit freely above the 100 km height, the claim of the Bogota States may be interpreted as a rejection of efforts to achieve a low boundary above which at any point space objects have traditionally been in orbit. Such a conclusion would be consistent with their claim to the geostationary orbital position as being within an area in which they possess sovereign rights.

Eight equatorial States, namely, Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda, and Zaïre signed in Bogota a document, now known as the Bogota Declaration, containing their conclusions relating to the use of geostationary orbits by space objects. Of these States Brazil, Ecuador, and Uganda were bound by the 1967 Principles Treaty. Indonesia and Zaïre were signatories but were not bound by the agreement. Congo, Colombia, and Kenya had not signed the treaty and were not bound by it.

The position of Colombia has been that there was no intention

to ratify the agreement "so long as its provisions had not been expanded in such a way as to permit a definition and delimitation of outer space that recognized the geostationary orbit as a limited natural resource under the sovereignty of equatorial states insofar as those segments which correspond to their national territories were concerned."¹⁵² Further, in the absence of a clear and precise definition of "outer space," States in the exercise of their "full and sole sovereignty as a subject of international law, could enact laws defining their national space and therein exercise the rights and assume the obligations established under national law."¹⁵³

By 1982 seven of the eight equatorial States were parties to the 1973 ITU Convention, namely, Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya and Zaïre, while Uganda was not. There are four additional equatorial States in the UN. These are Gabon, Nauru, Peru, and Somalia. None are parties to the 1967 Principles Treaty, but all four are bound by the 1973 ITU Convention.

The common interest of the Bogota States stemmed from the fact that the space resource States, because of the ellipticity of the equator, have found that geostationary space objects have an ideal orbital position at a height of approximately 22,300 miles above the equator.¹⁵⁴ With the use by such States of the geostationary orbital position, and with plans on their part for an augmented use of such positions, the equatorial States have wondered whether such use might constitute a *de facto* "appropriation" of such orbital positions. In convening in Bogota these States were unquestionably influenced by the fact that space objects of the ERTS and LANDSAT type were capable of sensing and identifying the presence of natural resources. Moreover, there had been a strong tradition on the part of the new and less-developed countries at the UN to secure the adoption of resolutions dealing with permanent national sovereignty over natural resources.¹⁵⁵

The product of the Bogota meeting has been described both as a "pretension" and as a "counterpoise" by the equatorial States against a *de facto* appropriation by states with advanced technology. . . . [They] asserted *de jure* 'territorial' claims to sectors of the geostationary orbit notwithstanding the prohibitions against national appropriation set forth in the space treaties."¹⁵⁶

The Bogota Declaration identified five areas of concern. First, the eight States described the geostationary orbit as a natural resource. They said:

Equatorial countries declare 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 outer space. Therefore, the segments of geostationary synchronous orbit are part of the territory over which Equatorial states exercise their national sovereignty.¹⁵⁷

Consequently, they decided "to proclaim and defend on behalf of their peoples the existence of their sovereignty over this natural resource."¹⁵⁸

Second, the Declaration refers to "Sovereignty of Equatorial States over the Corresponding Segments of the Geostationary Orbit." Here the authors mention the concept of permanent sovereignty over natural resources, and in particular, General Assembly Resolution 2692 (XXV). Reference is also made to of Economic Rights and Duties of States (XXIX) which is "The Charter provisions lead the equatorial states to affirm that the synchronous geostationary orbit, being a natural resource, is under the sovereignty of the equatorial states."¹⁵⁹

Third, they refer to the "Legal Status of the Geostationary Orbit." In this section the Bogota States indicate that their move will benefit their national interests and those of the universal community instead of the most developed countries. They make no claim to segments of the orbit situated above the "open sea." This area is considered to be beyond the "national jurisdiction of states" and is to be considered as appertaining to the Common Heritage of Mankind.¹⁶⁰ During the discussions of the Bogota Declaration at the 1978 meetings of the Scientific and Technical Sub-committee of COPUOS, attention had been drawn to the Common Heritage of Mankind concept. Thus, Ecuador has noted that segments of the geostationary orbit "corresponding to the high seas beyond the limits of national jurisdiction would be considered the common heritage of mankind, and there community regulated the use and exploitation of the international

In the following language the Bogota States agreed to the transiting of space objects when outside the geostationary orbital positions of the signatories. Thus, "The equatorial states do not object to the free orbital transit of satellites approved and authorized by the International Telecommunication Convention, when these satellites pass through their outer space in their gravitational flight outside their geostationary orbit."¹⁶² This statement appears to be consistent with their

view that the geostationary orbit is a natural resource of the State, since in the relevant passage the geostationary orbit was identified as not being a part of outer space. The equatorial States contemplate granting permission to the space resource States to place permanently in the geostationary orbital area of the granting States a foreign space object. Such permission is to be in the form of a "previous and expressed authorization on the part of the concerned states, and the operation of the device should conform with the national law of that territorial country over which it is placed."¹⁶³ By such consent the authorizing State is allowing a foreign State to operate within the territory of the former. The Bogota States also indicated that the presence of foreign space objects currently in their sovereign orbital areas is not condoned nor will these States allow such presence to constitute the basis for a claim of preemptive rights.

Fourth, they assess their relationship to the Principles Treaty. That Treaty is not to be considered a "final answer" to the exploration and use of outer space.¹⁶⁴ It was entered into at a time when the LDCs "could not count on adequate scientific advice and were thus not able to observe and evaluate the omissions, contradictions and consequences of the proposals which were prepared with great ability by the industrialized powers for their own benefit."¹⁶⁵ Here the Bogota States refer to the absence of a final definition of outer space. A consequence of the lack of such a definition, according to the Declaration, has been to allow the resource States to engage in a national appropriation. Since the Principles Treaty is regarded as incomplete, this provides a basis for the equatorial States to claim that the geostationary orbit was intended to be excluded from its coverage. Further, the absence of a definition of outer space in the Treaty allows the equatorial States to conclude that the prohibition against appropriation has no application to the geostationary orbital area. This being the case the equatorial States that had ratified the Treaty are not inhibited from claiming the areas occupied by orbiting satellites as parts of their sovereign areas.

Fifth, the equatorial States refer to diplomatic and political action. They acknowledge that the 1967 Treaty does not specifically exclude the geostationary orbital position from the prohibitions against appropriation contained in Article 2. They seek to persuade countries that have not ratified the 1967 Treaty to refrain from "undertaking any procedure that allows the enforcement of provisions whose juridical omission has already been denounced."¹⁶⁶ Approval was given to the comparable positions previously taken by Colombia and Ecuador at the United Nations, and they promised to work together to obtain acceptance of their position that "the geostationary orbit...

[is] an integral part of their sovereign territory. . . ."¹⁶⁷

7. THE COPUOS DEBATES FROM 1977 TO THE PRESENT

a. Views Expressed in 1977

Such claims have not gone unnoticed, and they have been vigorously rejected by the space-resource States and by signatories to the 1967 Principles Treaty. Since the Bogota Declaration focused on political-legal considerations, it was natural that the UN was to become the principal forum for debate on this subject.

Following the rejection by the United States of the contention of the equatorial States that they were entitled to exercise national sovereignty in areas in which geostationary satellites were positioned, the Soviet Union submitted a working paper to the Legal Sub-Committee in April of 1977. This document, entitled "Considerations on the Legal Status of Geostationary Orbit," constituted a formal denunciation of the 1976 Bogota Declaration.¹⁶⁸ Relevant provisions follow:

1. Geostationary orbit is inseparable from outer space and all relevant provisions [of the 1967 Principles Treaty] are applicable to it. Under the Treaty, geostationary orbit, like outer space as a whole, is not subject to national appropriation by any means whatsoever.
2. The placing of satellites in geostationary orbit by States creates no right of ownership over the respective orbital positions of the satellites or over segments of the orbit.
3. All States enjoy an equal right to the utilization of geostationary orbit. The utilization of geostationary orbit by States must not be detrimental to the interests of other States.

Paragraph 4 of the working paper emphasized the need for States to cooperate in placing communications satellites in geostationary orbit, took into account the recommendations and decisions of the ITU in this area, and linked the effective use of radio frequencies with space objects.

During the 1977 session of the Legal Sub-Committee States which considered the Bogota claims to be in violation of the 1967 Principles Treaty, as well as an attack on the effort to obtain

agreement on a boundary between air space and outer space, began to voice their objections. A dialogue developed when the Bogota States defended their position. Support for the positions put forward by the United States and by the Soviet Union came from the United Kingdom, Canada, Japan, Australia, Poland, and the Federal Republic of Germany. The United Kingdom representative indicated initial uncertainty over what the Declaration had intended to do. He observed that it could be interpreted to mean that the claim was for the geostationary orbital position only as a kind of slice taken out of all of outer space. Or, it could be construed to be a claim for all of the area above the claiming State to include, at a maximum height, the geostationary orbital position. It was the British view that the first interpretation would violate the Principles Treaty since the Treaty excluded the possibility of sovereignty in outer space. Further, it was pointed out that the Treaty made no reference to different regimes for different parts of outer space. Thus, if the Bogota claim were interpreted from the second perspective, an acceptance of such an outlook would result in an undermining of the Treaty and in particular Article 1.¹⁶⁵

Canada in its support for the U. S. and Soviet positions referred to the 1967 Principles Treaty and to the terms of the 1973 ITU Convention, as well as the 1977 WARC negotiations. The conclusion was drawn that "there was no support in international law for the assertion of sovereign rights in outer space by any State."¹⁷⁰ The assessment that a space object in geostationary orbit had no special scientific relationship with the underlying areas of the Earth and specific States was also accepted. Japan added that the position of the equatorial States was not based on existing international law "regardless of whether they were parties" to the Principles Treaty.¹⁷¹

The representative of Australia indicated that the geostationary geosynchronous orbit was not a physical fact the existence of which depended exclusively on its relationship to gravitational phenomena generated by the Earth, as had been claimed by the equatorial States. He noted that while the orbit could be considered to be a natural resource that it was not a resource over which any State possessed national sovereignty. It was, in fact, a resource whose use was governed by the 1967 Principles Treaty.¹⁷² Poland upheld the scientific and legal interpretations of the States which had rejected the claims set out in the Bogota Declaration.¹⁷³ The representative of the Federal Republic of Germany considered that the 1967 Treaty applied to the use of the geostationary orbital position. Hence, it was not able to accept the principle of exclusive national sovereignty over such space objects.¹⁷⁴ Argentina concluded that the position advanced by the United States

deserved respect. However, it could be undermined if the supportive arguments, as had been suggested by the United States, "were based on the concept of the geostationary orbit as a regime for satellite flight paths rather than a natural resource."¹⁷⁵ Argentina's interest in treating the geostationary orbital position as a natural resource of the space environment was in some measure based on the view that space objects designed to capture and transmit solar energy to Earth would be located at the geostationary height. It was considered that any involvement by COPUOS in the subject of solar energy would automatically carry with it a concern for an international legal regime relating to the geostationary orbit.¹⁷⁶ States not holding membership in COPUOS have also expressed opposition to the claims of the Bogota States. For example, Papua New Guinea has indicated that it does not consider the use of the geostationary orbital position to be subject to the sovereignty of any country and has urged that this resource be used for the benefit of all mankind.¹⁷⁷

Support for the position of the Bogota States was presented by Kenya, Colombia, and Brazil. On April 5, 1977 Kenya asserted that the geostationary orbit was a physical fact because its existence "depended exclusively on its relation to gravitational phenomena of the Earth, and that it must not therefore be considered part of outer space."¹⁷⁸ Kenya stated that existing international agreements dealing with the space environment had been based on the assumption that the delimitation of outer space was already a known fact. In disputing this conclusion it was stated that renewed efforts should be made to obtain a formal agreement on a boundary. In support of the Bogota claims it was urged that the equatorial States occupied a special relationship regarding the geostationary orbital position, since it formed a part of their natural resources. On this premise it was asserted that before foreign space objects might be stationed at geostationary heights above the equatorial States it would be necessary to obtain their consent. Kenya's status as a developing country was also mentioned. It was contended that the matter of definition/delimitation should be thoroughly reviewed, since the assumption that a customary international law rule already existed fixing the boundary would produce disadvantage to Kenya when the time came for it "to participate fully in the exploration and use of outer space."¹⁷⁹

Kenya also called attention to the position put forward at the 1977 WARC ST Conference. According to Kenya in 1977 the equatorial States "had indicated that they were not bound by the decisions of the Conference regarding the location of geostationary satellites in the segments of the orbit over which they exercised sovereign rights, that the positioning of such

satellites required their prior authorization, and that they would reserve the right to take whatever steps they might deem fit to protect their rights."¹⁸⁰

Kenya called for a definition of outer space, and urged that priority attention should be given to the subject. Such a definition, it was suggested, would have a bearing on respect for national sovereignty over natural resources.

On March 31, 1977 Colombia urged, since outer space had not been defined, it was proper to assert that the geostationary orbit was within the sovereign area of a State. Hence, such a claim was not violative of the *res communis* principles of the Principles Treaty. Consequently, "the use, enjoyment, and occupation of that segment was subject to the prior authorization of the State concerned, and any attempt by third parties to place stationary satellites in it was therefore rejected. . . ."¹⁸¹

On June 23, 1977, the representative of Colombia addressed COPUOS on the subject of definition/delimitation. He observed that his country was not a party to the 1967 Principles Treaty. He drew the conclusion that non-parties were free to determine for themselves where the boundary was to be drawn between air space and outer space. In support of this proposition he stated that the provisions of the Treaty relating to freedom of use and exploration and the rule of non-appropriation did not constitute preemptory norms of general international law whose binding nature was independent of a formally agreed to and accepted international agreement.¹⁸² It was also asserted that the Principles Treaty did not codify preexisting international space custom and practice.

Article 2 of the Treaty was considered to be "totally inoperative so long as there is no definition of 'outer space.'"¹⁸³ It was observed that pending agreement on a definition that the space-resource States would have a veritable license to do as they might please through exploitation of the lacunae believed to exist in Article 2. It was also the view of Colombia that the ITU did not possess the authority to allocate orbital positions in "segments belonging to equatorial countries without the prior agreement of those States."¹⁸⁴ The reservation put forward by Colombia on this issue at the 1977 WARC was reasserted. The presentation of Colombia was endorsed by Ecuador.¹⁸⁵

In commenting on the geostationary orbit it was the Brazilian view that "the very existence of dissimilar conditions among States with regard to the exploitation of that limited resource means, in practice, that the occupation of the synchronous

orbit takes place on a 'first come, first served' basis. That practice could create situations where the annexation of a particular point of that orbit by a satellite does represent an annexation of space that contravenes the terms of the Treaty of 1967."¹⁸⁶ Brazil's desire to avoid a situation in which a space-resource State might effectively annex a geostationary orbital position was related to its position on sovereignty over natural resources. In addressing COPUOS in 1977 the Brazilian representative stressed how important it was for States to oppose the utilization of space applications "that would entail any restriction on their sovereignty over their natural resources or constitute an obstacle to the full implementation of programs essential to their economic development."¹⁸⁷

During the 1977 session of the Legal Sub-Committee there was also a measured effort on the part of several States to obtain a definition/delimitation of outer space. The representative of Chile stressed that through the fixing of a formal boundary it would be possible to avoid disputes which might be brought on by claims relating to sovereignty, security, economic interests, and charges stemming from alleged foreign interferences in a State's internal affairs. The existence of an agreed boundary was also seen as serving the needs of the developing countries.¹⁸⁸ The representative of Italy stated that his country's 1975 proposal for a vertical frontier between air space and outer space at a median line of 90 km should be treated as a flexible criterion. Thus, Italy was willing to consider a proposal for a 100 km boundary.¹⁸⁹ The representative of the United Kingdom raised the question whether it was necessary at that time to seek a formal definition of the boundary between air space and outer space. It was considered that a definition was not required respecting the use of radio frequencies, the liability for Damages Convention, or the Registration Convention. Although the effort at definition was considered to be premature, the United Kingdom expressed a preference for "a very low limit."¹⁹⁰

France attributed importance to the issue of definition/delimitation on the grounds that there was a need to define the sphere of application of the COPUOS-sponsored space treaties. It was acknowledged that scientific criteria provided no definitive conclusions respecting a boundary between the Earth's atmosphere and outer space. However, it was thought that such factors might provide some insights, and, in any event, revisions could be made of an agreed definition when more adequate scientific and technical data became available. A formal proposal was made relating to the definition of "space activities." This would mean "any activity involving the sending into space of an object designed to permit the exploration and utilization

of outer space."¹⁹¹

Canada agreed with the United Kingdom rather than with France that the provisions of the Liability for Damages and the Registration Conventions did not require a definition/delimitation of outer space. Further, no practical reason required arriving at an agreement on the subject. Pending the further clarification of scientific and technological developments it was considered to be premature to proceed along definitional lines.¹⁹² Support for this position came from Sweden.¹⁹³

Japan's assessment of the definition/delimitation issue took into account the fact that the COPUOS-sponsored space treaties had not defined outer space but had focused on a definition of "the scope of application for the uses of outer space. Thus, it was conceivable that there might be as many such definitions as their might be types of outer space activities in the future. Consequently, it would be wrong to try to define a regime for outer space in general terms or to formulate a definition applicable to all types of outer space activities."¹⁹⁴

b. The 1977 Report of the Legal Sub-Committee

Several facts stand out as a result of the attention given by the Legal Sub-Committee to the subject of definition/delimitation during its 1977 session. The members were made aware of the absence of meaningful discussions during the period since 1967 when the subject was first placed on the agenda of the subcommittee. The members were cognizant of the two important documents prepared by the Secretariat which identified numerous approaches respecting a resolution of the issue. The claims of the eight equatorial States in the form of the 1976 Bogota Declaration were clearly identified as were the criticisms promulgated by the non-equatorial countries. A rather remarkable support was gathered by both the proponents and by the opponents of the Declaration. The subcommittee was also able to give a limited amount of time to the more general aspects of the definition/delimitation subject. Differences of opinion were expressed relating to the need to fix a precise lower boundary, whether a future boundary should be identified by a given measurement in kilometers above the surface of the Earth, whether the presence in particular of the Liability Convention and the Registration Convention necessitated clarification by way of an agreement on definition/delimitation, and whether the subject was one of urgency.¹⁹⁵ Attention was also drawn to the fact that there was a relationship between the subjects of geostationary orbital positions and definition/delimitation.

c. Views Expressed in 1978

During 1978 both of the COPUOS subcommittees made assessments relating to the geostationary orbital position. They were aided by a study prepared by the Secretariat entitled "Physical Nature and Technical Attributes of the Geostationary Orbit."¹⁹⁶ In presentations before the Scientific and Technical Sub-Committee on February 24, 1978 both Colombia and Ecuador attempted to support the claims set out in the Bogota Declaration.

Ecuador specifically identified its sovereignty to include "those segments situated above its mainland territory, its continental territorial sea in the Pacific Ocean and its island territory and territorial sea in Galapagos province."¹⁹⁷ At the same time Ecuador noted that segments of the geostationary orbit "corresponding to the high seas beyond the limits of national jurisdiction would be considered the common heritage of mankind, and there would be safeguards for everyone, provided the international community regulated the use and exploitation of the orbit."¹⁹⁸

Colombia indicated that it did not intend to ratify the 1967 Principles Treaty "so long as its provisions had not been expanded in such a way as to permit a definition and delimitation of outer space that recognized the geostationary orbit as a limited natural resource under the sovereignty of equatorial States insofar as those segments which correspond to their national territories were concerned."¹⁹⁹ Further, in the absence of a clear and precise definition of outer space States in the exercise of their "full and sole sovereignty as a subject of international law, could enact laws defining their national space and therein exercise the rights and assume the obligations established under national law."²⁰⁰ Among the equatorial States there was a willingness to treat the geostationary orbital position over the high seas as a common heritage of mankind.²⁰¹

Basing its position on the study by the UN Secretariat the United States replied that it was "clear that there was no scientific or technical basis for a claim of sovereignty over the geostationary orbit."²⁰² The United States "agreed with others that had come to that inescapable conclusion."²⁰³

Japan and Australia rejected the sovereign claims of the equatorial States on the grounds that the geostationary orbit was clearly a part of outer space.²⁰⁴ The Soviet Union restated its position that the geostationary orbit was an inalienable part of outer space.²⁰⁵ Reflecting the general views of the developing countries was the position taken by Egypt on

February 24, 1978, namely, that "no country or group of countries had exclusive sovereignty over any part of outer space. Outer space did not belong to the jurisdiction of any country, and its resources were part of the common heritage of mankind."²⁰⁶

In 1978 the Legal Sub-Committee also examined the issue of definition/delimitation. Nineteen States offered viewpoints including presentations from four of the equatorial countries. In a detailed assessment of the equatorial position the representative of Colombia contended that the 1967 Principles Treaty "could not be applied until outer space had been defined and delimited."²⁰⁷ To the legal arguments that a legal vacuum existed, despite the Treaty, and that Colombia possessed national sovereignty over the natural resource of the orbital position lying superjacent to its physical territory, the contention was also made that the legal regime flowing from the Treaty deprived the non-resource States from sharing equitably in the benefits derived from exploitative activities.

The equatorial States urged six main points, namely, (1) the orbit was unique; (2) it was a limited natural resource; (3) domestic law was to be applied to the demarcation of national space until an international definition had been arrived at; (4) the orbit should be used primarily for the benefit of developing countries in order to narrow the gap with the industrialized States thereby allowing for the presence of a more just and equitable economic community; (5) use of the orbital position above Colombia would require the "explicit and prior authorization of the Colombian Government";²⁰⁸ and (6) "the placing of a satellite in the segment above Colombia conferred no right to place a further satellite in the segment without the explicit and prior authorization . . ." of Colombia.²⁰⁹

In the light of these outlooks Colombia proposed the renegotiation of the Principles Treaty, with the view of securing a formal definition or delimitation of outer space, that would take into account the interests of equatorial States. Also to be included would be provisions for a legal regime to govern the use of the geostationary orbit. This would be accompanied by regional and sub-regional agreements with other Latin American States so that there might be assurances respecting "the joint use of the segment of the geostationary orbit corresponding to Colombia's national space."²¹⁰

The representative of Ecuador also urged that the purposes of the 1967 Principles Treaty were being thwarted by the absence of a defined line separating air space from outer space. He stated that the geostationary orbital position was "a limited national resource whose rational use should be directed

specifically towards the benefit of developing countries on the basis of equality."²¹¹ Only the framework of the new international economic order would be conducive to the study of the definition/delimitation issue.

Australia restated its 1977 viewpoint that only a scientific and technological assessment of the orbital position would provide guidance in arriving at a valid definition. Although sympathy was expressed for the needs of the developing countries it was observed that the claims of the equatorial States could not be supported on the scientific grounds advanced by them. Moreover, their claim was in conflict with the Principles Treaty and inconsistent with the regulations of the ITU.²¹²

The spokesman for the United States also restated the position that had been put forward in 1977. It was considered that the claims of the equatorial countries could not be supported either on scientific or legal grounds. The United States "saw no justification for the extension of sovereignty to the geostationary orbit unless it was to enable States to exercise economic control over the various segments of the orbit. Such a claim was inappropriate and contrary to the concept of the free use of outer space by all States without discrimination of any kind and on the basis of equality."²¹³ This being the case it was noted that the use of the geostationary orbit "did not provide the launching State with any right of sovereignty or claim of ownership to that orbit."²¹⁴ The United States also characterized the space shuttle as a space craft in design, purpose, and behavior because it could not be operated as an aircraft.

In its intervention in 1978 Czechoslovakia urged that both Articles 1 and 2 of the 1967 Principles Treaty denied the validity of the claim of the equatorial States. It was also pointed out that the free and equal exploration and use provision of Article 1 "reflected the fundamental principle of space law, which had been declared prior to the elaboration of the Treaty and had become a customary rule in the practice of States."²¹⁵ It was considered that the high status of Article 1 in international law made of it an imperative norm within the terms of the 1969 Vienna Convention on the Law of Treaties.²¹⁶ From this the conclusion was drawn that the concept contained in Article 1 of the Principles Treaty "could not be amended or suppressed without the consent of the international community as a whole."²¹⁷ A distinction was offered between the subjects of the legal status of geostationary orbits and that of definition/delimitation. It was suggested a functional approach should be taken to the latter, namely, that this matter "should be considered in the light of the individual characteristics of

various types of space activities."²¹⁸

The representative of France urged a progressive approach to the matter of definition. Specifically, it was suggested that it was necessary "to arrive at an overall and reasonable definition which could serve as a point of departure for the search for a more elaborate and realistic formula."²¹⁹ It was also suggested that reliance could be placed on the existing findings of science in order to formulate a legal regime for the geostationary orbit.

The Polish representative observed that the claims of the equatorial States were based on the argument that from a physical point of view the orbit formed an integral part of the subject territory and on the further argument that a gap existed in the coverage of Article 2 of the 1967 Treaty. Both contentions were considered to be unfounded. As to the contention that the existing international legal regime should be treated as incomplete because a fixed boundary had not been determined, it was observed that this would mean that "any State could arbitrarily choose whether to respect or ignore its provisions on the ground that it did not consider a certain area of space to constitute outer space within the meaning of the Treaty."²²⁰

It was urged, even though it might not be possible to arrive at a final definition of a boundary, that the French proposal for a more general identification had merit. It was noted that one approach would be to take as a starting point an altitude above the Earth which, by general agreement, constituted the lower limit permitted by the 1967 Treaty. A preference was assigned to a spatial rather than to a functional approach. In the formal agreement of the future it was suggested that there should be "an explicit provision relating to the right of peaceful passage of space craft belonging to one State through the air space under the sovereignty of other states."²²¹

The representative of Italy also was critical of the position put forward by the equatorial States. Attention was called to the fact that customary international space law allowing for free and equal use of and free access to the space environment had existed prior to the codification of these principles in the 1967 Treaty. The conclusion was drawn that the "principles embodied in the 1967 Treaty could not be regarded as binding only upon States which had ratified that Treaty."²²² The claim of the equatorial States was rejected that General Assembly resolutions, and in particular the 1974 Charter of Economic Rights and Duties of States as set forth in General Assembly Resolution 3281 constituted a viable source of international law. This outlook was based on the proposition that the resolutions of the General Assembly were not to be regarded as

sources of positive international law until States had taken further formal steps to achieve such an incorporation.

In restating its objection to the claims of the equatorial States the representative of the United Kingdom took note of the fact that some 80 space objects had been placed in geostationary orbital positions before any protest had been raised. His remarks were addressed in part to the contention of the equatorial States that they had not been sufficiently aware at the time that the Principles Treaty was being negotiated of the practical potential respecting the use of this orbital position. In his view it had "been the intention of the negotiators, who were already aware of the proven value of the geostationary orbit, to include it in outer space. If it had been the intention to abstract a sector of space and make it subject to national claims, there would have been a specific reference to the matter in the Treaty. Indeed, if the Treaty did not cover the geostationary orbit, it was difficult to understand why some States refused to ratify it on the grounds that ratification might jeopardize their national claims."²²⁴ Thus, it was concluded that although the limits of outer space had not been determined, there was no doubt that this orbital position was within the space environment and that it was subject to the terms of the Principles Treaty. The British representative, as had the Italian, also commented on the meaning to be attributed to the Secretariat's study of the Physical Nature and Technical Attributes of the Geostationary Orbit of August, 1977.²²⁵ The study had indicated that a space object launched into a geostationary orbital position could not maintain an absolute and unvarying fixed relationship with the Earth. The British representative concluded that no launching State could assert a national claim to a segment of the orbit on the grounds that a satellite was occupying a permanent position.

The German Democratic Republic also participated in the debate. In rejecting the claims of the equatorial States it put forward three considerations of a legal and political character for consideration in the drafting of a set of principles governing the use of the geostationary orbit. It was considered that this orbit formed a part of outer space and could not be claimed as a national resource. No States could acquire "ownership over orbital positions or segments of the orbit."²²⁶ Pursuant to the terms of Article 1 of the Principles Treaty all States were entitled, in a spirit of cooperation, to engage in the use of the geostationary orbital position without discrimination of any kind.

At the 1978 meeting the Soviet Union restated its earlier view that the Bogota Declaration lacked legal force. It was asserted that "no claim could be made to an orbit and it was

even more absurd to claim sovereignty over a segment of an orbit, since the orbit was indivisible. If it were possible for a State to claim sovereignty over the orbit of a geostationary satellite, it would be equally possible for States to lay claim to other orbits, such as the elliptical orbit of his country's communications satellites, whose apogee was several thousand kilometers above the Earth.²²⁷ The Soviet representative also expressed a preference for a spatial measurement rather than a functional approach for arriving at a definition. Doubts were expressed concerning the advisability of establishing an intermediate zone between air space and outer space, since such a regime would either limit the freedom of space activities or the sovereignty of States over their air space. It was stated that the ITU "had no competence to deal with questions of international space law" and that the determination by the ITU that the geostationary orbital position was a limited natural resource could only relate to radio broadcasts transmitted from satellites.²²⁸

The Soviet representative observed that it was paradoxical for several of the equatorial States to call for the revision of the Principles Treaty since they were not parties to it. According to Article 15 only parties may share in revisional activities. Attention was also called to advantages contained in the Treaty which were only available to signatories. Reference was also made to the Common Heritage of Mankind principle which in 1978 was in the process of being incorporated into the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies. Surprise was expressed that Colombia and Ecuador held different views respecting the legal status of the Moon and other celestial bodies and the legal status of the geostationary orbit in the sense that they applied "the principle of the common heritage of mankind to lunar orbits while rejecting that concept for the geostationary orbit. The legal principle was the same in both cases."²²⁹ It should be recalled in this connection that the equatorial States had considered that the Common Heritage of Mankind principle might apply to those portions of the geostationary orbital position which did not exist above the territory of States. They had specifically indicated that the CHM principle would apply to orbital positions located above the high seas.

The views of Brazil took into account a regime which would be both just and equitable and which would safeguard the interests of all States, while at the same time according particular attention to the needs of the developing countries and of States whose territories were situated below the orbit.²³⁰ Mexico supported the view of Brazil that the interests of the equatorial States should be taken into account in the

formulation of an international legal regime governing the use of the geostationary orbital position. Such a regime was required, since the Principles Treaty had not dealt with all of the problems of the space environment. The Mexican position was based on the prevalent view that the geostationary orbital position was a limited natural resource. Mexico urged that the new international regime for the geostationary orbital position should advance the interests of all of the members of the world community, that decisions should not be taken exclusively by the space-resource States, and that the creation of such a regime should not be brought about through a General Assembly resolution "merely applying the provisions of the 1967 Treaty to the geostationary orbit."²³¹

The representative of Belgium agreed with the French position that a broad definition should be attempted. This would be the product of an international agreement fixing the boundary at an average height of 100 km above sea level, subject to revision in order to take into account the requirements of space technology. It was noted that such a definitional approach would require a host of other definitions on such subjects as space flight, space activity, space objects, space ships, space stations, space bases, and the innocent passage of space objects through air space. It was also noted that "the question of distinguishing between simple and hybrid spacecrafts might also be considered, bearing in mind the capacity of the latter to utilize the principle of aerodynamics applied to aircraft."²³² In this connection the representative of the United States stated that the U. S. space shuttle "used aerodynamic surfaces to descend as an unpowered glider in a trajectory which was somewhat controllable and permitted landing within a limited area. The shuttle could not be operated as an aircraft; it was a space craft in design, purpose, and behavior."²³³

Seemingly the Belgian representative had reservations whether the 1967 Principles Treaty had incorporated into the international legal regime for the space environment the corpus of customary international law that predated the 1967 agreement. He stated that while he "did not conclude that the Treaty thus formed part of general international law, but neither did he exclude that possibility."²³⁴ In reflecting the claims of the equatorial countries it was noted that it was strange to consider a geometrical concept, e. g., the geostationary orbital position to be a natural resource, and moreover that no definition existed respecting a natural resource. The role of the ITU in providing legal definitions was also challenged, with the view being expressed that the ITU's role had been of describing "the parameters of the geostationary orbit from a purely technical standpoint."²³⁵ Thus, it was concluded that the "only stipulation of a legal nature in those regulations

was that the allocation of an orbital position could not confer permanent priority or possession. It was therefore difficult to see how it could be concluded that priority should be granted to the equatorial States.²³⁶

The Argentinian representative urged close cooperation between the two subcommittees of COPUOS so that a legal definition would not conflict with technical realities. It was considered that the 1967 Principles Treaty had not adequately dealt with the geostationary orbit and that this could be remedied through the creation of a special legal regime. One of the elements of such a regime would be an assurance that the orbit would be used for the benefit of all mankind²³⁷ and in particular for the needs of the developing countries.²³⁸

In a brief intervention the representative of Kenya agreed with the position put forward by Colombia. It was noted that as a party to the Bogota Declaration that Kenya "fully subscribed to its provisions."²³⁹

Iran considered that the then existing technical facts would allow for the fixing of a lower boundary of outer space at a point between 80 and 100 km above sea level. The view, put forward by some States, that Article 33 of the ITU Convention conferred priority of rights respecting the geostationary orbital position, was rejected. Respecting the proposal that it might be desirable to fix an intermediary zone between air space and outer space, it was concluded that if such a special zone were to be established around the equatorial belt that "a similar zone would have to be established around the Earth in general."²³⁹

Following the expression of the foregoing views the representative of Colombia was again given the floor. An attempt was made to clarify the scientific and technical grounds upon which the equatorial States had asserted their claims. The analysis covered three points: "the relationship between the geostationary orbit and the Earth, the question of the fixed position of geostationary satellites, and the possibility of artificial orbits."²⁴⁰ In connection with the first point it was observed that the "only orbit which permitted the deployment of satellites which were relatively fixed from the viewpoint of an Earth observer was a circular orbit in the equatorial plane."²⁴¹ Since it was the view of the equatorial States that such orbits were situated within their territorial air space, they were entitled to express justifiable concern over the presence of such alien objects. In connection with the second point it was noted that a fixed orbital position should be interpreted to mean a position within a 150 by 150 km square. It was considered that movement within such a spatial area was for all

intents and purposes a fixed position within the entire context of space. Respecting the third point the Colombian representative called attention to the efforts of some delegations to disprove the uniqueness of the geostationary orbit by calling attention to the possibility of establishing artificial orbits for fixed satellites. The expectation was that such artificial orbits would not be subject to all of the forces contributing to and allowing for the presence of the geostationary space object above the equator. The argument was made that if such artificial orbits were to become a reality that any State above which such a foreign satellite were installed would have the same outlook toward such space objects as had been already reflected by the equatorial States. Although the concerns of the equatorial States were focused on the presence of telecommunications-type space objects, the Colombian representative speculated that when such satellites in the artificial orbit were employed for direct television broadcasts, as well as for remote sensing, that the subadjacent States might be more sympathetic to the contentions made by the equatorial countries. He considered that such affected States might be anxious to protest or to require the application of municipal legislation to such presences and activities.

Exception was taken by Colombia to the view, pursuant to the Vienna Convention on the Law of Treaties, that the substance of the pre-1967 customary international space law had become binding on non-signatories to the 1967 Principles Treaty through the incorporation of customary law into the formal agreement. This argument was in part based on General Assembly Resolution 1963 (XVIII) of 1962. Although it is true that the Resolution recommended that consideration should be given to incorporating the Resolution's principles into formally proclaimed international law, there had been a considerable maturing of customary international law through State practice both prior to 1962 and prior to the completion of the Principles Treaty in 1967. In an equally selective manner the Colombian delegate sought to negate the quite substantial experience, including the general awareness of the existence of this experience, respecting the use of the geostationary orbital position prior to the conclusion of the 1967 Treaty. Nonetheless, it was categorically stated that "the existence of the satellites had no connection with the interpretation of Article IV" of that agreement.²⁴²

An attempt was also made to rebut the positions taken by the Soviet Union. Thus, Colombia suggested that a non-party to the 1967 Treaty could claim the benefits of its provisions respecting liability for damages on the basis of long-standing international legal norms dealing with State responsibility. While agreeing that Article 15 allowed amendments to be suggested

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An attempt was also made to rebut the positions taken by the Soviet Union. Thus, Colombia suggested that a non-party to the 1967 Treaty could claim the benefits of its provisions respecting liability for damages on the basis of long-standing international legal norms dealing with State responsibility. While agreeing that Article 15 allowed amendments to be suggested

only by signatories, Colombia considered that amendments might be proposed by potential signatories as a means to insure further participation in the formal agreement. There could be little doubt that Colombia was entitled to call attention to the absence of a specific definition of outer space in the 1967 Treaty since the subject was on the agenda of the Legal Sub-Committee.

At the 1978 meeting of the Legal Sub-Committee support was indicated by Japan for the functional rather than a spatially measured approach to the boundary issue.²⁴³

d. The 1978 Report of the Scientific and Technical Sub-Committee

The subcommittee examined the Secretariat's study entitled "Physical Nature and Technical Attributes of the Geostationary Orbit."²⁴⁴ It was considered by the subcommittee to be "very useful, informative, and objective."²⁴⁵ The subcommittee noted several of the highlights of the study including its reference to the use of geostationary orbital positions in the future for solar power satellites. The positions put forward by the equatorial States were summarized as follows:

Some delegation were of the opinion that the sovereignty of equatorial countries extended over segments of the geostationary orbit above those countries. They stated that, in view of physical and technical attributes of this orbit, they considered it as a limited natural resource of a unique character which excluded it from the outer space the limits of which were yet to be determined. They expressed the view that the consent of the equatorial countries must be sought prior to positioning geostationary satellites over their territories, coastal, maritime and insular zones, and that the geostationary orbit over the high seas should be considered as a common heritage of mankind.²⁴⁶

However, it was clear to the subcommittee that the space-resource States and parties, excluding the equatorial States, to the 1967 Principles Treaty had rejected the claims of the Bogota States. The former had emphasized the view that such claims to sovereignty were inconsistent with the provision of the Treaty. Further, the space-resource States, relying on their assessment of scientific facts, pointed out that it was not possible to consider the geostationary orbital position as not being an integral part of outer space. They concluded that neither science nor technology would allow for claims of sovereignty over segments of the orbit. Thus, claims to subject

outer space to national appropriation were rejected.²⁴⁷

e. The 1978 Report of the Legal Sub-Committee

Although the proposed Moon Treaty, direct television broadcasting, and remote sensing received the principal attention of the subcommittee in 1978, there were three sessions allocated to the problem of definition/delimitation as it related to the geostationary orbital position. Almost 20 States participated in the debate on the last subject. Positions first enunciated in detail in 1977 were restated. However, more States than in 1977 participated in the dialogue and new positions were advanced. The negotiators had benefited from the availability of the Secretariat's 1977 study on the "Physical Nature and Technical Attributes of the Geostationary Orbit." The subject under discussion was interpreted in the light of the 1967 Principles Treaty. References were also made to pre-1967 General Assembly Resolutions with attention being called to their adoption by unanimous votes. By contrast it was observed that General Assembly Resolutions dealing with permanent sovereignty over natural resources had failed to obtain the same measure of approval. The conclusion was drawn that their failure to command wide-ranging support was evidence of the fact that they did not establish rules of international law. The equatorial States restated the positions contained in the Bogota Declaration and the arguments made in support of this outlook. They also argued that the geostationary orbital position was of such a unique and specific nature that this should be taken into account respecting definition/delimitation. Reference was again made to the orbital position as a part of a State's natural wealth and resources over which States possess sovereignty. Further, it was urged that such orbital positions "must be used in priority for the benefit of the developing countries in order to help to narrow the gap between the developing countries and the industrialized countries on an equitable basis."²⁴⁸

These positions were largely rejected by the States that considered the 1967 Principles Treaty as governing those areas in which geostationary space objects are able to orbit. They stressed that the Treaty allowed for free access to and the free and equal use of the orbital position on the basis of cooperation with due regard being given to the corresponding interests of other States. It was their view that the placing of space objects into geostationary orbit did not create a right of ownership over either the orbital positions or over segments of the orbits. The view was also expressed that the 1967 Treaty did not preclude the elaboration of a specific

legal regime relating to the geostationary orbital position.

At the close of 1978 the differing outlooks of the Bogota States and the active supporters of the 1967 Principles Treaty were clearly evident. The States supportive of the opposed positions had added little to the views expressed in 1976 and in 1977. It had become clear that it was most unlikely that a consensus could be obtained in COPUOS in which the 100 km boundary as the lowest legal level for outer space would be accepted. However, there remained a feeling on the part of several States that it might be possible to establish special rules governing the use of the geostationary orbit. In order to keep this hope alive it was suggested that new technical studies and further legal-political negotiations should be conducted.²⁴⁹

F. Views Expressed in 1979

The General Assembly on November 10, 1978 asked COPUOS to consider in 1979, but not as a priority matter, the need to "continue to discuss matters relating to the definition and/or delimitation of outer space and outer space activities, bearing in mind *inter alia*, questions relating to the geostationary orbit."²⁵⁰ When the two subcommittees of COPUOS met in 1979 they had before them a lengthy addendum to the first study on the "Physical Nature and Technical Attributes of the Geostationary Orbit."²⁵¹ The 1978 study dealt with (1) actual and nominal orbital positions, (2) static charge, (3) disposal orbits, (4) the concept of antenna farms, and (5) the concept of generalized orbits. Among the conclusions arrived at in the study were that (1) in order for geostationary satellites to transmit electronic messages effectively it was necessary for the satellites to maintain nominal positions and that this had resulted to a great extent in an orderly use of the geostationary orbital position; (2) since space objects occupying a geostationary orbital position are subject to static electrical charging due to the effects of the ionized atmosphere and solar radiation, there was a need to take special precautions against possible malfunctioning; (3) non-utilitarian space objects can be disposed of successfully in circular orbits ranging from a few hundred to a 1,000 km beyond the geostationary orbital position; (4) congestion of the geostationary orbit can be avoided through the use of antenna farms allowing for the servicing of communications functions and new services; and (5) the capabilities for the transmission of communications, including energy, can be extended through the use of inclined, eccentric, geosynchronous orbits. In order to make use of this advantage it would be necessary for the ground-based rectenna of communications satellites and the space-based antennas of

satellite power systems to possess tracking capabilities.²⁵² The report's principal value was its focus on the facts that one space object situated at the geostationary level can mount many antenna farms, that each is able to supply a variety of services on many channels, and that many space objects can orbit successfully in the annulus-like collar which extends both upward, downward, and inward from a nominal 22,300 mile elevation. This is because the orbital position is multi-dimensional rather than having but a single linear dimension.

In 1979, as in the past, the Legal Sub-Committee was the principal forum for assessing the joint issues of definition/delimitation and the geostationary orbital position. Although fewer members of the subcommittee made interventions on these matters in 1979 than had done so in 1978, the prior areas of agreement and disagreement were clearly represented. In 1979 three principal viewpoints were received expression. The Soviet Union observed that an "increasing number of States had been advocating the establishment of a boundary between air space and outer space at an altitude of 100 to 110 kilometers above sea level."²⁵³

The United States counseled the need to wait pending a full understanding of the implications of a boundary fixed at the level proposed by the Soviets.²⁵⁴ In the absence of adequate legal and scientific analysis it was considered that a definition would not be rationally based. Thus, according to the U.S., a decision "to include certain regions of the upper atmosphere within air space subject to State sovereignty, or in outer space free from such claims, should not be taken lightly or hastily, especially if no problem depended for its resolution on such a decision."²⁵⁵ In relating the issue of definition/delimitation to geostationary orbital positions and the radio frequency spectrum, reference was made to ITU decisions. Attention was called to ITU findings that these resources were expanding, with the example being given that "one orbital position could support several entirely different transmissions on the same frequency."²⁵⁶ It was also noted that "since the orbit was part of outer space, its legal status was governed . . . by the 1967 Principles Treaty."²⁵⁷ Since the Principles Treaty guaranteed free and equal exploration, use, and exploitation of geostationary orbital positions, as well as free access to them, it was indicated that there was no need for new legal principles on the matter. Support for this last proposition, which was based on Article 1, came from Brazil. It took the form of the rejection of the "first-come, first-served" proposition, which had entered the field of international space negotiations by way of discussions relating to radio broadcasts from satellites. Brazil identified its rejection of the doctrine by announcing its support for the Common Heritage of

Mankind principle for inclusion in the 1979 Moon Treaty.²⁵⁸

The position of the United States was summarized during the 1979 meeting of COPUOS. It was stated that (1) a compelling legal or technical need or justification for a definition had not appeared over the years during which the subject had been considered; (2) major difficulties would result from the fixing of an arbitrary boundary; (3) if such a boundary had been previously established it would have either delayed or permanently inhibited many current space activities; and (4) "the international community has not yet adequately examined the multitude of scientific, legal, technical and political factors that are relevant to meaningful definition."²⁵⁹

Ecuador, as spokesman for the equatorial States, reaffirmed the view that the Principles Treaty did not contain a boundary definition, that the prohibition in Article 2 of national appropriation could not be applied to the geostationary orbital position, and that the exercise of national sovereignty over that orbit was "not contrary to the Treaty's provisions."²⁶⁰ Ecuador stated that the presence of a foreign satellite in geostationary orbit above an equatorial State gave no legal right to the foreign launching State.²⁶¹ It noted that equatorial States did not object to the presence of such foreign space objects above their territories when they were not in geostationary orbit. Ecuador stated that the geostationary orbit was a limited natural resource possessing a *ius cogens* nature. Further, the equatorial States viewed the resource as serving their interests and also the interests of other developing countries.

Indonesia also urged that such orbits possessed a *ius cogens* character. This was to be taken into account in the formation of a definition of outer space. Indonesia stated that orbital positions constituted a limited natural resource of the sub-jacent State.²⁶² Three States were willing to accept a provisional definition at the 100-110 km level. Bulgaria regarded the Soviet proposal as a conditional or temporary solution.²⁶³ Belgium viewed the 100 km level as being arbitrary and recognized that such a formulation would have to be modified in the light of technical and functional considerations.²⁶⁴ Chile was willing to agree to a provisional definition, but this was to be without prejudice to a "subsequent assessment of the question in the light of new technical and legal concepts."²⁶⁵

The 1979 meeting received from the Soviet Union on March 28, 1979 a working paper entitled "Approach to the Solution of the Problems of the Delimitation of Air Space and Outer Space."²⁶⁶ In their proposal the Soviets employed spatial criteria for the fixing of the boundary between the indicated areas. According

to the submission:

1. The region above 100 (110) km altitude from the sea level of the Earth is outer space.
2. The boundary between air space and outer space shall be subject to agreement among States and shall subsequently be established by a treaty at an altitude not exceeding 100 (110) km above sea level.
3. Space objects of States shall retain the right to fly over the territory of other States at altitudes lower than 100 (110) km above sea level for the purpose of reaching orbit or returning to Earth in the territory of the launching State.

Speaking in support of this proposal at an earlier meeting of COPUOS on June 29, 1978, the Soviet representative had urged that the definitional process should take place in several stages. It was suggested that "by way of a first step we might agree that space above 100-110 km above sea level should be considered outer space."²⁶⁷ This was reemphasized by the observation that the indicated altitude could be acknowledged, on the basis of existing circumstances, as constituting outer space.²⁶⁸ At the 1979 meeting of COPUOS the Soviet representative indicated plans for the introduction of a draft for a General Assembly resolution "on the question of the delimitation of air space and outer space and the legal status of the outer-space segment in which orbits of geostationary satellites are located."²⁶⁹ The proposed draft, it was indicated, would be put forward in a spirit of compromise in order to meet the wishes of a number of countries. It was thought that such wishes would be best accommodated through the consideration of both issues in one package.

g. The 1979 Report of the Scientific and Technical Sub-Committee

Under its agenda item on "Examination of the Physical Nature and Technical Attributes of the Geostationary Orbit" the Scientific and Technical Sub-Committee probed into this aspect of space activity in 1979.²⁷⁰ The subcommittee analyzed the 1978 and 1979 Secretariat studies and concluded that a need existed for a further report on the dynamics of the population of space objects. It was also the view of the subcommittee that new information should be acquired relating to the most efficient and economical means of using the geostationary orbital position, particularly by the developing countries. This resulted in the submission later in 1979 of reports from 10 States in which they identified what they considered to be the most efficient and economical means of using the

geostationary orbit. The subcommittee also had before it technical studies prepared by the ITU in connection with the 1979 WARC. Pending the completion of additional research and the receipt by COPUOS of the views of member States, it was agreed that further consideration should be deferred until 1980.

h. The 1979 Report of the Legal Sub-Committee

The 1979 meeting of the Legal Sub-Committee resulted in a reiteration of the positions that had been put forward in 1976, 1977, and 1978. As in the past there continued to be disagreement on the desirability of formulating a definition/delimitation of outer space. In support of arriving at a formal statement containing rights and duties was the fact that the number of space objects in orbit was increasing and more States were engaged in space activities. While support for the Soviet linear proposal was given by some States, there was also a strong feeling that it merited further study. In this regard it was indicated that past studies as to the lowest practical perigees of space objects had consistently placed them too high. States objecting to a formal definition/delimitation pointed to the fact that COPUOS "had been unable to identify practical problems which would require a definition and/or delimitation."²⁷¹ It was also reported that the Scientific and Technical Sub-Committee no longer carried the subject of definition/delimitation on its agenda.

The equatorial States, as in the past, linked the question of the geostationary orbit with that of definition/delimitation. They repeated their arguments that the orbital position was a limited natural resource falling within their sovereignty. The advanced States continued to insist that the 1967 Principles Treaty was applicable to the orbital position, and that the position, as a part of a spatial area in outer space, could not become the private property of any State or fall within the public sovereignty of a claiming State. They continued to point to the important distinction between use and exclusive rights. The space-resource States, in denying the claimed exclusive rights of the equatorial States, indicated that the orbital position was "free for use by all States without discrimination of any kind on a basis of equality and in accordance with international law."²⁷²

The proposition advanced in 1978 that the existence of the Principles Treaty did not preclude the elaboration of a specific legal regime for the geostationary orbital position was restated in 1979. This proposal, however, was contradicted by some States which held the view that both the Principles Treaty

and the 1973 ITU Convention and subsequent Radio Regulations "already contained necessary provisions to ensure equitable use of the geostationary orbit and that, therefore, the formulation of new legal principles relevant to the use of the orbit was not necessary."²⁷³

i. The 1980 Report of the Scientific and Technical Sub-Committee

In 1980 the Scientific and Technical Sub-Committee resumed its consideration on a non-priority basis of the agenda item on "Examination of the Physical Nature and Technical Attributes of the Geostationary Orbit."²⁷⁴ The subcommittee considered two reports by the Secretariat consisting of submissions from 10 non-equatorial States dealing with their views on the most efficient and economical means of using the geostationary orbital position.²⁷⁵ The reporting States identified the need to take into account the interests of developing countries; to make use of the capabilities of the ITU in connection with the use of radio frequencies; to protect space objects from harms; to avoid the presence at the geostationary orbital position of non-functioning space objects; and generally to engage in international cooperation in the development of future global space systems. Three States, namely, Italy, Sweden, and the United States, restated their opposition to the claims of the equatorial States. France suggested that the ITU might play an important role through making an initial study of the needs of the world community respecting telecommunications. France stated that it "would be agreed that all countries have equal rights of access to the orbit or the frequency spectrum. Acquired rights might, however, be renewable on a priority basis, but such an arrangement could not lead to the recognition of any right of use in perpetuity."²⁷⁶ Thus, France indicated a willingness to face directly the long-debated proposition, respecting the use of the radio frequency, namely, whether the "first-come, first-served" approach possessed merit. Inferentially, if not directly, this raised the issue--because of the practical relationship between the occupation of a given orbital position and radio broadcasts from a space object at that orbital position--of the possible future role of the ITU concerning orbital positions.²⁷⁷ The United States, in order to still fears respecting monopolistic uses of the very large number of geostationary orbital positions, indicated it was "undertaking new developments so that all current and potential uses of space communications systems will have ample opportunity to share the benefits of satellite communications now and in the future, without fear of a shortage of orbital space or frequency bands."²⁷⁸

The Scientific and Technical Sub-Committee also reported on its assessment of a study prepared with the assistance of COSPAR on the dynamics of space objects.²⁷⁹ This study examined the stability of satellites while in orbit and the means for removing inactive space objects from their orbital positions. The report dealt with the prediction of the decay of space objects. Some five techniques were identified for achieving removal, namely, orbital transfers, propellant consumption, pushing a space object into the lower atmosphere, pushing it out of the Earth's gravitational field, and placing it in a disposal orbit. On the basis of the available and relevant data it appeared that a space object could be maintained at a given position within the geostationary orbital area with a high degree of certainty. The subcommittee received reports from member States respecting the effective use of the orbital position. Attention was called to the need for careful planning for space services employing the orbit. The members of the subcommittee were aware of the role of the ITU and concern was expressed lest duplicative studies be conducted by both bodies.

Prospects for success in the use of the geostationary orbital position may be affected by future space transportation systems. In 1979 the Secretariat issued a report entitled "International Implications of New Space Transportation Systems."²⁸⁰ The subcommittee placed on its agenda for 1981, but not on a priority basis, the question of space transportation systems and their implications for future activities in space.

The 1980 report of the subcommittee must be viewed not only in terms of what was reported but in what was not reported. Understandably, it was not able to provide definitive guidance as to the scientific and technological innovations of the future. It was not able to forecast the orbital characteristics of space objects that still must be tested, as well as those still on the drawing boards. Thus, it was not able to discuss, let alone make any constructive suggestions, respecting a preference for a spatial approach or a functional approach to the fixing of a boundary between sovereign air space and non-sovereign outer space.

1. The 1980 Report of the Legal Sub-Committee

The 1980 Report again reflected the fact that COPUOS members held a variety of views relating both to the issue of definition/delimitation and to rights respecting the geostationary orbital position. On the matter of definition/delimitation there was disagreement whether a decision was required and

whether a spatial or a functional approach should prevail in the event that a definition were appropriate. Among the States favoring the establishment of a definition there were differences as to the specific boundary that might be accepted.

As to outlooks of those States favoring the identification of a boundary, it was noted that the regimes of air space and outer space were different and that the fixing of a formal boundary would facilitate an understanding of the respective rights and duties applicable to the several regimes. The point was made that the Soviet proposal for a lower boundary at a distance of between 100 and 110 km above sea level was a practical one, since it largely corresponded to the lowest perigee of space objects. Some States, while willing to accept such a boundary, called attention to expectations of scientific and technological advances. Thus, in their views any agreement on a boundary would be subject to a revision downward by a future multilateral understanding. This would mean that pending the entry into force of the ensuing agreement the status of the area below 100-110 km would remain undetermined.

Other States asserted that a customary rule of international law existed respecting a boundary between air space and outer space. In the opinion of some of these States there was no need to identify an intermediate zone, e. g., a mesosphere, between air space and outer space. Others supported the view that a boundary was desirable but that an exact demarcation between the two spaces may not be possible.

It was reported that "the view was also expressed that the establishment of a conventional boundary should be supplemented by functional definitions of the terms 'space flight' and 'space object.' Some of the delegations which considered a boundary necessary stated that a definition and/or delimitation of outer space should also contain provisions on the *generis* character of the geostationary orbit."²⁸¹

The States objecting to arriving at a definition in 1980 advanced numerous reasons in support of their policy preference. These included: (1) as in the past, no practical problems had resulted from the absence of a definition; (2) scientific data would not justify the fixing of a boundary at 100 km, since a perigee had been determined below that elevation; (3) an arbitrary boundary would lead to complications, since States lacking space capabilities would have no way of knowing of violations or would possess no means to control such a boundary; and (4) a boundary at the 100 km level could impede further developments in space science and technology. Some States, because of their opposition to the fixing of a boundary at a specific distance above sea level pending a further clarification of

scientific and technological developments, urged the desirability of taking a functional approach. The hope was also expressed that the Scientific and Technical Sub-Committee would keep the matter under review.

In examining the issue of the geostationary orbital position the members of the Legal Sub-Committee divided along several lines. The equatorial States restated the view that, owing to the physical characteristics and technical attributes of the orbit, it was a limited natural resource of a *sui generis* character. They continued to assert that they exercised sovereign rights over those segments of the orbital position superjacent to their territories. These claims were again rejected by the space-resource States. Among these States there were some which considered that the developing countries should have equitable access to the orbital position and that their needs might be determined through the ITU. Representatives of the developing countries favored the creation of an equitable legal regime. Its function would be to ensure that the orbital position was employed for the benefit of all countries but with special reference to the needs of the developing States.

The meaning to be accorded to Resolution BP of the 1979 WARC was debated. The Resolution, entitled "Relating to the Use of the Geostationary Satellite Orbit and to the Planning of Space Services Utilizing It," stated "that a World Administrative Radio Conference shall be convened not later than 1984 to guarantee in practice for all countries equitable access to the geostationary-satellite orbit and the frequency bands allocated to space services" and that at its first session the Conference, insofar as space services and frequency bands were concerned, it was to take account of "the relevant technical aspects concerning the special geographical situation of particular countries; and provide guidelines for associated regulatory procedures."²⁸² Two space services, namely, the Fixed Satellite Service (FSS) and the Broadcasting Satellite Service (BSS), came within the purview of the Resolution.

There were a number of proposals respecting the terms of the Resolution, with important differences being manifested by the less-developed States, by the equatorial States, and by the advanced States. While it was the view of all States that a future conference should be held to further the efficient and economical use of the geostationary orbital position and attendant broadcast opportunities, there was an intense debate on the steps which should be pursued to obtain such a goal. According to the chairman of the United States delegation "the focus was directed at whether such a conference should have limited terms of reference confined to developing an *a priori* plan, or whether it should have broad terms of reference to

admit consideration of a wide range of possibilities for guaranteeing equitable access."²⁸³

During the debates the developing States urged that the indicated planning should lead to a detailed plan for allotment of orbital positions and frequencies to States. This approach was preferred on the grounds that space objects were being placed in orbital positions, that the space-resource States were filling up such positions on the basis of a "first-come, first-served" claim, that such a claim would deny equitable access on the part of the developing States, and that the rights set forth in Article 33 of the ITU Convention were not being protected by the processes identified in Article 9A of that agreement. The advanced States, taking an opposing position, reasoned that it was neither feasible nor desirable to plan for making allocations to the Fixed Satellite Service (FSS). This outlook was supported by the views that existing regulatory procedures did not support a claim of "first-come, first-served," that such procedures had worked well in the past and could be modified to work better in the future, that an imposed plan could result in the freezing of technological advance-- thereby producing congestion in the geostationary orbital area to the detriment of all States-- and, if it were necessary to proceed with the development of a plan, that it should not produce a detailed assignment of the kind identified for the Broadcasting Satellite Service (BSS) in 1977.²⁸⁴

Responding to these arguments the equatorial States and the developing countries under the leadership of Algeria put forward a proposal calling for a two-session WARC. It would be the function of the first session to "establish principles, technical parameters and criteria for the planning of the orbit and frequency assignments for space services . . . taking into account relevant aspects of the particular geographic situation of equatorial countries."²⁸⁵ This approach was analyzed by the chairman of the United States delegation:

Although not so specified, the Algerian proposal in essence favored *a priori* planning with no alternatives. Its failure to consider any other approach than planning and no other planning mode but the allotment of frequencies and orbital positions made it unacceptable to the developed nations. The reference to equatorial countries also proved to be unacceptable to many countries which viewed it as a continuing attempt by the equatorial countries to build a case for their claim of sovereignty to that part of the geostationary satellite orbit located above their territory.²⁸⁶

As a result of the negotiations, Resolution BP did not finally

contain the terms "particular geographic situation of equatorial countries," as suggested by Algeria, but rather the language "the geographical situation of particular countries."²⁸⁷

According to Ambassador Robinson the United States has perceived the planning mandate of the next Space Conference:

as being very wide in scope, admitting of a broad range of possibilities ranging from detailed orbit/frequency assignment plans to more dynamic planning approaches that will provide access to the orbit/spectrum in an equitable manner as the real requirements of administrations arise. While we are of the view that a flexible and dynamic planning approach will be more responsive to user needs, we believe that the Conference will be free to decide for itself the best approach for ensuring equitable access to the orbit/spectrum based upon careful and comprehensive technical preparations and analysis.²⁸⁸

Thus, the United States continued to support and to build its case on the provision of Article 33 of the 1973 ITU Convention which prescribed equitable access to the free use of the orbit/spectrum resource. On this premise the United States viewed Resolution BP as being broadly enough based to allow for full discussion of alternative means of securing equitable access to the resource, although it was acknowledged that at the future conference the developing States and the equatorial States would revive the demands for specific assignment to them of preferred rights to such resources under the heading of a *priori* planning.

Despite this understanding of the meaning to be given to Resolution BP, during the 1980 meeting of the Legal Sub-Committee of COPUOS some delegations argued that the Resolution was intended to apply particularly to States located in polar, tropical, and desert areas where climatic conditions affect the reception of signals broadcast from space objects. The equatorial States urged that the import of the Resolution was to accord recognition to their previously identified specific contentions and needs.

k. The 1980 Summation by COPUOS

Statements made at the 1980 meeting of COPUOS indicated that members were still unable to resolve their differences respecting the geostationary orbit and the geostationary orbital position. Ecuador perceived that the space-resource States were engaged in "appropriating to themselves perpetual rights for

locating satellites in the crowded geostationary orbit."²⁸⁹ This conduct was termed "unacceptable" as was also "the emplacement of fixed position devices in segments of the geostationary orbit above equatorial countries without prior agreement from the respective underlying equatorial countries."²⁹⁰ At the same time Ecuador referred to the equality of use provision of Article 1 of the 1967 Principles Treaty as it applied to the respective technological and economic capacities of both the space-resource and the non-resource States. Thus, it was urged that "there cannot be equality when there are imbalances between the different countries with respect to the means and the opportunities of using this orbit."²⁹¹ The conclusion was drawn that economic and technological superiority must give way to the "rights" of the equatorial States. As a consequence it was urged that members of COPUOS should not delay in arriving at regulations to govern the use of the "geostationary orbit." The representative of Ecuador indicated this approach would allow for "segments of the geostationary orbit" to be used for the benefit of the peoples of the equatorial States and also for "the international community as a whole, particularly the developing countries."²⁹² Attention was also called to resolution BP of the 1979 WARC, which according to him, "officially recognized the need to plan for the use of the geostationary orbit, bearing in mind the special geographical position of certain equatorial countries."²⁹³

The representative of Ecuador also called attention to a statement signed in Quito on March 14, 1980 by the members of the Andean Group. On that occasion support was given by Bolivia, Colombia, Ecuador, Peru, and Venezuela to the foregoing Ecuadorian interpretation of the 1979 BP resolution. Spain also supported the Quito statement. In his observations the representative of Ecuador also found encouragement in the prior remarks of the representative of Mexico. The latter had concluded that the concept of a geostationary orbit, following the views of the equatorial States, is "a limited space resource. . . . As such it is not adequately regulated in the Outer Space Treaty."²⁹⁴ Mexico also maintained that there was a need to work out "a set of principles that would complement the existing treaty."²⁹⁵

In much the same vein the representative of Colombia called for the fashioning of rules in a timely manner lest the use of the geostationary orbit be treated as a *de facto* occupation which would be contrary to the "provisions of international law which clearly prohibit the emplacement in a fixed orbit of radio-communications stations at any altitude without the express authorization of the State below, as in the specific case of the States that are crossed by the Equator."²⁹⁶ This was premised on the view that a perpetual presence of a

geostationary satellite existed on a segment of Colombian territory.

The space-resource States, having previously clearly identified their opposition to the assertions of the equatorial States, did not use the 1980 COPUOS meeting as an occasion to restate their understanding of existing formal and customary law relating to the use of the geostationary orbital position. There was an awareness on the part of the representatives of the report prepared for UNESCO on the subject of mass communications. This study, known as the McBride Report, was mentioned by several of the delegates.²⁹⁷ Thus, the representative of the Netherlands indicated that the report had dealt with "the possibility of an international duty on the use of the geostationary orbit for the benefit of the developing countries."²⁹⁸ Responding both to the positions held by the equatorial States and as reflected in the McBride Report, the Dutch delegate stated that the orbital position was a "phenomenon to be exploited for the benefit of all, regardless of the technological development or geographic position" of any State or group of States.²⁹⁹ This statement constituted an interpretation of Resolution BP of the 1979 WARC at variance with that of the Quito States.

At the 1980 meeting of COPUOS the representatives gave more attention to the other items appearing on the agendas of the two subcommittees. This focus suggested their awareness of the irreconcilable differences as to factual characteristics of the geostationary orbital position both from the point of view of whether it is a natural resource or whether it is a limited resource. It also reflected disagreement as to the meaning of Articles 1 and 2 of the 1967 Principles Treaty. Finally, it indicated a misunderstanding on the part of the equatorial States of the frequently stated commitments of the space-resource States to the effect that the use of the geostationary orbital position was not to be permanent, that the use was not to constitute a *de facto* basis for a claim of exclusivity of use, that such uses were in fact to be made available to all States, and that pending the utilization of such orbital positions by all States pursuant to agreement on suitable rules and regulations that there was to be a sharing of the benefits of exploitative uses with all States, including the developing and equatorial States.

In their general exchange of views in 1980 the members of COPUOS demonstrated that varied and opposing views existed respecting the joint issues of definition/delimitation and the use of the geostationary orbital position. Outlooks relating to the use of the orbital position took three directions. First, there were the ongoing representations of the equatorial

States that they possessed sovereignty at the geostationary level. This contention was based on the view that this orbital position was *sui generis*. Second, some States considered that the time had come to establish a special regime to govern the use of the position. Third, a number of States pointed out that the orbital position and the uses of geostationary satellites were already subject to well-understood provisions of the 1967 Principles Treaty which allowed for free access to and free and equal exploration, use, and exploitation of the position.

During 1980 first mention was made in COPUOS of Resolution BP adopted during the 1979 meeting of the World Administrative Radio Conference. Interpretations were advanced by the members of COPUOS as to the meaning to be given to the resolution. Some States took the position that the resolution was designed to serve the special interests of equatorial States. Other States indicated that the resolution was designed to deal with natural and scientific facts rather than political-legal claims. In their view the resolution "referred to polar and certain tropical and desert countries where geographical and climatic conditions affected signals from satellites."³⁰⁰ The varying interpretations of the resolution, which added a new dimension to the historical disagreements relating to definition/delimitation and to geostationary orbital rights, demonstrated that immediate prospects were dim for consensus in these areas. However, COPUOS endorsed the view that continuing studies should be conducted concerning the physical nature and technical attributes of the geostationary orbital position.

1. The 1981 Summation by COPUOS

In 1981 COPUOS and its two subcommittees continued their debates on definition/delimitation and on the physical nature and technical attributes of the geostationary orbit. The Scientific and Technical Sub-Committee called attention to the preparation of a background paper on the physical nature and technical attributes of the geostationary orbit for the use of the Second UN Conference on the Exploration and Peaceful Uses of Outer Space.³⁰¹

The Legal Sub-Committee considered widely ranging views including the pros and cons of arriving at a formal agreement on a boundary between air space and outer space.³⁰² The following reasons were advanced for reaching a formal agreement: separate legal regimes applied to air space and outer space; national sovereignty over air space would be strengthened if the upward limit of air space were clearly established; the presence of an identifiable boundary would reduce disputes; new

vehicles would be able to transit through both air space and outer space and it would be necessary to know which regime were applicable at different stages; the need for definition/delimitation had become urgent.

States favoring a formal definition considered that it would not be possible to rely exclusively on scientific and technical criteria. A formal agreement would allow for necessary identification of an intermediate zone between air space and outer space. A formal agreement would allow for the use of functional definitions of the terms "space flight" and "space object." Some States expressed the view that it would be possible to introduce into a formal agreement provisions giving a *visi generis* character to geostationary orbital positions. Discussions focusing on a prospect of a formal definition were influenced by the reintroduction by the Soviet Union of its 1979 proposal that a boundary should be fixed at an altitude not higher than 100 to 110 km above sea level.³⁰³

A number of States raised objections to the need for a formal definition, and in particular to the Soviet proposal fixing the boundary at the 100 to 110 km height. Attention was called to the fact that no practical difficulties had arisen in the absence of a formal definition/delimitation. Opponents of a formal agreement observed that "there was no scientific or technical justification for the designation of a particular altitude as the boundary between air space and outer space."³⁰⁴ They also urged that a relatively high boundary would create difficulties for space objects, immediately following launch or in the course of descent, where the transit took place over foreign countries. It was also pointed out that a functional approach would require the definition of "space flight" and "space object." Opponents also considered that a formal definition would be both arbitrary and premature.³⁰⁵

The subcommittee reviewed the issues that had been raised on the use of geostationary orbital positions. As in the past there were widely divergent views expressed by the equatorial countries and the principal space-resource States. As in the past attention was called to the possible utility of a formula allowing such positions to be used for the benefit of all countries and in particular the developing States. It was also suggested that the ITU might be the preferred forum for dealing with the utilization of such positions.³⁰⁶

These issues attracted the attention of COPUOS when it met in 1981. Agreement could not be reached respecting a formal agreement on definition/delimitation. Wide differences also existed on whether the geostationary orbital position was subject to sovereign or preferential claims. However, notice was

taken of the view that it would be rational to use the orbital position on an equitable basis.³⁰⁷

By the end of 1981 it had become clear that the members of COPUOS were not anywhere near a consensus position on the subjects of definition/delimitation and rights respecting the geostationary orbital position. No proposal had been made for the establishment of a general set of principles dealing with these issues, although the Soviet Union had urged consideration of its working papers on definition/delimitation. The two issues are essentially practical ones and some of the ideological differences, which have prevented the achievement of consensus, for example in the area of DTB, have not been raised respecting the present issues. However, perhaps an equally ominous development was the hardening of the positions of the equatorial States and those rejecting their claims. However, many of the space-resource States indicated an awareness of the problems confronting the developing countries, including several of the equatorial States falling into this category. This awareness has taken the form of assurances that the communication's needs of the developing countries would be aided by the advanced countries.

A major problem, which is not unique to the negotiations conducted within COPUOS, has been the difficulty of establishing scientifically and technologically verified facts. When such facts appear to have been established, although they will always change over time as advances are realized, there has been a major difficulty in gaining their acceptance by national delegates. For example, it is now quite clear that through the use of antenna farms it is possible to use a given space object for a variety of communication's purposes. This has resulted in a partial elimination of the earlier concerns over the crowding of the geostationary orbital position by space objects. Further, a large number of highly advanced procedures have been put into operation whereby interferences in the use of frequencies have been brought under close control. Thus, the fears of monopolistic national dominations of both the geostationary orbital position and the field of communications may be laid to rest. Until facts such as these are fully understood and accepted, it seems unlikely that consensus will be achieved.

During the discussions of these subjects there has been a close coordination between COPUOS and the ITU. This will have to continue in the future in order to avoid opposing positions and contests over the most suitable forum for the making of relevant decisions. Both COPUOS and the ITU can derive substantial benefits from some of the scientific reports prepared at the request of the Scientific and Technical Sub-Committee. There will continue to be the need for close coordination between the

two subcommittees on this subject. The members of the Legal Sub-Committee will have to understand the reluctance of the Scientific and Technical Sub-Committee to offer recommendations until it can be fully persuaded that its advice is based on sound facts. These facts, particularly as to the lowest continually safe position at point of perigee, still remain to be determined. Thus, despite strong demands, especially on the part of the Soviet Union, for the fixing of a boundary in the range of 100 to 110 km above sea-level, it does not appear that this proposal will be able to gain the required consensus.

It should also be noted that it was not until 1976 that the terms of the 1967 Principles Treaty were brought under concerted attack. Although contentions of the equatorial States have been made with vigor in all forums that are available for the portrayal of their outlooks, it does not appear that they have been able to persuade States, other than those in their common geographical condition, of the validity of their contentions.

It is probable that both the issues of definition/delimitation and rights to the geostationary orbital position will remain for the foreseeable future in the area of political rather than legal concern. In the meantime the ongoing activities of the space-resource States at the geostationary orbital level constitute further evidence of the maturing of customary international law.

8. CURRENT ASSESSMENTS BY SCHOLARS

a. The Issue of Definition/ Delimitation

Professional commentators at the present, as in preceding decades, have offered solutions to the issue of definition/delimitation. Their attention has been drawn to two principal approaches for the establishment of a legal boundary between sovereign air space and non-sovereign outer space. These are the spatially-measured and the functional approaches. The former in particular includes several alternatives. Additionally, it has been suggested that the time is not yet ripe to make a choice between the alternatives. Scholars, like national spokesmen, have been divided over the respective merits of the several possibilities.

The options have generally fallen within the illustrations contained in the 1977 background paper of the UN Secretariat.³⁰⁸ This set forth 10 illustrations of a spatial approach and commented on a functional approach. Among the spatial

possibilities were those relating to atmospheric layers and to zones. Borrowing on such considerations a proposal has been made that a region, to be termed "mesospace," should be located above 50 km above sea level and below 130 km, plus or minus 10 km.³⁰⁹ This proposal, which draws on the analogy of a contiguous zone between sovereign land and air space areas and non-sovereign ocean areas, would allow for a unique area in which space objects would have certain transit rights.³¹⁰ The proposal for a mesospace zone has relied on a factual assessment of the physical properties of the atmosphere.

Doubt has been cast on the utility of such an approach following conclusions advanced by the Scientific and Technical Sub-Committee. It reported there were no scientific or technical characteristics of the Earth's upper atmosphere that might make it a valid basis for the establishment of zones or boundaries. COSPAR studies were cited in support of the fact that past estimates of the lowest altitude at which satellites could survive had been too high.³¹¹

In a 1976 assessment of boundary proposals attention was called by Belgium to problems associated with fixing a boundary depending on the layers in the atmosphere.³¹² Conditions in the atmosphere were described as variable, particularly in the heterosphere lying above 100 km plus or minus 10 km. This finding has produced doubt as to the suitability of a zonal approach that has its foundations in the natural conditions of the Earth's atmospheric gases.

Among the foremost of the proponents of a functional approach has been N. M. Matte. In concluding that there should be a single legal regime for air space and outer space he has used the expression "aerospace."³¹³ In his view it is more feasible to examine the nature of the activities being pursued than to attempt a definition based on spatially-measured criteria.³¹⁴ As observed by Stoebner, this approach would require obtaining international agreement as to the meaning to be given to the expression "spatial activities." This would possibly require an understanding of the purported mission of the space object, and this in turn would require the clarification of potential ambiguities. However, the latter has suggested that guidance might be obtained through reference to the terms of Article I of the 1967 Principles Treaty which provides that space exploration and use "shall be carried out for the benefit and in the interests of all countries."³¹⁵

In rejecting the functional approach Stoebner offered a legal definition of outer space. He suggested that outer space might be defined as an unlimited area above the Earth that could be reached by all appropriate means excluding vehicles relying on

air-breathing power sources.³¹⁶ He would not allow any State to interdict the return to Earth of a space object. However, to advance notice would have to be given by a launching State to a State above whose territory a space object would be engaged in transit when the returning space object was at a height of less than 83 km above the transited State.³¹⁷ In his view such advance notice would accord to the space object in the indicated "trajectoire" an absolute priority over all other means of transport.³¹⁸

Support for a functional approach to definition/delimitation has been voiced by Gal, who, nonetheless, has considered that the chances were better for a definition based on spatial measurements.³¹⁹ Gal has urged that the importance of space activity is the basis for opting for a boundary able to accommodate such activities. This would allow any aspect of space activity, even when occurring beneath a spatially-measured boundary, to be governed by space law and not by air law. In support of his contention he has taken note of the security and political aspects of space activities, which he considered relevant to definition or identification. He stated that only through the avoidance of a measured boundary would it be possible to achieve the "harmonization of air and space law concerning such delicate questions as 'freedom of innocent passage,' definition of spacecraft and space objects as differentiated from aircraft and other objects not ruled by space law."³²⁰ In short, he would be guided by the condition of orbital flight rather than by the altitude achieved by the space object. In his view the choice as between competing approaches remained unresolved at the time of his writing because the practice of 20 years allowing a space object to orbit at its lowest perigee had not evolved into an accepted rule of customary international law. Since Gal's focus was on what space objects are in fact able to do by way of orbiting and landing, the possibility that such objects may be able to orbit at lower levels in the future than at present was not relevant. By the same logic he would not modify his position were it proven in the future that aircraft might be able to transit safely from Earth to those spatial areas now reserved exclusively to space objects by reason of their physical characteristics.

Gal's view that *optinio juris* has not as yet confirmed the right of spacecraft to orbit lawfully at the lowest perigees available to them is clearly a minority view. Thus, it has been noted by Williams that "an international custom exists from the moment the requirement of an *optinio juris generalis* is made evident."³²¹ She has also pointed out that "general consensus exists among States in the sense that any claim of sovereignty above the lowest perigee of a satellite, or above 100-110 km would invalidate to a greater extent the principle of freedom

and non-appropriations."³²²

A detailed assessment of prospects for international agreement on a boundary between outer space and air space was made by Perak in 1976.³²³ After examining a number of the theories based on spatial criteria for a boundary between outer space and air space, Perak stated that "reasonable scientific criteria can be found for a possible geometrical delimitation of outer space."³²⁴ He concluded that a definition/delimitation based on the lowest perigees of satellite orbits had the soundest scientific basis and should be given preference over competing approaches. In support of his conclusion he stated that "the criterion of lowest perigees of earth satellites has the advantage that it is based primarily on physical concepts which are invariable."³²⁵ Further, such a limit would meet "all the requirements for a practical and meaningful delimitation of outer space."³²⁶ His specific proposal was that the boundary should be measured from ocean level. He pointed out that a decision would have to be taken as to whether the boundary should be at the average level of orbiting space objects or slightly below that height. On a factual basis almost all satellites up to the present have orbited in a specific region higher than between 90 and 100 km above ocean level. In his view, practical considerations would allow policymakers choices between 90 and 110 km. Perak, on the basis of the geometrical approach, has suggested for definitional purposes that the rounded-off value of 100 km be accepted. He stated "in such a case a very brief definition might be found sufficient, simply stating that the limit of outer space had been set at the altitude of 100 km above the geoid, measured in a direction perpendicular to the geoid."³²⁷

This approach accepted the basic proposition that space objects when in orbit are in outer space. Support for this view is found in General Assembly Resolution 1721 (XVI), the practices of the space-resource States in providing information to the UN Secretary-General regarding launches, and the Registration Convention. Resolution 1721 called upon States launching objects into orbit or beyond to furnish information promptly to COPUOS, through the Secretary-General, for the registration of launches. The United States began to submit such data in March 1962, as did the Soviet Union, and these reports have continued to the present time. Derek, in commenting on the reports from the United States and the Soviet Union containing the foregoing data, has stated that "the spirit of the above introductory statements seems to indicate that the region which is occupied by satellites in orbit is a part of outer space."³²⁸ It was also his view that the Registration Convention strongly supported this conclusion since the terms of that agreement "indicate that artificial satellites of the Earth are space

objects and hence launched into outer space."³²⁹

Perek's analysis of competing spatial criteria reviewed the proposal that a boundary might be fixed at the point above the surface of the Earth where aerodynamic lift is exceeded by the centrifugal force, i. e., the proposal identified with its author and known as the von Karman line.³³⁰ This line, which would be at an elevation of about 50 miles or 84 km, would constitute a simple definition based on scientific criteria. However, such an approach has a defect in that it is to some degree "connected with a particular degree of technological development."³³¹

In Perek's judgment the best criteria would have a scientific and technical basis associated with the lower areas in which space objects traditionally orbit. In his view "no other criterion proposed for fixing the limit of outer space, with a possible exception of von Karman's line of primary jurisdictional boundary, seems to meet the requirements for a practicable definition."³³² This led him to opt for a choice between the distances of 90 and 110 km. In support of this suggestion he considered that a limit at 90 km altitude would be a suitable choice if it were found desirable that satellites spend their entire lifetimes, but for extremely exceptional cases, above the limit. A limit at the middle distance of 100 km would mean that practically all satellite orbits, at least during their useful lifetimes, would be in outer space. The infrequent crossings of the limit by decaying satellites could be regarded in the same light as the natural phenomenon of meteors. He also urged that a 100 km boundary "would give States more headroom at the cost of some satellites spending hours or days below the limit before decaying."³³³

When space objects are orbiting at a height of 90 to 110 km it is now possible to identify their position both from the ground and from space within a margin of 3 km. Thus, substantial support exists for the use of spatial criteria for definition/delimitation at a precisely fixed position above the ocean level. The 100 km boundary is an exact figure. It can be applied globally with the same boundary pertaining to all States. Since it can be stated in absolute terms, it allows for a quick and easy methodology in determining whether a given space object is at the boundary or above or below it.

Indicative of the fact that support for the spatial approach to the boundary issue has been growing are the conclusions of Goedhuis.³³⁴ Since he has preferred to take a very cautious approach to the facts that are believed by many to allow for the acceptance of a customary rule of international law allowing for a boundary closely proximate to the 100 km position, he

has concluded that "the problem of demarcation can only be solved on a *conventional* basis taking into account some scientific criteria."³³⁵

He also has called attention to two legal problems which result from the physical transiting of a foreign spacecraft. The right to engage in such transiting is affected by the necessity confronting the State claiming the right. Further, such a right must accommodate to the need that no harm or prejudice should befall the transited State.³³⁶ He believes that States will show "a greater inclination to agree to a right of transit for spacecraft than they have shown as regards a right of transit for aircraft."³³⁷ Nonetheless, a need remains for a careful analysis of such competing terms and concepts as "innocent passage," "right of transit," and "freedom of transit."

Several papers on definition/delimitation were presented at the 1978 meeting of the International Institute of Space Law. Almond has come to the conclusion that "the time for establishing a line separating outer space and territorial air space is not yet ripe."³³⁸ The primary reason for this judgment is that "the determination of the appropriate line raises policy problems that have not been resolved amongst States."³³⁹ In Almond's view, in the absence of the acceptance of common policies, any agreement that might be entered into would be couched in vague and ambiguous terms. By engaging in such a process the parties would be shifting to the future the real decisions and the ultimate resolution of their differences. Such a bargained decision, in his view, should allow for the formation of precise rules, but this would depend on the application of adopted criteria to practical differences, if and when they might arise. This case-by-case approach would flesh out the formulas. It would also constitute steps in the process of developing a customary international law on boundaries.

In his 1978 assessment Górbriel has called attention to the paradox of detailed rights and duties imposed by the contemporary law of outer space and the absence of a definition/delimitation of the area. He supported the spatial approach over the functional approach for arriving at a boundary between air space and outer space, particularly on a boundary between that it was not possible to make a precise and satisfactory distinction between uses of the two indicated areas.³⁴⁰ He favored an obligatory conventional disposition of the matter. In his view the boundary might be established at between 80 and 90 km above the surface of the Earth.

Academic commentators on the subject of definition/delimitation, like national representatives at COPUOS, added little in

recent years to what had been said before. The intensity of the interest in this subject, brought on by the formalization of the claims of the equatorial States in the 1976 Bogota Declaration, had by 1982 assumed a much lower profile. The inability of States to effect a choice, via the process of consensus, between a boundary founded on either spatial or functional considerations proved to be as frustrating to the commentators as it had been to national spokesmen. Obstacles to agreement were signaled for attention. Thus, in this vein it was noted that avenues, which might have been pursued by negotiators, had been closed by the challenges raised respecting the 1967 Principles Treaty by the equatorial States. A second obstacle was seen in the existing dichotomy between completely opposing regimes relating to air space and to outer space. A further obstacle was found in "the determination to base the legal delimitation of space on precise and rigorous scientific criteria."³⁴¹ Thus, the acceptance of an arbitrary spatially fixed boundary was favored. Nonetheless, it was acknowledged that through the acceptance of such a boundary, States might create "barriers to their space applications research."³⁴²

Other commentators have pointed to the inability of States to identify the criteria to be employed in fixing a boundary. Attention was called to considerations seemingly receiving maximum approval, namely, to the distance of lowest perigee--either as of 1968 or a later date--to an arbitrary boundary arrived at by agreement varying between 83 and 110 km above the surface of the Earth, and to an intermediate area between air space and outer space wherein something equivalent to the law of the sea principle of innocent passage might be allowed.

In analyzing the boundary situation several commentators called attention to security considerations. Security can be analyzed from at least two perspectives. If it were considered that a space object might be employed as a vehicle to deliver destructive bombs to the territory of an adversary, it would be hard to see any relevance between such conduct and the mere presence of a legal boundary consisting of an imaginary line located at some point above the surface of the Earth. Rules do not automatically or conclusively deter illegal conduct. On the other hand, if security were to be confined to the need to prevent a large number of space objects from interfering in the transit of aircraft at heights slightly above the surface of the Earth, then the concern for the avoidance of such disorder and inconvenience could be encompassed within the concept. Thus, it was suggested by Heraud that the establishment of an intermediate zone, or mesospace, immediately below the outer space boundary in which the subject State would possess sovereignty, would serve the needs of space transit, provided there would also be "automatic freedom of transit and of

innocent overflights by objects in space and new means of travel [and] prohibition of activities prejudicial to the underlying State, which would however have the burden of proof that the activities of another State are prejudicial to it."³⁴³

Several commentators have recently urged that an agreed boundary would tend to prevent future problems relating to the use of outer space. A Soviet writer has identified such problems as being produced by hybrid craft of the shuttle variety and by the claims of the equatorial States to exclusive rights in geostationary orbital positions. Particular attention was called to the need for space objects to transit over territories of other States at altitudes lower than 100 km while engaged in reaching orbit or returning to the Earth in the territory of the launching State.³⁴⁴ Support was given to the 1979 Soviet proposal for a spatially focused definition. Williams has endorsed the Soviet plan considering it to be more practical than the functional alternative. In support, it was stated that the definition "should be based on a legal criterion rather than on technical, biological or other factors."³⁴⁵ It is a fact that the Scientific and Technical Sub-Committee has not been able to supply the Legal Sub-Committee with scientific criteria for a linear division between air space and outer space. Thus, there has been a willingness on the part of commentators to look to alternative factors.³⁴⁶ Of interest has been the recent proposal of Heraud that one possible way to extricate the current discussions from their seemingly irreconcilable divergences would be to follow the approach taken respecting the Moon and other celestial bodies. In that instance it was possible to establish a special regime for the indicated spatial areas and natural resources without derogating from the 1967 Principles Treaty.³⁴⁷

In 1979 after calling attention to the 20-year practice of States in orbiting space objects, plus the absence in COPUOS-sponsored treaties of provisions for fixed boundaries, Rosenfield concluded that a functional approach to the definition/delimitation problem has already been accepted.³⁴⁸ In taking into account the fact that over time space activity has been on the increase, and that with the advent of the shuttle the volume of traffic will become even greater, this author suggested that the functional approach had met with success and that it "should be continued so long as it is of value."³⁴⁹ In his view the identification of a clearly defined scientifically-based boundary, or the presence of a practical matter in need of a solution, would be the only considerations which would necessitate a formal definition. Thus, a "wait and see" policy was favored.

The International Law Association, through its Committee on

Space Law, has been identified with the demarcation issue since 1966 with consideration having been given to the subject in Helsinki in 1966, in Buenos Aires in 1968, and in Manila in 1978. Attention was drawn in the 1978 Report to the fact that a number of States, including Argentina, Belgium, France, Italy and Mexico had given their support to a boundary in the range of 100 km.³⁵⁰ The Report also indicated that several members of the Committee had responded to an inquiry as to their views concerning a boundary of approximately 100 km. On the whole, such members favored the 100 km boundary, although one respondent supported the functional approach and others indicated the need for a launching State to continue to exercise jurisdiction over the events taking place on space objects launched by it.³⁵¹ These positions were taken in 1980 with the knowledge that in 1968 a resolution had been adopted containing the statement that the term outer space as used in the Outer Space Treaty of 1967, included "all space at and above the lowest perigee achieved by the 27 January 1967 when the Treaty was opened for signature, by any satellite put into orbit, without prejudice to the question whether it may or may not later be determined to include any part of space below such perigee."³⁵²

Among the issues raised for consideration at the 1978 session was whether an agreement, fixing the lowest boundary of outer space at an elevation of 100 km, would produce an implication that States might exercise sovereignty above their territories up to such a height; whether such a decision would require a definition of outer space functions which might be permitted in the area between the surface of the Earth and the outer space boundary; and whether there should be a right of passage for spacecraft through foreign air space in order to reach outer space.³⁵³ In responding to these fundamental problems, dealing with practical launchings of spacecraft, attention was called by Ernst Willhelm to the fact that it was increasingly being appreciated that "wherever any line of demarcation between air space and outer space is drawn, the area *below* that line is not an area of exclusively *national* domain but is also of *international* concern. To the extent this view is sound, it would seem that the need to distinguish air space from outer space, and to settle on a fixed line of demarcation between the two is correspondingly less."³⁵⁴

Following assessments of the definition/delimitation issue the Conference adopted a resolution in which it reemphasized the view that, even in the absence of a treaty, international law contained a principle of freedom of outer space for exploration, use, and exploitation. The resolution also noted that "the space at and above the altitude of about 100 km above sea level has been growingly acknowledged by States as well as by experts in the field of outer space activities as outer

space."³⁵⁵ The Committee was authorized by the resolution to "study the question as to whether the sovereignty above the surface territory of States extends to the lowest boundary of outer space."³⁵⁶ The resolution also favored the establishment of a rule allowing for the freedom of passage for spacecraft through the air space of a non-launching State for the purpose of allowing access to orbit and to return from orbit to Earth.

b. The Issue of the Geostationary Orbital Position

Prior to the Bogota Declaration of December 3, 1976 scholarly assessments of the use of the geostationary orbital position had focused on the legal and practical aspects of satellite-based telecommunications. Attention had been given to the role of the ITU in making allocations of radio frequencies to be employed in broadcasts from space objects. Concern existed whether a "first-come, first-served" principle existed whereby the first user of a broadcast spectrum would be able to assert an exclusive claim to a geostationary orbital position. It is now clear that, while a State may register with the International Frequency Registration Board of the ITU a national assignment of a broadcast band, this only creates preferences to that frequency rather than rights in the context of the ITU governing process.³⁵⁷ Following the 1971 WARC SF and Resolution No. SpA 2-1, representatives of the ITU called attention to par. 1 of the Resolution which provided that "the registration with the ITU of frequency assignments for space radio-communication services and their use should not provide any permanent priority for any individual country or groups of countries and should not create an obstacle to the establishment of space systems by other countries."³⁵⁸

The meaning of the foregoing resolution was explained to the Legal Sub-Committee of COPUOS by Mr. Richard E. Butler of the ITU on May 20, 1976. He stated that the ITU Convention "also provided for equal rights in the frequency bands for space radio communication services and ensured that international registration of frequency assignments did not give permanent priority to any country or group of countries."³⁵⁹

It has long been the position of the United States and other space-resource States that the use of a geostationary orbital position for activities which are peaceful in character is compatible with the terms of the 1967 Principles Treaty and therefore, by definition, is entirely legitimate. Thus, it has been observed:

Using a favorable orbit for a legitimate activity

cannot reasonably be classified as a prohibited

national appropriation in the sense of Article II.

The point I wish to make is that using a favorable geostationary orbit is no more an "appropriation" or *de facto* occupation" than using a particularly favorable area of the lunar surface . . . for a manned landing.³⁶⁰

Through Resolution BP of the 1979 WARC recognition was accorded, as it had been in the earlier activities of the ITU, to the close connection between the use of the geostationary orbital position and of the radio frequency spectrum. The Resolution took into account that "in the use of the geostationary-satellite orbit for space services, attention should be given to the relevant technical aspects concerning the special geographical situation of particular countries."³⁸¹ The Resolution called for a new conference to be convened not later than 1984 "to guarantee in practice for all countries equitable access to the geostationary-satellite orbit and the frequency bands allocated to space services."³⁸² This Resolution was adopted following extensive negotiations and was passed with the assurances of the space-resource States that they would seek to facilitate in the future the legitimate needs of the less-developed countries for communication services. Such assurances could be made in the light of the continuing development of the technology of space communications. Thus, with the emergence of an understanding of these facts, many States became more aware that there was no need to assert exclusive claims to spectrum allocations and to orbital positions. In short, attention was directed away from debates over sovereign rights and exclusivity of uses to the guarantees contained in the 1967 Principles Treaty respecting free access and free and equal exploration, use, and exploitation. The present trend is to consider the accommodation of the needs of the respective users, with an emphasis on use, rather than on the claim of one or several States to exclude other States from present or prospective uses. However, at the 1979 WARC some of the LDCs urged the adoption of formal assignment plans for space services and the geostationary orbit. This caused the U. S. delegation to report that it was "somewhat concerned about what seem to be unrealistic expectations of some countries . . ." on this matter.³⁶³

At the 1979 WARC the LDCs urged the need to devise plans for the use of the fixed satellite service so that they would not be denied equitable access to orbital positions in the 4/6 GHz band. These claims were denied by the advanced countries. Arguments were presented by them "to show that detailed planning was, in their view, totally unsuited for most space services and especially so for the fixed satellite service."³⁶⁴

These discussions influenced the adoption of Resolution BP with its provision for the convening around 1984 of a Space WARC. Its function would be to consider the means whereby the goal of equitable access might be achieved as well as an improvement in regulatory procedures.³⁶⁵

Scholarly analyses of the claims of the equatorial States--except for those emanating from the equatorial States--have been uniformly adverse to the terms of the Bogota Declaration. Such criticisms were voiced even prior to its formal promulgation, and have continued to the present.

The objections have focused on four major considerations as well as on a number of minor ones. Attention has been given principally to the proposition that the terms of the Bogota Declaration were contrary to the right established in Article I of the Principles Treaty permitting all States equally and freely to explore, use, and exploit the space environment and to have free access to it. Secondly, the critics have noted that the placing of a geostationary satellite into an orbital position, and maintaining it there, cannot be considered to be an appropriation of an area or of a resource in outer space by means of use or occupation as forbidden in Article 2. Thirdly, it has been pointed out that customary international space law contains norms, which have been incorporated into the Principles Treaty, and which have been consistently respected since 1967. Such norms allow for the use on the basis of equality of geostationary orbital positions. Fourth, since the space-resource States have consistently given full public notice of the use of geostationary orbital positions, it has been concluded that the equatorial States have asserted their claims long after the world community had accepted the regime of free and equal exploration, use, and exploitation and free access. Such notice has been given to the UN and distributed by it. Special notice has been given to the ITU respecting national decisions. The conclusions reached by the ITU, and especially by the International Frequency Registration Board, have been heavily publicized. Launching States have also given wide publicity to other States and to the general public.

Prior to the Bogota Declaration analytical attention had been given to the meaning to be given to Articles 1 and 2 of the Principles Treaty and to the relationship between these articles. In examining these articles it is well to recall that they do not mention the natural resources of outer space, the Moon, and other celestial bodies. They refer instead to the foregoing three spatial areas. Moreover, the prohibition contained in Article 2 is against only national appropriation of the areas.³⁶⁶

Writing in 1974 Goedhuis noted that Article 2 of the Space Treaty prohibited national appropriation of the areas of the space environment but did not prohibit the appropriation of the natural resources of that space.³⁶⁷ Following a review of the negotiating history of this Article he observed that the area was treated in the same manner as the high seas. In his view this meant, pursuant to Article 1, par. 2, that States possessed "the freedom to take and make use of the natural resources of this space."³⁶⁸ No explanation was offered respecting the extent to which States might "take and make use" of the geostationary orbital positions other than his reference to the scarcity of orbital positions and the need for some kind of control. Perhaps it is noteworthy that he did not contend that use constituted the basis for establishing either a *de facto* or *de jure* basis for an exclusive taking of the orbital position. His observations focused, instead, on the need in the future to decide how to divide and regulate what he considered to be the orbital position as a natural resource. Reference was also made to the need to take into account the interests of States not possessing an outer space capacity. Thus, despite the language quoted above, it is possible that his view related more to a sharing of common resources, which were available for the exploration and use of all, rather than a division of such resources only among States able to exercise exclusive rights to them. However, he clearly supported the view that a geostationary orbital position was "a spatial extension resource," and use of it was permitted under the 1967 Treaty.³⁶⁹ The same conclusion was reached in 1978 when he observed that a geostationary orbit is situated in outer space "to which the fundamental principle of freedom for exploration and use applied."³⁷⁰

The use of a geostationary orbital position according to Williams should not be considered to be an appropriation of such an area. The same author also observed that "it is clear that, *by nature*, outer space can be subject neither to national appropriation nor to any kind of appropriation under private law."³⁷¹

Writing before the issuance of the Bogota Declaration Dudakov noted the inconsistency between the position advanced by the United States on July 31, 1969 during negotiations relating to direct broadcast satellites,³⁷² in which the United States rejected the possibility of appropriation of a geostationary orbital position, and the Colombian position. It was considered that the views expressed by Colombia were "in contradiction to the spirit and idea . . . of the 1967 Principles Treaty."³⁷³ Support for this conclusion was drawn from the terms of Articles 1, 2, and 9 of the Principles Treaty and the Preamble, Article 1, par. 2, Article 2, par. 4, and Article 55, par. b of

the UN Charter. Relying on these provisions the conclusion was drawn that the principles of free use and non-appropriation were applicable. As a part of outer space the geostationary orbital position was deemed to be the province of all mankind.³⁷⁴ Also writing prior to the Bogota Declaration another Soviet author arrived at the same conclusion, but from a different perspective. According to Kolosov "not a single rule of international outer space law can be interpreted as limiting the right of States to explore or use outer space by certain time periods or by certain parts of space."³⁷⁵

Following the 1976 Bogota Declaration and the defense of its provisions by the equatorial States at the United Nations, a number of scholars advanced substantial practical and legal reasons for rejecting its terms. Writing in 1977 Ferrer noted that the Sun, as a natural resource, had not fallen under the domination of a State. In his view their claim of sovereignty over the orbital position should be rejected for the same reasons that a claim to the Sun would not be accepted. He saw no parallel between the claims of coastal States to special rights in an exclusive economic zone and geostationary orbital claims. Also rejected was the view of the Bogota States that, since space objects at the geostationary level were within the pull of the Earth's gravitation, they were not in outer space. He noted that gravitation exists on all portions of the globe and not just in respect to the relationship between the equatorial States and space objects. The position of the equatorial States that, because there is no formal definition of the respective boundaries between air space and outer space, they were thus entitled to claim sovereignty at geostationary levels, was turned against them. Ferrer indicated that, since no definition existed, it was equally possible to affirm that the orbital position was in outer space. He also noted that the absence of such a definition would not allow a State to make a claim of indefinitely upward sovereignty. Any such claim would constitute in his words, a "cosmographic absurdity," since by extending national boundaries upward there would be overlaps between the asserted adjacent boundaries of States in the space environment. He also advanced the view that the space practices of the resource States had established a boundary based on customary perigees, and that this was in close proximity to the surface of the Earth. He also called attention to the overwhelming votes in favor of General Assembly Resolutions 1962 and 2222 at a time when the Principles Treaty constituted an annex to the latter. The common provisions of these resolutions were considered by him to be a *communis juris opinio*. Further, he urged that the Principles Treaty had ripened into *jus cogens* and as such was "equally binding on all States and among them the equatorial ones."³⁷⁶

Cocca has stated that international space law, and particularly the 1967 Principles Treaty and the 1973 ITU Convention, contains general regulations applicable to the use of the geostationary orbital position.³⁷⁷ In his view the Bogota Declaration has necessitated taking account of the practical aspects of such orbits. Focal points for such an inquiry have included: (1) the orbital position as a region in space; (2) as a site for the placement of satellites; (3) as a point of reception and emission of broadcasts; (4) as an area for the gathering and transmission of solar energy; (5) as a route to be lawfully used, i. e., as a *droit de route*; (6) as a limited natural resource; and (7) as a reference for a possible delimitation of outer space.³⁷⁸

The expression "*droit de route*" was attributed to Manuel Augusto Ferrer.³⁷⁹ Its source was found in the 1967 Principles Treaty, which by authorizing the exploration of the space environment, allowed movement through outer space. In Cocca's words "everybody has the right to use a route on condition; of course, they should not interfere with a previous similar right exercised by another."³⁸⁰ The conclusion may be drawn from the foregoing that, following the lawful positioning of a space object in geostationary orbit, a second launcher is duty-bound to respect the route selected by the first launcher and occupant. Although he has stated that the first to place a space object into an orbital position has a prior right, the right was to use the position rather than to have a claim based on an occupation which might give rise to a permanent preference or to appropriation of the position. In his view the terms of Resolution Spa 2-1 of the 1971 WARC ST would not allow for a "permanent privilege or exclusive use."³⁸¹

Commentators supporting the view that the use of the geostationary orbital position does not constitute an appropriation of the space environment, and that such use is consistent with the terms of the Principles Treaty, are numerous. Arzinger has stressed that outer space exists at heights where space objects have engaged in uninterrupted transit. In his view the practical utility of space objects would be severely impeded if it were necessary to obtain the formal approval of the Principles Treaty by all States over which a space object might transit prior to a launch.³⁸² Fernandez-Brital has stated that the stationing of space objects at geostationary heights is consistent with Articles 1 and 2 of the Treaty.³⁸³ Kosuge has noted that the Treaty did not make specific reference to the use of the geostationary orbital position. He observed that it was "quite reasonable that space activities using the geostationary satellite orbit shall be conducted under the guidance of the principles laid down in the Space Treaty."³⁸⁴ Górbiel has taken the unequivocal position that the same international space law

applied to the use of the geostationary orbital position is applied to all of outer space.³⁸⁵

Gorove has supported on both customary and treaty grounds the "utilization of the geostationary orbit."³⁸⁶ J. F. Galloway has concluded that the majority of States composing COPUOS have not regarded the legal status of the geostationary orbital position as being indeterminate "because it is clearly in outer space and thus not subject to sovereign claims or national appropriation in accordance with Article 2 of the 1967 Treaty on Outer Space."³⁸⁷ Supportive of these outlooks has been the conclusion of Busak that "the orbit is an integral and inalienable part of outer space and it is accordingly covered by the provisions of the Space Treaty."³⁸⁸ He also made reference to the use of the geostationary orbital position when he noted that it would be necessary to consider practical measures so as "to prevent a position in this orbit from being used in such a way as might be considered a quasi-appropriation."³⁸⁹ Despite the differing approaches taken by the foregoing commentators in their assessments of the terms of the Bogota Declaration, they were unanimous in their rejection of it.

These writers have also made other important observations relating to special issues raised by the Bogota Declaration. Busak compared the authority of the international legal prescriptions contained in the Principles Treaty with those contained in the product of the ITU. The decisions of the 1977 WARC BS, for example, could not in his view constitute a legal regime "that would conflict with international law or with the tasks entrusted to it by the basic ITU instruments and by the resolutions of the Pleni-potentiary Conference. The ITU was in no way empowered to take decisions incompatible with the binding provisions of the Space Treaty."³⁹⁰ He also suggested that General Assembly Resolution 3171 (XXVIII), dealing with permanent sovereignty over natural resources, could not serve the cause of the equatorial States since this and similar resolutions "have nothing to do with the natural resources of outer space, whose status is governed by the Space Treaty."³⁹¹ He also rejected the distinction made by the equatorial States between geostationary orbital positions situated over the high seas and over national territory. In his view this approach would not promote the "rational and effective use of the orbit for the benefit and in the interests of all countries."³⁹² Gorove also called attention to the language of Article 1, paragraph 1 of the Principles Treaty which specifies that "all" countries are to share in the benefits and use of outer space.³⁹³

Several scholars have rejected the claims of the equatorial States on the ground that a binding rule of customary international law has existed long enough to invalidate contentions

that were not heard until the middle 1970s. The early development of a rule of customary international law preventing the assertion of claims to geostationary orbital positions, as well as denying the appropriation of outer space, has been traced to a period of time antedating the 1967 Principles Treaty. Such a customary international space law has been seen as having been confirmed in practices during and after 1967.³⁹⁴ According to Goodhuis the legal principles of freedom of exploration, use, and nonappropriation of outer space were codified in the Principles Treaty. By confirming existing law, no new law was created. From this assessment the conclusion was drawn that "Every State, independent of this Treaty, is bound by these two basic principles."³⁹⁵

The existence of a customary rule allowing space objects to orbit freely above 150 km has also been suggested. This conclusion was based in part on the practical consideration of an uninterrupted transit of space objects. In the absence of a general customary rule it was seen that States, which had not become parties to the Principles Treaty, might seek to prevent the use of geostationary orbital positions above the territories of the non-signatories. Assuming the existence of such a customary rule, it has been urged that the space-resource States have acted in reliance on that prescription. Many commentators have referred to the fact that, prior to the statements made by the equatorial States in the mid-1970s at the United Nations, opposition to the use of orbital positions had not been proclaimed. Such protests had not been made either at the UN or at the ITU. In calling attention to the experience at the ITU prior to 1977 it has been pointed out that "neither at previous Radio Conferences nor at the Plenipotentiary Conference has any country raised any objection to the principle that the geostationary satellite orbit could be used by all countries under the relevant provisions of the International Telecommunication Convention and the Radio Regulations."³⁹⁷

The applicability of Article 1, par. 2 of the Principles Treaty to the geostationary orbital position has been questioned by those equatorial States which have not subscribed to that agreement. These include Colombia, Indonesia, Kenya, Somalia, and Zaïre. Thus, if it were contended successfully that the terms of the Treaty, despite the fact there have been more than 80 ratifications, does not constitute international law in the absence of universal consensus, the Treaty would have no legal significance. However, such an exacting standard of universal approval has never become a part of international law. In appraising the quality of the norms contained in the Treaty it must be recalled that all of the space-resource States are parties to it and that there has been a general acceptance of the legal vitality of its terms. Thus, it must be concluded

that objections advanced by the equatorial States based on the non-universality of acceptance are without merit.

The equatorial States rest much of their argument on the proposition that the Principles Treaty does not contain a formal definition of the boundary between air space and outer space. In response to this contention the question must be asked whether a boundary can be established by a process other than that of formal agreement. As is well-known, one of the principal sources, and possibly even the most important source, of international law is custom. Despite efforts at COPUOS to arrive at a formal definition of a boundary between the two areas, it is the view of many observers that a customary law boundary exists at the point where space objects normally orbit, namely, a low boundary in the neighborhood of 100 to 110 km above sea level. If this is the case then the terms of Article 2 of the Principles Treaty denying the right to establish sovereignty in outer space would defeat the claim of the equatorial States. Their claim would not be defeated by Article 2, per se, but would fail by reason of the fact that Article 2 either reflects or has "become" a statement of customary international law.³⁹⁸ Thus, in each of these situations the claims of the equatorial States would fail. In assessing the applicability of customary international law to the use of the geostationary orbital position it should be emphasized that orbital positions were in use prior to the drafting of the Principles Treaty and have remained in common use down to the present. Thus, it may be accepted that the use of the given spatial area, particularly as a result of the statements by the space-resource States that they are not establishing sovereign rights in the area, continues to be a use subject to the mandate of Article 2 of the Principles Treaty as controlled by the applicable customary international law. The role of customary international law in connection with the free and equal use, exploration, and exploitation of and free access to outer space has been summarized by a Soviet scholar in the following words: "Nowadays, it is widely recognized that this principle which has become a customary rule of international law has only been reasserted in the treaty."³⁹⁹ In any such assessment of these legal rights it must be recalled, that where international law--derived from whatever source--does not prohibit a course of conduct, such conduct is permissible.

An assessment of the potential of analogies between the law of the sea and the international law of outer space has raised the relevance of the concept of the exclusive economic zone which has emerged during the negotiations of the Third UN Conference on the Law of the Sea. Such an analogy was attempted by Ecuador and Indonesia during the 1977 meeting of the Legal Subcommittee. This attempt has been opposed by a Soviet

commentator on the ground that there were "purely superficial similarities" between the different spatial areas.⁴⁰⁰ As is well-known, analogies can serve useful purposes. However, the comparative relationships must be similar enough so as to avoid criticisms of the type raised.

While there has been a consistent opposition to the claims of the equatorial States, there have been reasons given in support of such claims. Thus, Marcoff has stressed two propositions relating to the use of the geostationary orbital position. First, he has adopted the view, pursuant to Article 1 of the Principles Treaty, that States have the right to free access to the orbital position. In order to maximize the use of the position he has favored the assignment of such positions through decisions taken by both space-resource States and those not possessing such capabilities. Second, in accepting the view that the orbital position is a limited natural resource, he has opposed its becoming the object of the exclusive rights of one group of States or international organizations.⁴⁰¹

In a subsequent assessment of the Bogota Declaration he described it as "the most significant breach made up to now on a governmental and international level of the Space Treaty's system."⁴⁰¹ In his view the claims of the equatorial States were founded on considerations of their national sovereignty and on the fact that the Principles Treaty did not provide a formal definition of the boundary between sovereign air space and non-sovereign outer space. He has also found a connection between the Declaration and the common interests provision of Article 1, par. 1 of the Treaty. Thus, "unilateral stationing of satellites in a space area that has been recognized as a scarce natural resource infringes upon the fundamental rule . . . providing that all State activities in outer space must be carried out for the benefit and in the interests of all countries."⁴⁰³ However, despite his assertion that the common interest approach to the use of the geostationary orbital position by the space-resource States constitutes a violation on their part of Article 1, par. 1 of the Principles Treaty, he has admitted that his interpretation has not been "nominally recognized."⁴⁰⁴ His principal reason for supporting the claims of the Bogota States has been that the geostationary orbital position lies within the area claimed by them as a part of their territorial sovereignty. He sees their claim as "a strong response and a measure undertaken by the Equatorial States in retaliation for the continuing infringements of their rights, which are recognized by the leading space law provision," e. g., the common interests rule.⁴⁰⁵ Although he has urged that the common interests rule can serve as an integrating influence upon international society, it is open to speculation whether special claims, founded on retaliatory

considerations, and relying on the exclusivity of natural resource use and exploitation by a few geographically positioned States, would in fact promote the interests of the world community.

It has been suggested, for example, that the positions advanced by the equatorial States, have been put forward not so much to assure the common interests of States as to reserve an opportunity in the future on the part of the equatorial States to engage in exploitative activities designed to overcome "psychological perceptions of exploitation, discrimination, and colonialism."⁴⁰⁶ Attention has also been drawn to an inconsistency between the outlook of Colombia to the extent that it has been willing to benefit from the employment of such geostationary space objects as Intelsat while urging national sovereignty over the orbital positions employed by such telecommunications satellites. Further, Galloway has perceived that the equatorial States have confused the concept of equity contained in international telecommunications law and in the Common Heritage of Mankind principle with the concept of equality.⁴⁰⁷

The continuous use of the geostationary orbital position by the space-resource States should make it clear that the mere assertion of exclusive claims by the equatorial States will not confer upon them the preferred legal condition which they seek. Such claims to be validated would have to include some demonstration of a capacity to govern in the indicated area. It has been noticed that the equatorial States have not indicated how they "expect to discharge, at a height of 36,000 km above the Earth, the authority indispensable to the exercise of sovereignty."⁴⁰⁸

The prescriptions of scholars active in the field as to the needs of the future are essentially the same as those who speak on behalf of governments. Their commonest advice has been to move forward progressively with the establishment of a more specific international space law. Such commentators believe that through the detailed identification of rules relating both to the issue of definition/delimitation, and to that of the geostationary orbital position, some of the existing problems might be reduced.

9. CONCLUSION

Since 1976 it has become evident that there is an incontrovertible link between the subject of definition/delimitation and the use of the geostationary orbital position. The link has resulted from their natural relationship as well as the willingness of the two subcommittees of COPUOS and the parent body

to treat them as being interrelated. Despite the combined inquiry into the two topics, the assessment of the boundary issue has focused on the lower boundary of outer space, i. e., the boundary between the upper reaches of air space and the presumably lower boundary of outer space. Very few proposals have been made concerning the identification of the upper boundary of outer space, although in 1976 COSPAR had suggested the distance of 240,000 miles above the surface of the Earth.⁴⁰⁹ Only several States and a few commentators have pursued this approach. The contrast with proposals for a low boundary is striking. The range has been between 80 and 160 km, with present suggestions concentrating on an indeterminate height of between 100 and 110 km.

In the years ahead it will be necessary to determine if an understanding can be reached on the nature and legal status of both definition/delimitation and the geostationary orbital position. Concerned observers have called for an explicit clarification of national rights and duties. To the present the debates on these matters are reminiscent of historic efforts. Some ultimately led to the acceptance of national sovereignty in certain air and ocean areas, while others led to decisions that the high seas and the superjacent air space were not subject to national sovereignty. With regard to the geostationary orbital position and the issue of definition/delimitation, it may be possible to arrive at separate understandings, at only one understanding, or at no understanding.

A priority was not attached to the issue of definition/delimitation when it was first raised in 1959. However, attention had to be given to this subject. This was necessitated because at the time the first space object entered orbit there was already in existence a mature international legal regime relating to the undefined area of air space. That regime contained an impressive array of prescriptions relating to the use of and activities in air space.

Thus, from the outset it was considered that it would be necessary to effect an accommodation between the legal regime dealing with sovereign air space and aerial activities and a new regime charged with the governance of outer space and the activities flowing from the exploration, use, and exploitation of the space environment. This differentiation was influenced by the fact that two different means of transit were to be employed in the respective spatial areas and because of the different physical properties of the respective areas. These considerations suggested the feasibility of separate legal regimes. Thus, assuming the presence of two separate, although not completely different, physical areas the question logically followed as to the need to identify the respective boundaries.

Over time this has resulted in the further need to identify criteria that would have a meaningful influence on the fixing of such a prospective boundary.

The UN became identified as an appropriate forum for the consideration of these matters with the issuance in 1959 of the Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space. In the following years attention has been called to possibly viable approaches to the subject of definition/delimitation. These alternatives are: (1) international agreement on a spatially-measured and fixed boundary, (2) subsequent agreement on zones intermediate to, or below, the highest boundary of sovereign air space, (3) international agreement that sovereign-free outer space, (4) the acceptance of a generally defined influences, and (4) the acceptance of a generally defined boundary or boundaries, subject to their revision at such time as more definitive scientific and technological information is at hand.

Each of the alternatives has presented a special bundle of problems. The proponents of a fixed boundary have not been able to reach an agreement as to a preferred spatially-measured height for the proposed boundary. They have been troubled respecting the criteria which may have relevance to such a decision. Further, they have come under the vigorous attack of those opponents, at least for the present, who do not consider that adequate scientific and technological data and information have been supplied as to the potential capabilities both respecting the lowest safe perigee of space objects and the highest effective operating ranges of conventional aircraft.

Support for a fixed boundary at the present time has had as its chief proponent the Soviet Union. It has suggested in 1977, and again in 1979, a zone located at a height of between 100 and 110 km above sea level. Provisional support has been received from Iran and Poland. Italy, following several of its own proposals, has been supportive. Conditional acceptance of a fixed boundary, but not specifically supportive of the Soviet proposal, has come from Belgium, Bulgaria, and Chile. Belgium has specifically rejected a 100 km boundary. It has urged the acceptance of a broadly defined boundary subject to a further clarification of technical and functional considerations. In the case of Chile its support has been dependent upon reaching a formal agreement which would take into account all relevant scientific and technological considerations. Several States have taken a "wait and see" approach to this alternative.

Iran has been an exponent of an intermediate zones approach. It has identified the need to examine the applicability to such

an alternative of concepts borrowed from the law of the sea. These have included the concepts of innocent passage, freedom of transit, and right of transit. This approach has been disavowed by the Soviet Union.

The functional theory has stimulated inquiries into the nature of air activities and space activities. In order to advance this approach the government of France has proposed that space activities be defined as including whatever was involved in sending into space an object designed to permit the exploration and utilization of outer space. Upon reflection it would appear that this characterization would provide only a threshold for a future assessment of what might ultimately be thought to fall within such a category, unless every object leaving Earth and bound for the space environment were to be governed by space law. A functional approach would also be troubled by the need to determine what constituted a space mission as opposed to a non-space mission or respecting hybrid air and space missions. Japan has expressed its opposition to the functional theory. This alternative has been conditioned by "wait and see" considerations. Until there have been further clarifications of scientific and technological potentialities it may be too soon for many States to favor this theory. However, support has been indicated from Czechoslovakia and Holland. Proponents of the policy of obtaining further scientific and technological data and information prior to arriving at a decision on this subject have been the United States, Canada, Japan, Sweden, and the United Kingdom. The Soviet Union has concluded that the position put forward by the United States before the Legal Sub-Committee in 1978, in which the United States urged that no final decision should be taken on the matter of a formal boundary definition, constituted support for the functional approach. It is far from clear that the United States has taken the course attributed to it by the Soviet Union.⁴¹⁰ The States, including the United States, which have asked that the issue of definition/delimitation not be pursued pending the gathering of the very best scientific and technological data respecting the orbiting capabilities of space objects, will ultimately have to determine if they favor the spatially-measured or the functional approach to air space and outer space regimes.

Of course, it would be possible to go forward at the present time with a formal definition only on the basis of current scientific and technological findings. France has supported this approach. Approval for such an outcome has been conditioned by the reservation that as more definitive information became available any prior definition would be made the subject of revision. Kenya favors a formal definition.

The formula proposed by the Soviet Union, which was guided by the fact of sustained perigees at the 100-110 km level, may ultimately be persuasive. The language chosen was simple and comprehensible, although not without need for clarification. The proposal addressed itself to the goals of the 1967 Principles Treaty in that, if adopted, it would facilitate the free and equal exploration, use, and exploitation of, and equal access to outer space. It combined the practical needs of use and access with the critically important security considerations that must be considered in arriving at a formal definition. It was not innovative, since it did not run counter to the expectations that have contributed to a general belief that the indicated height already, as a consequence of customary international law, constituted a boundary between air space and outer space. It rejected the views put forward in the Bogota Declaration. It combined the need to reach orbital positions with the possibility that this objective could be realized only through transiting across States either adjacent to or distant from the launching State. Among the States that may be disposed to support the Soviet proposal, there will still be a demand to obtain additional meaning as to the expression in the third paragraph reading "... shall retain the right to fly. . . ." Undoubtedly the word "transit" or the functional equivalent will be substituted for "fly." Further, the nature of the right to transit will have to be identified. The meaning to be given to the term "right" in the Soviet proposal will undoubtedly be analyzed in terms of limitations, assuming that enough States give their support to the static Soviet approach.

Other important policy considerations will have to be taken into account in assessing the Soviet proposal and in determining the merits of a low as opposed to a high boundary. If there were to be agreement on a low boundary, this would allow launching States to transit over adjacent or not far distant States very shortly after launch. This would ease the problems of launch and would allow the launching State greater freedom in its use and exploration of the space environment. A low boundary would allow space objects to effect a close approach to subjacent areas in order to engage in inspection and sensing activities. Close approaches could facilitate rescue and return operations. It would allow for a larger area for the disposition of space objects thereby reducing the dangers of collision and facilitating security activities. It would minimize transiting through the air space of States adjacent to the point of launch and return, although this may not be a matter of practical concern for States having large, national land masses or wide-ranging ocean areas near at hand. By 1982 much sentiment existed that a 100-110 km boundary was too high.

A high boundary, on the other hand, by according the condition

of sovereignty to a State within the indicated subjacent area would enable the launching State to assert exclusivity of uses. This would apply to exclusive rights to geostationary orbital levels, if the boundary were drawn at 22,300 miles. If a boundary at 22,300 miles were established, then a launching State would not be governed by Articles 1 through 3 of the Principles Treaty in areas subjacent to that elevation. This would allow launching States to engage in operational activities in that area, such as sensing, broadcasting, and transmitting, in general, without conforming to all of the existing principles of international space law.

With a high boundary, all States would have greater authority, but not necessarily greater control, over foreign access to their territories. In the event that a foreign space object were to stray into high areas of national sovereignty, there would be charges of trespass with the prospect that the transited State would attempt to apply a variety of sanctions.

However, a very high boundary would not offer greater security to the subjacent State than a low boundary because of the increasing versatility of space objects. There would also be a higher cost to transited States in that they would be obliged to keep sovereign areas under surveillance and attempt to deal with trespassers. Effective exercise of sovereign powers would in many instances not be feasible. If the boundary were drawn above the geostationary orbital position, the orbited State would treat the entire spatial area as a national, natural resource. It could either exploit the resource or allow others to do so under agreed terms.

By joining the two situations, namely, the claim of exclusive rights to orbital positions with the issue of definition/delimitation, there is a possibility that agreement on the second subject will be prevented. It may also prevent obtaining agreement on both matters. If this were to be the case, then natural events would resolve the outcome. The alternative process would be a continuation of the present practices of the space-resource States. Such practices are now conditioned by the important international legal regime which has emerged over the years. It would be very regrettable if existing principles, designed to advance the well-being of mankind, were to be weakened or put aside.

Based on Articles 1 through 3 of the 1967 Principles Treaty it had generally been assumed until December 1976 that States were assured freedom of access to and free and equal use of the totality of the space environment lying above unspecified but identifiably low distances above the surface of the Earth. This outlook had to be revalued following the Bogota

Declaration of the eight equatorial States. The claims of these States focused greater and more immediate attention on the general issue of definition/delimitation than had existed prior to 1976. With this need for a new evaluation the further problem arose as to the priority or urgency in dealing with the matter at COPUOS. Although this issue had long been a concern of COPUOS the first organized, if casual, concern was reflected only in 1967 with the placing on the agenda of COPUOS of "Matters Relating to the Definition and/or Delimitation of Outer Space."

The urgency of the agenda item was influenced by the conviction of many States, particularly the major space-resource States, that their practices had already established a customary law boundary at least as low as the 100-110 km height. Thus, there was no particular interest on their part in working diligently for a formal international agreement on the subject.

If it were true that a customary rule applicable at this level were in existence, then a further important issue was in need of resolution. This has to do with the legal status of the spatial area located below the indicated boundary. In particular the issue was presented as to the nature of the sovereign rights of States in the area lying below the 100-110 km boundary.

This has raised the further issue as to the legal status of space objects physically transiting through such areas, and in particular through the areas lying above States other than the launching State. The physical transiting of foreign space objects through such an area is one thing. But quite different from this is the legal right to engage in such transit, including the choice of legal regimes to limit or control the transiting of foreign space objects. The applicability of such concepts as "innocent passage," "right of passage," and "freedom of transit" will have to be analyzed and choices made. Major differences exist respecting the significance to be attributed concerning transit by surface vessels on the ocean when such expressions as "innocent passage," "right of transit," and "freedom of transit" are put forward respecting their voyages. Further, the specific relevance of ocean-oriented concepts to the types of space activity engaged in by launched or reentering space objects will have to be clarified. Such details can be worked out through formal international agreements. Generally speaking such formal agreements have much to commend them. They can be stated in clear and specific terms. Further, support for their terms can be obtained through a general consultation with all of the important actors in the world community.

However, a distinction should be maintained. While the formation of specific rights for such transit may necessitate formal international agreements, the same process need not pertain to the means for fixing a boundary between air space and outer space. In this situation reliance can be had on the process of customary international law. Perhaps innovative modes could be employed in the enunciation of general principles, as well as the identification of more detailed rights and duties. Many States, including optimally all of the space-resource States, could promulgate identical, unilateral statements. Or, these States could enact identical national statutes. Such documentation would lead to the identification of general, even though not universal, perceptions of the substance of space law. Whatever the form used, effective guidance would be provided both to the UN and to the ITU.

The development of an orderly regime for the exploration and use of the space environment, including access to and use of the geostationary orbital position, has not been impeded by the absence of a formal and specific definition/delimitation of that environment. However, formal agreements have contributed to the orderly and legal uses of other outer space areas as well as for air space, ocean space, and Antarctica. Nonetheless, following the conclusion of the pressing efforts by COPUOS to regulate access to and exploration and use of the Moon and its natural resources, remote sensing, and DTB, it may be timely to turn serious attention to the issue of the definition/delimitation of outer space and associated boundary problems including the geostationary orbital position. In the development of new substantive provisions for a formal international law of the space environment COPUOS should continue to be the preferred instrumentality for such negotiations.

In going forward with such negotiations a major goal would be to reduce potential conflict, and this might be facilitated through the granting of a special legal status to orbital positions. This might be achieved through acknowledgement of a new legal relationship between the radio spectrum and orbital positions. Coordination would be required between the UN and the ITU.

Legal interest in the maintenance of a suitable international legal regime for the exploration, exploitation, and use of the geostationary orbital position has been influenced by the enormous value attached to such positions. In determining the composition of such a regime it will be necessary to take account of a number of important scientific, technological, and policy considerations. Moreover, if there is to be an effective management and control over practical and operational activities, there would be a need for institutional procedures

to allow for the implementation of a more detailed international legal regime. Through such a legal regime and the institutional infrastructure it would be possible to take into account the common interests of all States respecting the presence of space objects in orbital positions. The formation of such a regime and accompanying institutional procedures will require clarifications and compromises relating to such alternatives as (1) a functional or a spatial--or possibly a compromise intermediary--position to the issue of definition/delimitation, (2) to the issue of whether the geostationary orbital position is to be treated as a natural resource only or as a resource affected by both natural and man-made influences, (3) to the issue of whether the resource is as "limited" as suggested by the ITU, (4) to the issue whether space objects in geostationary orbital positions are to be likened to a "string of pearls," or whether they will be considered as resident within a physical belt or collar-like corridor while occupying nominal orbital locations, and (5) to the issue of the sharing of the orbital position among space objects performing such separate missions as telecommunications, the gathering of solar energy, sensing, or another more purely scientific inquiry such as radio astronomy.

Exclusive claims to geostationary orbital positions were asserted by the equatorial States in the 1976 Bogota Declaration. To their contention that they possess sovereign rights over an area located at a height of 22,300 miles above their respective territories, a number of responses have been made. The United States has stated that there is no special physical relationship between the geostationary orbital position and the subjacent States. In its view the path of a space object in geostationary orbit is influenced by many factors, including but not wholly based on gravitational forces. From the legal point of view it has suggested that the 1967 Principles Treaty had codified practices, uses, and expectations which had developed in the pre-1967 period. It has rejected the view that the 1967 Treaty has gaps in it, such as to allow the equatorial States to assert valid claims.

The Soviet Union has also contended that the Principles Treaty applies to the geostationary orbit, and allows the free and equal use of and free access to such an orbit, since the orbital position is in outer space. In the Soviet view the Treaty created no right of ownership by entities occupying and using an orbital position either for the position or for segments of the position. Uses of the geostationary orbital position dating back to 1963 created no rights of continued use. Stress was placed on the equal right of all to make use of orbital positions.

Relying on the applicability of the Principles Treaty, opposition to the claims of the equatorial States has come from the additional States of Australia, Belgium, Canada, Czechoslovakia, Egypt, Federal Republic of Germany, Japan, Poland, the United Kingdom, and the United States. Australia has supported the U. S. position that the orbital position is not a physical fact, while Poland has stressed scientific considerations as well as legal ones. Both Australia and Canada also regarded the Bogota claims to be inconsistent with ITU agreements. The Soviet Union, Belgium, and Iran have mentioned the limited role of the ITU. Argentina has indicated that the position advanced by the United States deserved respect. It also called attention to the fact that the orbital position would be used for the gathering and transmission to Earth of solar energy and that this inhibited the assertion of monopolistic claims by the equatorial States. Japan considered it has been well-established that the orbital position was located in outer space. Among the critics of the Bogota Declaration there were limited disagreements. Argentina has indicated support for the generally held view that the orbital position was a natural resource, while Belgium denied this fact. The latter spoke in favor of obtaining a definition of the concept of natural resources. Belgium also has expressed reservations as to whether the Principles Treaty had incorporated the customary international law of outer space relating to activities and uses existing at the time the agreement was entered into. This was clearly a minority view on the subject.

During the expression of national opinions the Bogota States urged that the Principles Treaty had not codified preexisting international customary law. They considered that the condition of *opinio juris* was absent. The space-resource States have supported the existence of customary law on this subject. Aside from Brazil and Ecuador, who are parties to the Principles Treaty, the other equatorial States which are members of COPUOS, were critical of the Principles Treaty and rejected its applicability to the geostationary orbital position. Several called attention to their special needs and stated that the orbital position was *sui generis* . They considered the orbital position to be a natural resource, and argued, pursuant to certain UN resolutions, that they possessed permanent sovereignty over this resource. General sympathy for the outlooks of the equatorial States has been expressed by Mexico. There has been general agreement on the part of all States that a first user of a geostationary orbital position was not entitled to assert proprietary rights under the rubric of "first-come, first-served." Brazil has stated that any preemptive claim based on such a practice would be violative of the 1967 Treaty. This was based on the provisions of Article 2 and of par. 1 of Article 1. The latter provides that the exploration and use of

the space environment is to be carried out for the benefit and in the interests of all countries. The claims of the equatorial States for sovereign rights in geostationary orbital positions contradict both Articles. However, in an effort to gain the support of the less-developed countries for the claims of the equatorial States, the latter have indicated that they might be willing to share with such States some of the gains realized through the establishment of preferred rights over such geostationary orbital positions.

The space-resource States as well as all others have indicated that they do not wish to establish a *de facto* monopoly taking the form of a national appropriation of the geostationary orbital position. Those States expressing fears over the capabilities of the space-resource States have been asked to rely on the guarantees accorded to all States entitled to have free and equal exploration, use, and exploitation of and free access to geostationary orbital positions.

The issues in the minds of the commentators have been rendered complicated by the 1973 joinder by the ITU of the radio spectrum and the geostationary orbit as "limited natural resources." It has been pointed out that the use of the term "limited" depends on scientific and technological change, and that the quality of "limitedness" may not be so marked as the ITU's designation might suggest. It has also been pointed out that the term "natural" is overly simplistic, since both the spectrum and the orbital position are subject in very substantial ways to man-made influences. Further, by use of the term "resources," something has been interjected that is not explicitly provided for in the Principles Treaty. However, by implication the Treaty may be said to be concerned with resources, since they are to be found within the spatial area which falls specifically within the coverage of the Treaty.

The provisions of Article 1 of the Principles Treaty that given areas "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" established a clear expectation that no State would establish exclusive proprietary rights in the area. States may use the geostationary orbital position since it is situated in the area, but they may not achieve national ownership nor exercise the powers flowing from appropriation. The legislative history of Article 1 also demonstrated that the exploration, use, and exploitation of the area was to be free to all. This could not take place if there were to be an appropriation in the sense of an exclusive control of the natural resources in the area. For these reasons it has never been considered that the geostationary orbital position, irrespective of whether it is or is not a natural

resource, is something that could be appropriated by a juridical or natural person. Although the Treaty prohibits "national" appropriations, it would be inconsistent with such a sweeping prohibition to allow natural persons to obtain proprietary rights denied to sovereigns.

In identifying the respective rights and duties of States the 1973 ITU Convention in Article 33 provided for equitable rights but not equal rights. It took into account the respective contributions made by the States which have invested their science and technology in exploitative activities. For these reasons the commentators have generally been opposed to the claims of special rights as put forward by the equatorial States because the acceptance of such claims would negate the principle stated in Article 1 of the Principles Treaty that the exploration, use, and exploitation of the space environment "shall be carried out for the benefit and in the interests of all countries."

By the Treaty's emphasis on exploration, use, and exploitation it has come to be accepted that the resources to be found in the space environment are to be available for inclusive rather than exclusive use. The most recent pronouncement on this matter is Article 11 of the 1979 Moon Treaty. It specifically allows for the present harvesting of the natural resources located on the Moon and other celestial bodies. This allows for the acquisition of property rights in the resources which are no longer "in place." The international legal regime, which allows an explorer to obtain property rights by way of appropriation of Moon resources, is quite different from the legal regime which has reserved the area of outer space through which geostationary space objects transit for the free exploration, exploitation, and use of all natural and juridical persons. Despite the absence of specific prohibitory language in the Principles Treaty forbidding the acquisition of sovereign and proprietary rights in the geostationary orbital position, it must be concluded that such appropriation is not permissible by reason of the free and equal exploration, use, and exploitation and free access provisions of the treaty. The foregoing statement is supported by the practices and activities of launching States, international organizations, and privately owned legal entities. Since such practices and activities conform to the Principles Treaty, it can be concluded that international space law prevents exclusive appropriations of space-environment areas and space-environment resources, subject to the special not "in place" natural resources of the Moon and other celestial bodies.

While it is true that the 1967 Principles Treaty deals only with the area consisting of outer space, per se, the Moon, and

other celestial bodies, and does not make specific reference to the resources located within the area, nonetheless the Treaty sets forth a number of binding rights and duties. And, in the absence of provisions prohibiting the acquisition of preferential rights relating to such resources, it might be considered both possible and lawful to appropriate and exercise exclusive rights over the resources of the area. However, as has been well documented, the Treaty does make abundant provision for the free and equal use, exploration, and exploitation of and free access to the space environment and its resources.

FOOTNOTES

- ¹First Meeting of Equatorial Countries, *El Espectador* (Colombia), 7 Dec. 1976; 6 *J. Space L.* 193 (1978); *infra*, Appendix 6. The importance of and the reasons for the use of the term "geostationary orbital position" are assessed in Part 6 of this Chapter.
- ²The Chicago Convention on International Civil Aviation of Dec. 7, 1944 in Article 1 provides that States possess sovereignty in their superjacent airspace. No definition of altitude in their superjacent airspace. 3 Bevans 944; 15 UNTS 295. Space was attempted. TIAS 1591; 3 Bevans 944; 15 UNTS 295.
- ³14 U. N. GAOR, Report of the Ad Hoc Committee on the Peaceful Uses of Outer Space, U. N. Doc. A/4141, Part III, Section III, par. A, 14 July 1959.
- ⁴*Ibid.*
- ⁵*Ibid.*
- ⁶*Ibid.*
- ⁷*Ibid.*
- ⁸U. N. Doc. A/C.1/PV.982, p. 41, 12 Nov. 1958.
- ⁹U. N. Doc. A/C.1/SR.982, p. 196, 12 Nov. 1958.
- ¹⁰U. N. Doc. A/C.1/SR.983, p. 201, 13 Nov. 1958.
- ¹¹U. N. Doc. A/C.1/SR.984, p. 203, 13 Nov. 1959.
- ¹²U. N. Doc. A/C.1/SR.982, p. 8, 30 June 1959.
- ¹³U. N. Doc. A/C.1/SR.983, p. 5, 30 June 1959.
- ¹⁴U. N. Doc. A/C.1/SR.984, p. 229, 19 Nov. 1958.
- ¹⁵U. N. Doc. A/C.1/SR.991, p. 229, 19 Nov. 1958.
- ¹⁶U. N. Doc. A/C.1/SR.990, p. 224, 19 Nov. 1958.
- ¹⁷U. N. Doc. A/C.1/SR.986, p. 201, 17 Nov. 1958.
- ¹⁸U. N. Doc. A/C.1/SR.982, p. 196, 12 Nov. 1958.
- ¹⁹U. N. Doc. A/C.1/SR.987, p. 211, 17 Nov. 1958.
- ²⁰U. N. Doc. A/C.1/SR.983, p. 201, 13 Nov. 1958.
- ²¹L. Becker, "United States Foreign Policy and the Development of Law for Outer Space," *JAG. J. (May)* 4 (February 1959); *Commentary*, L. Becker, "Major Aspects of the Problem of Outer Space," 38 *Dep't State Bul.* 965 (1958).
- ²²H. Green, "Perspectives on World Problems," 11 *External Affairs* 302 (1959).
- ²³U. N. Doc. A/C.1/SR.1211, p. 253, 5 Dec. 1961.

- 24U. N. Doc. A/C.1/SR.1211, p. 251, 5 Dec. 1961.
 25U. N. Doc. A/C.1/SR.1297, p. 252, 10 Dec. 1962.
 26U. N. Doc. A/AC.105/6, p. 6, 9 July 1962.
 27U. N. Doc. A/AC.105/37, p. 1, 14 July 1967.
 28U. N. Doc. A/AC.105/196, p. 9, 4 Apr. 1977.
 29U. N. Doc. A/AC.105/218, p. 9, 13 Apr. 1978.
 30U. N. Doc. A/AC.105/240, p. 3, 10 Apr. 1979.
 31C. S. Tang, "The Boundary Question in Space Law: A Balance Sheet," 6 *Offawa L. Rev.* 268 (1973).
 32*Id.* at 272.
 33*Id.* at 273.
 34*Id.* at 267.
 35U. N. Doc. A/AC.105/C.2/7, 7 May 1970; U. N. Doc. A/AC.105/C.2/7/Add.1, 21 Jan. 1977.
 36J. E. S. Fawcett, *International Law and the Uses of Outer Space* 23-24 (1968); compare, A. G. Haley, *Space Law and Government* 75-117 (1963).
 37International Law Association, *Report of the Fifty-Third Conference*, xxii (1969).
 38D. Goodhuis, "Reflections on the Evolution of Space Law," 2 *Netherlands Int'l L. Rev.* 127 (1966).
 3918 UST 2410; TIAS 6347; 610 UNTS 205.
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 4319 UST 7570; TIAS 6599; 672 UNTS 119.
 4424 UST 2389; TIAS 7762.
 45TIAS 8480.
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 49*Ibid.*
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 56*Id.* at 15.
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 58U. N. Doc. A/AC.105/C.1/SR.44, pp. 4-5, 9, 30 Oct. 1967.
 59*Ibid.*
 60*Id.* at 4.
 61U. N. Doc. A/AC.105/C.1/WP.V.2, 1 Sept. 1967.
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 65L. Lipson & N. B. Katzenbach, *The Law of Outer Space in Legal Problems of Space Exploration, A Symposium* (ed. Galloway), Senate Comm. of Aeronautical and Space Sciences, S. Doc. 26, 87th Cong. 1st Sess. 789-798 (1961).
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 68*Ibid.*; 22 U. N. GAOR, 2 Annexes (Agenda Item 32) 1, at 5, U. N. Doc. A/6804 and Add. 1 (1967).
 69U. N. Doc. A/AC.105/C.2/SR.103, p. 20, 19 Aug. 1968.
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 73U. N. Doc. A/AC.105/C.2/SR.114, p. 40, 7 Oct. 1969.
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 75U. N. Doc. A/AC.105/58, p. 4, 4 July 1969.
 76U. N. Doc. A/AC.105/55, 1 Apr. 1969.
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 78*Id.* at 2.
 79*Id.* at 3. For an assessment of six of the foregoing approaches as well as theories dealing with unlimited national sovereignty, the juridical and geophysical scope of the term "air space," and the aeronautical ceiling theory, see A. G6rriel, *Legal Definition of Outer Space* 14-43 (1980).
 80U. N. Doc. A/AC.105/C.2/SR.158-161, 25 Aug. 1971.
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 84U. N. Doc. A/AC.105/C.2/SR.264, p. 9, 2 June 1976.
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 86*Ibid.*
 87*Ibid.* The Belgian working paper is U. N. Doc. A/AC.105/C.1/1.76, 23 Mar. 1976.
 88U. N. Doc. A/AC.105/C.2/SR.265, p. 2, 31 May 1976.
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 91U. N. Doc. A/AC.105/150, p. 26, 12 Apr. 1976.
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 93*Ibid.*
 94Statement of the U. S. Representative, *US/UN Press Release*-18

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- 109J. F. Galloway, "Telecommunications, National Sovereignty and the Geostationary Orbit," in *Proceedings of the 20th Colloquium on the Law of Outer Space* 235 (1978).
- 110*Supra*, note 1.
- 111*Supra*, note 94, at 659.
- 112*Id.* at 660.
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- 115"Description of a Presidential Directive on National Space Policy," The White House, June 20, 1978, in *Space Law, Selected Basic Documents*, 2nd ed., Senate Comm. on Commerce, Science, and Transportation, 95th Cong. 2d Sess. 559 (Comm. Print 1978).

- 116*Ibid.*
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- 118B. Dudakov, "International Legal Problems on the Use of Geostationary Orbit," in *Proceedings of the 15th Colloquium on the Law of Outer Space* 71 (1973); J. J. Gehrig, *supra*, note 96, at 273; P. P. C. Haanappel, "Article II of the Outer Space Treaty and the Status of the Geostationary Orbit," in *Proceedings of the 21st Colloquium on the Law of Outer Space* 28-29 (1979); M. G. Marcoff, *Traité de Droit international public de l'espace* 620 (1973).
- 119Article 33, *Telecommunication Convention and Final Protocol*, 1973, TIAS 8572.
- 120The Final Acts of the Conference are set forth in 23 UST 1527, TIAS 7435. For an analysis of the role of the ITU and the decisions of the radio conferences through 1977 see Christol, *supra*, note 106, at 11-108.
- 12123 UST 1527, TIAS 7435. The radio conferences of the ITU adopt regulations, resolutions, and recommendations. The regulations become a part of the Final Act of the conference and have binding legal force following national ratifications. The resolutions and recommendations do not have the same legal status.
- 122*Id.* at 1686.
- 123*Ibid.*
- 124*Id.* at 1527.
- 125*Id.* at 1820-1.
- 126*Supra*, note 100, at 107.
- 127*Id.* at 106-107.
- 128*Supra*, note 121, at 1839.
- 129*Ibid.*
- 130*Ibid.*
- 131*Id.* at 1840. Italics added.
- 132C. H. Alexandrowicz, *The Law of Global Communications* 66-73 (1971); C. Chayes, "Unilateralism in United States Satellite Communications Policy," in *The International Law of Communications* 61 (ed. McWhinney 1971); G. A. Coddling, Jr., "International Constraints on the Use of Telecommunications: The Role of the International Telecommunication Union," in *Telecommunications: An Interdisciplinary Survey* 30 (ed. Levin 1979).
- 133*Supra*, note 119.
- 134*Ibid.*
- 135Annex 6, par. 4, *Final Acts of the World Administrative Radio Conference Broadcast Satellite*, Geneva, 1977.
- 136International Telecommunication Union, *Report on Types of Assistance Extended by the United Nations System to Developing Countries in the Field of Practical Applications of Space Technology*, U. N. Doc. A/AC.105/124/Add.1, p. 13, 3 Apr. 1974.
- 137*Supra*, note 135, Doc. No. 331-E; compare, R. E. Butler, "World Administrative Radio Conference for Planning Broadcasting Satellite Service," 5 *J. Space L.* 97 (1977); U. N. Doc.

- A/AC.105/C.2/SR.273, p. 4, 28 Mar. 1977.
- ¹³⁸*Supra*, note 92, Resolution BP.
- ¹³⁹Rankin, *supra*, note 100, at 104; *citing*, U. S. Dep't of State, Office of Telecommunications, *Position Paper on the Allocation of Orbit Positions and Specific Radio Frequency Channels*, WARC 5T (June 1971).
- ¹⁴⁰*Ibid.*
- ¹⁴¹U. N. Doc. A/AC.105/62, pp. 3-4, 30 June 1969.
- ¹⁴²U. S. Delegation to the Second Session of the Working Group on Direct Broadcast Satellites, Statement made by United States representative Herbert Reis at the Working Group Meeting, 31 July 1969 (mimeo.). He also stated: "The point I wish to make is that using a favorable geostationary orbit is no more an 'appropriation' or 'de facto' occupation' than using a particularly favorable area of the lunar surface--the Sea of Tranquility, for example--for a manned landing."
- ¹⁴³S. M. Williams, "The Implications of Direct Broadcast Satellites Are Changing the Face of the World," in *Proceedings of the 17th Colloquium on the Law of Outer Space* 98 (1975).
- ¹⁴⁴Dudakov, *supra*, note 118, at 71.
- ¹⁴⁵29 U. N. GAOR, Report of the Committee on the Peaceful Uses of Outer Space, at 12; U. N. Doc. A/9620 (1974); U. N. Doc. A/AC.105/149, p. 2, 14 Mar. 1975.
- ¹⁴⁶U. N. Doc. A/AC.105/149, 14 Mar. 1975.
- ¹⁴⁷*Id.* at 10.
- ¹⁴⁸U. N. Doc. A/C.1/PV.2052, pp. 43-46, 13 Oct. 1975.
- ¹⁴⁹*Id.* at 45-46.
- ¹⁵⁰U. N. Doc. A/C/31/PV.10, pp. 37-38, 81-82, 1976.
- ¹⁵¹*Supra*, note 119, Article 33.
- ¹⁵²U. N. Doc. A/AC.105/C.1/SR.199, p. 2, 28 Feb. 1979.
- ¹⁵³*Id.* at 4.
- ¹⁵⁴U. N. Doc. A/AC.105/203, p. 5, 29 Aug. 1977.
- ¹⁵⁵A notable illustration is General Assembly Resolution 1803 (XVII) of December 13, 1962. Actually, General Assembly Resolutions dating from 1952 advance this claim. The Bogota Declaration made reference to General Assembly Resolution 2692 (XXV) of December 11, 1970, entitled "Permanent Sovereignty over Natural Resources of Developing Countries and Expansion of Domestic Sources of Accumulation for Economic Development." This Resolution spoke of land and marine resources but not air or space resources. Also motivating the Bogota States was a general feeling that proposals emanating from the ITU relating to orbits and frequencies were impracticable and unfair.
- ¹⁵⁶J. Henry Glazer, "Domicile and Industry in Outer Space," 17 *Colum. J. Transnat'l L.* 81, 114.
- ¹⁵⁷*Supra*, note 1.
- ¹⁵⁸*Ibid.*
- ¹⁵⁹*Ibid.*
- ¹⁶⁰*Ibid.*
- ¹⁶¹U. N. Doc. A/AC.105/C.1/SR.199, p. 7, 28 Feb. 1978. C. Q.

- Christol, "The Legal Common Heritage of Mankind: Capturing an Illusive Concept and Applying it to World Needs," in *Proceedings of the 18th Colloquium on the Law of Outer Space* 42 (1976); C. Q. Christol, "International Space Law and the Use of Natural Resources: Solar Energy," *Rev. Belge de Droit Int'l* 40 (1/1980).
- ¹⁶²*Supra*, note 1.
- ¹⁶³*Ibid.* Compare, Christol, *supra*, note 106, at 247.
- ¹⁶⁴*Supra*, note 1.
- ¹⁶⁵*Ibid.*
- ¹⁶⁶*Ibid.* Compare, Christol, *supra*, note 106, at 249.
- ¹⁶⁷*Supra*, note 1.
- ¹⁶⁸U. N. Doc. A/AC.105/C.2/SR.281, p. 6, 8 Apr. 1977; U. N. Doc. A/AC.105/L.94, 21 June 1977; U. N. Doc. A/32/20, Annex 6, P. 29, 1977.
- ¹⁶⁹U. N. Doc. A/AC.105/C.2/SR.269, p. 8, 22 Mar. 1977.
- ¹⁷⁰U. N. Doc. A/AC.105/C.2/SR.281, p. 5, 8 Apr. 1977.
- ¹⁷¹*Id.* at 7.
- ¹⁷²U. N. Doc. A/AC.105/C.2/SR.281, pp. 5-6, 8 Apr. 1977.
- ¹⁷³U. N. Doc. A/AC.105/C.2/SR.277, p. 2, 5 Apr. 1977.
- ¹⁷⁴*Id.* at 7.
- ¹⁷⁵U. N. Doc. A/AC.105/C.2/SR.281, p. 5, 8 Apr. 1977.
- ¹⁷⁶U. N. Doc. A/AC.105/PV.178, p. 32, 28 July 1977.
- ¹⁷⁷U. N. Doc. A/AC.105/142/Add.9, p. 8, 19 Dec. 1977.
- ¹⁷⁸U. N. Doc. A/AC.105/C.2/SR.280, p. 2, 7 Apr. 1977.
- ¹⁷⁹*Ibid.*
- ¹⁸⁰*Ibid.* It was also the position of Kenya that it reserved the rights respecting the geostationary orbit "until the attempt to prevent the imminent saturation of that orbit can be better ascertained." U. N. Doc. A/AC.105/PV.173, p. 40, 21 July 1977.
- ¹⁸¹U. N. Doc. A/AC.105/C.2/SR.277, p. 4, 5 Apr. 1977.
- ¹⁸²U. N. Doc. A/AC.105/PV.173, p. 57, 21 July 1977.
- ¹⁸³*Id.* at 53.
- ¹⁸⁴*Id.* at 43.
- ¹⁸⁵*Id.* at 61.
- ¹⁸⁶U. N. Doc. A/AC.105/PV.176, p. 21, 27 July 1977. Compare, Christol, *supra*, note 106, at 23-43; D. Leive, *International Telecommunications and International Law: The Regulation of the Radio Spectrum* 23, 144-240 (1970); D. D. Smith, *International Telecommunication Control* 30 (1969).
- ¹⁸⁷U. N. Doc. A/AC.105/PV.178, p. 32, 28 July 1977.
- ¹⁸⁸U. N. Doc. A/AC.105/C.2/SR.269, p. 3, 22 Mar. 1977.
- ¹⁸⁹*Id.* at 6.
- ¹⁹⁰*Id.* at 8.
- ¹⁹¹U. N. Doc. A/AC.105/C.2/SR.281, p. 4, 8 Apr. 1977.
- ¹⁹²*Id.* at 5.
- ¹⁹³*Id.* at 7.
- ¹⁹⁴*Ibid.*
- ¹⁹⁵U. N. Doc. A/AC.105/196, p. 9, 11 Apr. 1977. Compare, D.

Goedhuis, "Some Observations on the Problem of the Definition and/or Delimitation of Outer Space," 2 *Annals Air & Space L.*

292 (1977).

196 *Supra*, note 154.

197U. N. Doc. A/AC.105/C.1/SR.199, p. 6, 28 Feb. 1978.

198 *Id.* at 7.

199U. N. Doc. 105/C.1/SR.199, p. 2, 28 Feb. 1978.

200 *Id.* at 4.

201U. N. Doc. A/AC.105/216, p. 26, 6 Mar. 1978.

202U. N. Doc. A/AC.105/C.1/SR.199, p. 9, 28 Feb. 1978.

203 *Ibid.*

204 *Id.* at 6.

205 *Id.* at 8.

206U. N. Doc. A/AC.105/C.1/SR.200, p. 3, 1 Mar. 1978.

207U. N. Doc. A/AC.105/C.2/SR.296, p. 2, 4 Apr. 1978.

208 *Id.* at 5.

209 *Ibid.*

210 *Ibid.*

211U. N. Doc. A/AC.105/C.2/SR.297, p. 2, 5 Apr. 1978.

212 *Ibid.*

213 *Id.* at 4.

214 *Id.* at 3.

215 *Id.* at 4.

2163 *AJIL* 875 (1969); 8 *ILM* 679 (1969). Pending ratification

by 35 States the treaty has not entered into force.

217U. N. Doc. A/AC.105/C.2/SR.297, p. 5, 5 Apr. 1978.

218 *Ibid.*

219 *Id.* at 6.

220 *Id.* at 7. Compare, A. Górbíel, "Remarques sur la Définition

de l'Espace Extra-Atmosphérique," in *Proceedings of the 21st*

Colloquium on the Law of Outer Space 89 (1979); Górbíel, *supra*,

note 79, at 53-71.

221U. N. Doc. A/AC.105/C.2/SR.297, p. 6, 5 Apr. 1978.

222 *Id.* at 8.

22329 U. N. GAOR, Supp. (No. 30) U. N. Doc. A/9030, at 50

(1974).

224 *Ibid.*

225 *Supra*, note 101.

226U. N. Doc. A/AC.105/C.2/SR.297, p. 9, 5 Apr. 1978.

227 *Id.* at 10.

228 *Ibid.*

229 *Id.* at 11.

230 *Ibid.*

231 *Ibid.*

232U. N. Doc. A/AC.105/C.2/SR.298, p. 4, 6 Apr. 1978.

233U. N. Doc. A/AC.105/C.2/SR.297, p. 4, 5 Apr. 1978.

234U. N. Doc. A/AC.105/C.2/SR.298, p. 4, 6 Apr. 1978.

235 *Id.* at 5.

236 *Ibid.*

237 *Id.* at 7.

238 *Ibid.*

239 *Ibid.*

240 *Id.* at 8.

241 *Ibid.*

242 *Ibid.*

243U. N. Doc. A/AC.105/C.2/SR.291, p. 9, 22 Mar. 1978.

244 *Supra*, note 154.

245 *Supra*, note 201, at 26.

246 *Ibid.*

247 *Ibid.*

248 *Supra*, note 29, at 10.

249 *Ibid.*

250G. A. Res. 33/16, U. N. Doc. A/34/45, p. 66 (1979).

251U. N. Doc. A/AC.105/203/Add.1, 11 Dec. 1978, and Add.2, 17

Jan. 1979.

252U. N. Doc. A/AC.105/203/Add.1, p. 1, 11 Dec. 1978. On the

subject of static charging, see H. C. Koons, P. F. Mizersa, J.

F. Fennell, and D. R. Wall, "Spacecraft Charging--Results from

the SCATHA Satellite," 18 *Astronautics & Aeronautics* 44 (Novem-

ber 1980).

253U. N. Doc. A/AC.105/C.2/SR.303, p. 4, 15 Mar. 1979.

254U. N. Doc. A/AC.105/C.2/SR.304, p. 9, 16 Mar. 1979.

255 *Ibid.*

256U. N. Doc. A/AC.105/C.2/SR.318, p. 2, 9 Apr. 1979.

257 *Ibid.*

258U. N. Doc. A/AC.105/PV.203, p. 31, 16 July 1979.

259U. N. Doc. A/AC.105/PV.193, p. 47, 20 June 1979.

260U. N. Doc. A/AC.105/C.2/SR.306, p. 3, 21 Mar. 1979.

261 *Id.* at 4.

262U. N. Doc. A/AC/C.2/SR.308, p. 3, 23 Mar. 1979.

263U. N. Doc. A/AC.105/C.2/SR.307, p. 4, 22 Mar. 1979.

264U. N. Doc. A/AC.105/C.2/SR.306, p. 14, 21 Mar. 1979.

265U. N. Doc. A/AC.105/C.2/SR.307, p. 5, 22 Mar. 1979.

266U. N. Doc. A/AC.105/C.2/L.121, 28 Mar. 1979; U. N. Doc. A/

AC.105/240, Annex 4, p. 6, 10 Apr. 1979.

267U. N. Doc. A/AC.105/PV.183, pp. 48-50, 30 June 1978.

268U. N. Doc. A/AC.105/PV.185, p. 41, 11 July 1978.

269U. N. Doc. A/AC.105/PV.194, p. 8, 20 June 1979.

270U. N. Doc. A/AC.105/238, p. 20, 26 Feb. 1979.

271 *Supra*, note 30, at 9.

272 *Ibid.*

273 *Id.* at 10.

274U. N. Doc. A/AC.105/267, p. 14, 15 Feb. 1980.

275U. N. Docs. A/AC.105/252, 4 Oct. 1979 and Add.1, 13 Dec.

1979.

276U. N. Doc. A/AC.105/252, p. 6, 4 Oct. 1979.

277 Christol, *supra*, note 106, at 11-12.

278U. N. Doc. A/AC.105/252/Add.1, p. 12, 13 Dec. 1979.

279U. N. Doc. A/AC.105/259, 11 Jan. 1980.

280U. N. Doc. A/AC.105/244, 16 Aug. 1979.

- 281U. N. Doc. A/AC.105/271, p. 8, 10 Apr. 1980.
- 282*Supra*, note 92, Resolution BP. Such resolutions have no legal force.
- 283"Report of the Chairman [G. O. Robinson] of the United States Delegation to the World Administrative Radio Conference of the International Telecommunication Union, September 24-December 6, 1979," U. S. Dep't State, Office of International Communications Policy, TD Serial No. 116, 74 (1979).
- 284*Id.* at 75.
- 285*Ibid.*
- 286*Id.* at 75-76.
- 287*Id.* at 76. For a more detailed assessment of Resolution BP see Chapter 11.
- 288*Id.* at 77.
- 289U. N. Doc. A/AC.105/PV.213, p. 13, 15 July 1980.
- 290*Ibid.*
- 291*Id.* at 12.
- 292*Ibid.*
- 293*Ibid.*
- 294U. N. Doc. A/AC.105/PV.211, p. 16, 10 July 1980.
- 295*Ibid.*
- 296U. N. Doc. A/AC.105/PV.211, pp. 62-63, 10 July 1980.
- 297S. MacBride, *Many Voices, One World* (1980).
- 298U. N. Doc. A/AC.105/PV.207, p. 62, 3 July 1980.
- 299*Ibid.*
- 30035 U. N. GAOR, Report of the Committee on the Peaceful Uses of Outer Space, at 9, U. N. Doc. A/35/20 (1980).
- 301U. N. Doc. A/AC.105/287, p. 12, 13 Feb. 1981.
- 302U. N. Doc. A/AC.105/288, p. 10, 20 Apr. 1981.
- 303*Supra*, note 266, at 6.
- 304*Supra*, note 302, at 11.
- 305*Ibid.*
- 306*Id.* at 12.
- 307U. N. Doc. A/36/20, p. 12 (1981).
- 308U. N. Doc. A/AC.105/C.2/7/Add.1, 21 Jan. 1977.
- 309C. de Jager & G. C. M. Reijnen, "Mesospace: The Region between Airspace and Outer Space," in *Proceedings of the 18th Colloquium on the Law of Outer Space* 107 (1976); compare, Haanappel, *supra*, note 118, at 54.
- 310C. Q. Christol, "Innocent Passage" in the International Law of Outer Space, "7 A. F. JAG. L. Rev. 22 (Sept.-Oct. 1965); A. G6rbiel, *supra*, note 79, at 37.
- 311*Supra*, note 82, at 4.
- 312U. N. Doc. A/AC.105/C.1/L.76, 23 Mar. 1976.
- 313N. M. Matte, *Aerospace Law* 58-62 (1969).
- 314N. M. Matte, "Introductory Comments on the Aerospace Medium," in *Proceedings of the 80th Colloquium on the Law of Outer Space* 47 (1978).
- 315A. W. Stoebner, "U. Space Extra-Atmospherique: Implications Juridiques d'une Discrimination Technique," in *Proceedings of*

- the 21st Colloquium of the Law of Outer Space 105 (1979). The article contains an up-to-date bibliography on the subject of definition/delimitation.
- 316*Ibid.*
- 317His reference to the return of the space object was: "retour qui survolerait le territoire d'un Etat. . . ." *Id.* at 106. When a formal international agreement is reached on this subject it would appear that a term such as "transit" or "passage" would be preferred to one that has connotations of "over-flight."
- 318*Ibid.*
- 319G. Gal, "The Question of Delimitation After Twenty Years," in *Proceedings of the 22nd Colloquium on the Law of Outer Space* 125 (1980). However, support for a functional approach has come from the ITU since ionospheric layers at an altitude between 500 and 1,000 km can affect terrestrial radiocommunications. Butler, *supra*, note 137, at 99.
- 320*Id.* at 128.
- 321M. Williams, "The Geostationary Orbit: A Limited Natural Resource from Outer Space," 6 *Int'l Relations* 670 (November 1979). As early as 1967 the United States, speaking through the Secretary of State, had stated that "an object in orbit is in outer space." *Supra*, note 47, at 17. During the same hearings it was stated by Ambassador Goldberg that "everybody agrees in considering this treaty that objects in orbit are in outer space. Everybody--nobody quarrels about that." *Id.* at 29.
- 322*Ibid.*
- 323L. Perak, "Remarks on Scientific Criteria for the Definition of Outer Space," in *Proceedings of the 18th Colloquium on the International Law of Outer Space* 185 (1977); L. Perak, "Scientific Criteria for the Delimitation of Outer Space," 5 *J. Space L.* 111 (1977); compare, G. P. Sloup, "Outer Space Delimitation Proposals: Enlightened Jurisprudence or Celestial Shakedown? Some Implications for Private Enterprise," 2 *How. J. Int'l L.* 87 (1979).
- 324*Id.* at 185.
- 325*Id.* at 191.
- 326*Id.* at 192.
- 327*Id.* at 194.
- 328*Id.* at 189.
- 329*Ibid.*
- 330*Id.* at 193.
- 331*Ibid.*
- 332*Ibid.*
- 333*Id.* at 194.
- 334Goedhuis, *supra*, note 195, at 308. See also Goedhuis, *supra*, note 38, at 123.
- 335Goedhuis, *supra*, note 195, at 308. Italics in original.
- 336*Id.* at 306, citing E. Lauterpacht, "Freedom of Transit in

International Law, "Transactions of the Grotius Society 313 (1958-1959).

337 *Ibid.*

338 H. Almond, Jr., "Legal Definition of Outer Space," in *Proceedings of the 21st Colloquium on the Law of Outer Space* 84 (1979).

339 *Ibid.*

340 Göthiel, *supra*, note 220, at 89.

341 B. Heraud, "The Problem of the Delimitation of the Outer Space," in *Proceedings of the 22nd Colloquium on the Law of Outer Space* 158 (1980).

342 *Id.* at 160.

343 *Ibid.* Compare, L. I. Tennen, "Conflicts of Law and the Delimitation of Outer Space: An Interest Analysis Approach," in *Proceedings of the 20th Colloquium on the Law of Outer Space* 236 (1980). The latter favored a two-tiered jurisdictional hierarchy. It would encompass exclusive national sovereignty up to the height of 83 km and would be combined with the right of the subject State, acting through the international community, to exercise competence over vehicles "capable of operating solely on thrust, and those which operate on both thrust and aerodynamic lift. This jurisdiction would exist because of the physical properties of the craft, and not in relation to a fictional line." *Id.* at 239. Also see at 238-239 in connection with the issue of security.

344 E. G. Vasilevskaya, "On the Problem of the Delimitation of Air Space and Outer Space," in *Proceedings of the 22nd Colloquium on the Law of Outer Space* 258 (1980).

345 M. Williams, "The Problem of Demarcation is Back in the Limelight," in *Proceedings of the 22nd Colloquium on the Law of Outer Space* 248 (1980).

346 Heraud, *supra*, note 341, at 159.

347 *Ibid.*

348 S. B. Rosenfield, "Where Air Space Ends and Outer Space Begins," 7 *J. of Space L.* 148 (1979).

349 *Ibid.*

350 "A Report by the Chairman of the Committee on The Problem of the Demarcation of Air Space and Outer Space," International Law Association, *Report of the Fifty-Eighth Conference* 165 (1980).

351 *Id.* at 166-177.

352 *Supra*, note 37, at xxii.

353 *Supra*, note 350, at 177.

354 *Id.* at 182. Italics in original.

355 *Id.* at 2.

356 *Ibid.*

357 Christol, *supra*, note 106, at 33. Compare the Articles dealing with direct broadcasting by satellites in *Proceedings of the 17th Colloquium on the Law of Outer Space* 3-100 (1975).

358 *Supra*, note 121, at 1820.

359 U. N. Doc. A/AC.105/C.2/SR.258, p. 6, 20 May 1976. The same assurance was given in March, 1977. U. N. Doc. A/AC.105/C.2/SR.273, 28 Mar. 1977.

360 *Supra*, note 142; compare, Christol, *supra*, note 106, at 82-94.

361 *Supra*, note 92, Resolution BP.

362 *Ibid.*

363 U. S. Dep't of State, *World Administrative Radio Conference, Summary Report No. 9*, p. 3 (1980).

364 *Id.* at 11.

365 *Id.* at 12. Compare, A. M. Rutkowski, "The 1979 World Administrative Radio Conference: The ITU in a Changing World," 13 *The Int'l Law* 289 (1979); A. M. Rutkowski, "Six Ad-Hoc Two: The Third World Speaks Its Mind," *Satellite Communications* 22 (March 1980).

366 W. von Kries, "The Legal Status of the Geostationary Orbit, Introductory Report," in *Proceedings of the 18th Colloquium on the Law of Outer Space* 25-30 (1976).

367 D. Goedhuis, "Some Legal Aspects of the Use of Communication Satellites," in *Proceedings of the 17th Colloquium on the Law of Outer Space* 56 (1975).

368 *Ibid.*

369 *Id.* at 57.

370 D. Goedhuis, "Influence of the Conquest of Outer Space on National Sovereignty: Some Observations," 6 *J. Space L.* 70 (1978).

371 Williams, *supra*, note 143, at 98. Italics in original.

372 *Supra*, note 118, at 71.

373 B. G. Dudakov, "International Legal Problems on the Use of Geostationary Orbit," in *Proceedings of the 19th Colloquium on the Law of Outer Space* 407 (1977).

374 *Id.* at p. 409.

375 Y. M. Kolosov, "Sovereignty in Outer Space," in *Proceedings of the 19th Colloquium on the Law of Outer Space* 412 (1977).

376 *Supra*, note 107, at 218.

377 *Supra*, note 99, at 193.

378 *Id.* at pp. 193-195.

379 *Derecho Espacial* 257 (1976).

380 *Supra*, note 99, at 194.

381 A. A. Cocca, "The Geostationary Orbit, Focal Point in Space Telecommunication Law," 45 *Telecommunication Journal* 172 (1978).

382 R. Arzinger, "The Freedom of Outer Space and the Geostationary Orbit," in *Proceedings of the 21st Colloquium on the Law of Outer Space* 13 (1979).

383 O. Fernandez-Brital, "Geostationary Orbit," in *Id.* at 15.

384 T. Kosuge, *supra*, note 108, at 31. Kosuge, after referring to Articles 10 and 33 of the 1973 ITU Convention and the Final Acts of WARC BS of 1977, viewed these agreements as reinforcing the principle of the equality of States to have access to the geostationary orbital position. *Id.* at 32.

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The International Legal Regime the Exploitation of the Orbit/Spectrum Resource: The ITU and the UN

The present interest in the free and equal exploitation and free access to the space environment has been accentuated by an awareness of the value of spectrum resource. Particular attention has been given to geostationary orbital position, located at 22,300 miles from the Earth's surface, and to the radio spectrum. The enlarged interest in arriving at a definition/delineation of air space and outer space has resulted from the desire to establish a viable legal regime for the use and sharing of such resources.¹ Two important issues have been presented for consideration. First, there is a need to identify the foregoing facts. Second, there is a need to determine the substantive principles and rules of law allowing for the decision makers who will be allowed to fix the parameters of such activities.

The utilization and the management of the orbit resource is subject to the 1967 Treaty on Principles and the Activities of States in the Exploration and the Space, Including the Moon and Outer Celestial Bodies, orbit/spectrum resource is also particularly with of the October 25, 1973 Telecommunication Convention³ and applicable International Telecommunication Protocol⁴ and Radio Regulations.⁵ An understanding of the rights of orbit/spectrum resource users and classification as assessment of the central provisions of existing as the practices and the assertions of those shared as opposed to preferred or exclusive use