OUTER SPACE DELIMITATION PROPOSALS: ENLIGHTENED JURISPRUDENCE OR CELESTIAL SHAKEDOWN? SOME IMPLICATIONS FOR PRIVATE ENTERPRISE†

*George Paul Sloup**

Although the subject of the definition and/or delimitation of outer space and outer space activities has been a low priority item on the agenda of the Legal Sub-Committee of the United Nations Committee on the Peaceful Uses of Outer Space for many years, recent developments, such as the conclusion of work on other agenda items, the Bogotá Declaration of December 3, 1976, and the prospective use of the Space Shuttle are causing the issue to be accorded greater priority on the agenda. While there is great difference of opinion on whether such a definition or delimitation is needed in the first place, the recent U.S.S.R. proposal for an alternative 100 or 110 kilometer altitude may become a focal point for discussion. Adoption of such a delimitation, however, might have serious implications for private enterprise in outer space.

I. INTRODUCTION

During the 1978 session of the U.N. Committee on the Peaceful Uses of Outer Space (COPUOS), the Soviet Union tentatively proposed "that space above 100-110 kilometers above sea level should be considered outer space," while cautioning that "we do not intend now to say that that altitude will automatically be adopted as the ceiling for air space."[1] The proposal subsequently introduced by the Soviet

† "shakedown . . . 3: an act or instance of obtaining money in a dishonest or illegal manner; esp: extortion." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 2085 (unabridged 1976).

* Attorney, Crystal Lake, Illinois. J.D., 1970, DePaul Law School; LL.M., 1973, George Washington University. Expert, NASA 1977-Present; Attorney-Advisor, NASA Office of the General Counsel, 1976-77. Member: American Institute of Aeronautics and Astronautics, British Interplanetary Society, International Institute of Space Law. The opinions expressed in this article are solely those of the author, and are not necessarily those of any organization, public or private, with which he is associated.

1. Remarks by Mr. Troyanovsky, U.S.S.R., U.N. Doc. A/AC.105/PV.183, at 48-50 (1978). *See* Menter, AIRSPACE SOVEREIGNTY QUESTIONS MOVED BY SHUTTLE, ASTRONAUTICS AND AERONAUTICS, Oct. 1978, at 75.

Union as a working paper to the 1979 session of the COPUOS Legal Sub-Committee on March 28 states:[2]

> MATTERS RELATING TO THE DEFINITION AND/OR DELIMITATION OF OUTER SPACE AND OUTER SPACE ACTIVITIES, BEARING IN MIND, *INTER ALIA*, QUESTIONS RELATING TO THE GEO-STATIONARY ORBIT
>
> *Union of Soviet Socialist Republics: working paper approach to the solution of the problems of the delimitation of air space and outer space*
>
> 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.

Although this proposal is tentative in nature, it may become a focal point for discussion in COPUOS and its Legal and Scientific and Technical Sub-Committees for two reasons.[3] First, a major space power introduced the proposal and second, the subject matter may get a greater priority on the agenda of the Legal Sub-Committee. The implications of such a proposal, were it to be adopted by international convention and thus become international law, should be of concern to anyone interested in creating and protecting opportunities for private enterprise in outer space.

II. A LINGERING CONCERN: "HOW HIGH IS UP?"

The question of where (*i.e.*, at what altitude) outer space begins has troubled space lawyers since Sputnik 1 was launched into orbit on October 4, 1957.[4] Actually, the question was raised many years before Sputnik 1, but did not become significant until orbiting man made space objects became a reality. The purpose of this article is not to examine in any detail all of the numerous proposals made and the de-

2. U.N. Doc. A/AC.105/C.2/L.121 (1979) (original text in Russian).

3. Background information on COPUOS and its two Sub-Committees can be found in Jankowitsch, *Contributions of the United Nations Committee on the Peaceful Uses of Outer Space: An Overview*, 5 J. SPACE L. 7 (1977); Carver, *The Scientific and Technical Sub-Committee of the United Nations Committee on the Peaceful Uses of Outer Space*, 5 J. SPACE L. 17 (1977); and Chen, *Pending Issues Before the Legal Sub-Committee of the United Nations Committee on the Peaceful Uses of Outer Space*, 5 J. SPACE L. 29 (1977).

4. *See, e.g.*, D. LOTH & M. ERNST, HOW HIGH IS UP, 1-30 (1964).

bates which have occurred through the years relating to this question.[5] Rather, the discussion will focus on the new Soviet proposal and separate developments, such as the Bogotá Declaration, *vis-à-vis* the initial issue of whether it is necessary to know at what altitude outer space begins.

In 1970, at the request of the COPUOS Legal Sub-Committee, the U.N. Secretariat prepared a background paper, "The Question of the Definition and/or the Delimitation of Outer Space,"[6] which examined the aforesaid question in great detail.[7] The "conclusions" of the background paper are as follows:

> The foregoing survey shows that the problem of the definition and/or delimitation of outer space is of great complexity. While it may be said that there are two basic approaches—spatial and functional—to the problem, a variety of criteria under the one or the other approach have been proposed both in and outside the United Nations. However, neither the two basic approaches nor any combination of the criteria seem to have gained general support. Various proposals for an arbitrary delimitation of air space and outer space have also failed to achieve that purpose.
>
> Apart from the question of the possibility of defining outer space, consideration has also been given to the question of the need to define outer space. On the one hand, it has been maintained that a definition of outer space is urgently needed for the proper implementation of the existing and future international instruments. On the other hand, it has been observed that the absence of such a definition has not caused any controversy among States or adversely affected the implementation of the international instruments concluded so far in the field of outer space. The view has also been expressed that while a definition of outer space is needed, there should be no haste in working it out since it requires further study.[8]

Actually, the definition/delimitation question has been on the agenda of the Legal Sub-Committee since 1967, usually worded as "matters relating to the definition and/or delimitation of outer space and outer space activities." However, until recently the issue has been accorded a low priority due to the existence of higher-priority issues.

---

5. *Id.*
6. U.N. Doc. A/AC.105/C.2/7 (1970).
7. *Id.* The background paper is sixty-six pages in length, plus an Annex of eleven pages.
8. *Id.* at 66. The "spatial approach" tries to fix an altitude boundary or boundaries between air space and outer space, while the "functional approach" concentrates on defining outer space activities. *Id.* at 8. The 1970 background paper discusses these approaches in detail, and they will not be discussed here.

In 1977, at the request of COPUOS, the U.N. Secretariat prepared an "Addendum" to the 1970 background paper in order to update the latter.[9] A synoptical table of proposals was also prepared for COPUOS.[10] The organization of the 1977 background paper Addendum was similar to that of the 1970 paper, utilizing the same basic differentiation between the "spatial" and the "functional" approach.[11] The "conclusions" of the 1977 Addendum are as follows:

> As can be seen from the foregoing, in the period under review, the question of the definition and/or delimitation of outer space has retained its great complexity. In spite of certain modifications of and additions to the spatial and functional approaches these two basic avenues for solving the problem in accordance with a variety of known criteria still seem to dominate the reasoning of Governments, scholars and United Nations bodies. As before, none of the suggested approaches or their combination has so far met with general acceptance although several States expressed their considered preference for establishing the air-outer space boundary at an altitude between 90 and 100 kilometres above the sea level. At the same time certain equatorial States have introduced a new element into the mosaic of ideas relating to the definition and/or delimitation by claiming sovereignty over parts of the geostationary orbit at 35,700 kilometres above their territories.
>
> On the other hand, two opposite views as to the urgency to define and/or to delimit outer space continue to persist. The view is also held that there should be a uniform legal regime for air and outer space, which dispenses with the need for definition and/or delimitation of outer space altogether.[12]

Therefore, a new element was added to the old definition/delimitation debate, namely, the claims of certain equatorial states to sovereignty over parts of the geostationary orbit. These claims, all based upon the same theoretical framework, will be examined next.

III. TOLLGATES OVER BOGOTÁ AND OTHER "ORBITAL DICTA"

During the Sixteenth Session of the Legal Sub-Committee of

---

9. *The Question of the Definition and/or Delimitation of Outer Space, Addendum*, U.N. Doc. A/AC.105/C.2/7/ Add. 1 (1977).

10. *Definition and/or Delimitation of Outer Space and Outer Space Activities—Synoptic Table of Proposals and Suggestions*, Conf. Room Paper No. 1, U.N. Doc. A/AC.105/C.2/14 (1977).

11. The 1977 Addendum contains thirty-one pages, plus two Annexes totaling five pages. The synoptical table of proposals contains six pages; *See* notes 9 and 10, *supra*.

12. *The Question of the Definition and/or Delimitation of Outer Space, Addendum*, *supra* note 9, at 31.

COPUOS, held from March 14 to April 8, 1977, the question of the legal status of the geostationary orbit[13] was directly related to the definition/delimitation issue. At the Seventeenth Session of the Legal Sub-Committee in 1978, the former issue was attached to the latter, forming a single agenda item entitled: "Questions relating to the definition and/or delimitation of outer space and outer space activities, also bearing in mind questions relating to the geostationary orbit."[14]

There can be little doubt that the major motivating factor for the formal inclusion of the geostationary orbit in the definition/delimitation agenda item was the declaration issued by a number of equatorial countries (*i.e.*, countries traversed by the Equator) which met in Bogotá, Colombia from November 29 through December 3, 1976. The five major points made by the Bogotá Declaration were as follows:[15]

A. The Geostationary Orbit as a Natural Resource

The equatorial countries which signed the Bogotá Declaration on December 3, 1976,[16] declared 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 the outer space. Therefore, the segments of geostationary synchronous orbit are part of the territory over which Equatorial states exercise their national sovereignty.

---

13. Chen, *supra* note 3, at 35. The geostationary orbit is that orbit in which a satellite appears stationary to an observer on the surface of the Earth. This is because the satellite completes one orbital revolution around the Earth (the orbital period) every 24 hours, the same period of time the Earth takes to rotate once about its axis. Satellites with 24-hour orbital periods are referred to as synchronous or geosynchronous satellites, while geosynchronous satellites which orbit along the length of Earth's Equator (*i.e.*, in the plane of the Equator) are called geostationary satellites. Gehrig, *Geostationary Orbit—Technology and Law*, PROCEEDINGS OF THE NINETEENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 267 (Schwartz ed. 1977). While the terms are not synonymous, they are often used interchangeably to refer to the *geostationary orbit* and will be so used in this article.

14. *Report of the Legal Sub-Committee on the Work of Its Seventeenth Session*, U.N. Doc. A/AC.105/218, at 9 (1978). In 1979 some further changes were made to the phrasing of this agenda item, so that 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." *Report of the Legal Sub-Committee on the Work of Its Eighteenth Session*, U.N. Doc. A/AC.105/240, at 8 (1979).

15. The full text of the *Declaration of the First Meeting of Equatorial Countries*, Dec. 3, 1976, can be found in N. JASENTULIYANA & R. LEE, II MANUAL ON SPACE LAW 383-87 (1979).

16. They were Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda, and Zaire. *Id.* at 387. Only two other equatorial countries exist, not counting islands or atolls under the Equator claimed as sovereign territory by still other countries; these two countries, Gabon and Somalia, did not sign the original declaration. *Id.* at 387.

> The geostationary orbit is a scarce natural resource, whose importance and value increase rapidly together with the development of space technology and with the growing need for communication; therefore, the Equatorial countries meeting in Bogotá have decided to proclaim and defend on behalf of their peoples, the existence of their sovereignty over this natural resource. The geostationary orbit represents a unique facility that it alone can offer for telecommunication services and other uses which require geostationary satellites.[17]

B. Sovereignty of Equatorial States over the Corresponding Segments of the Geostationary Orbit

Citing United Nations General Assembly Resolutions 2692 (XXV) and 3281 (XXIX), which affirm the rights of countries to "permanent sovereignty" over their own natural resources, the Bogotá Declaration affirms "that the synchronous geostationary orbit, being a natural resource, is under the sovereignty of the equatorial states."[18]

C. Legal Status of the Geostationary Orbit

Under this point are five subpoints, all based upon the two points already stated. The first three subpoints simply elaborate upon the rights claimed by the signatory states and are, therefore, more subsidiary in nature.[19] The fourth and fifth of these subpoints can be regarded

17. *Id.* at 383. Also linked to this point was an assertion by the signatory countries to the Bogotá Declaration that the solutions proposed by the International Telecommunications Union (ITU) to handle the question of saturation of the geostationary orbit by numbers of satellites, as well as saturation of the frequencies available to such satellites, were "at present impracticable and unfair and would considerably increase the exploitation costs of this resource especially for developing countries that do not have equal technological and financial resources as compared to industrialized countries, who enjoy an apparent monopoly in the exploitation and use of its (sic) geostationary synchronous orbit." *Id.* at 383-84.

18. *Id.* at 384-85. This point, of course, is based upon the first point, namely, that the geostationary orbit is a natural resource *of the underlying countries*. Supporters of the Bogotá Declaration frequently argue that the geostationary orbit has a *sui generis* character and therefore is not part of outer space but rather is a "natural resource" of the nations over which it is situated. This claim is made even though the countries are signatories to the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space. *Supra* note 9, at 10 (remarks by Mr. Gaviria, Colombia). These views were reflected by representatives of the Bogotá Declaration signatory countries, in some cases, even before the Bogotá Declaration was signed. Such views have been stated either in COPUOS, its Scientific and Technical or Legal Sub-Committees, or the First Committee of the U.N. General Assembly. *Id.* at 8.

19. These subpoints are as follows:

(a) The sovereign rights put forward by the equatorial countries are directed towards rendering tangible benefits to their respective people and for the universal community, which is completely different from the present reality when the orbit is used to the greater benefit of the most developed countries.

(b) The segments of the orbit corresponding to the open sea are beyond the national jurisdiction of states (and) will be considered as (the) common heritage of

as the immediate objective of the Bogotá Declaration:

> (d) The devices to be placed permanently on the segment of a geostationary orbit of an equatorial state *shall require previous and expressed authorization on the part of the concerned state*, and the operation of the device should conform with the national law of that territorial country over which it is placed. . . .
> (e) Equatorial states do not condone the existing satellites or the position they occupy on their segments of the Geostationary Orbit nor does the existence of said satellites confer any rights of placement of satellites or use of the segment *unless expressly authorized by the state exercising sovereignty over this segment*.[20]

D. The 1967 Treaty

This point addresses the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies[21] (hereinafter the 1967 Treaty), which provides, *inter alia*, that "outer space, including the moon and other celestial bodies, 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 . . .," and that "*outer space*, including the moon and other celestial bodies, *is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means*."[22]

According to the Bogotá Declaration, the 1967 Treaty with its proscription of sovereign claims to outer space does not apply to the geostationary orbit:

> There is no valid or satisfactory definition of outer space which may be advanced to support the argument that the geostationary orbit is included in the outer space. The [U.N. Legal Sub-Committee] which is dependent on the United Nations [COPUOS] has been working for a long time on a definition of outer space, however, to date, there has been no

---

mankind. Consequently, the competent international agencies should regulate its use and exploitation for the benefit of mankind.
(c) The equatorial states do not object to the free orbital transit of satellites approved and authorized by the International Telecommunications Convention, when these satellites pass through their outer space in their gravitational flight outside their geostationary orbit.

N. JASENTULIYANA & R. LEE, *supra* note 15, at 385.

20. *Id.* (emphasis added).

21. Opened for signature Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 (entered into force with respect to the United States, Oct. 10, 1967).

22. *Id.* arts. I, II (emphasis added).

agreement in this respect.[23]

The Bogotá Declaration further states that the 1967 Treaty only allowed a "technological partition" of the geostationary orbit by the countries which had already placed satellites above the equator, and that such a partition "is simply a national appropriation, and this must be denounced by the equatorial countries."[24] Finally, the 1967 Treaty's failure to define outer space implied "that Article II should not apply to geostationary orbit and therefore does not affect the right of the equatorial states that have already ratified the Treaty."[25]

E. Diplomatic and Political Action

The final point urged the countries that had not ratified the 1967 Treaty to refrain from undertaking any procedure that would allow the enforcement of Treaty provisions inconsistent with the Bogotá Declaration.[26] The equatorial countries promised that they would endeavor to make similar declarations in the United Nations and other international agencies dealing with the geostationary orbit, and to align their international policies in accordance with the principles elaborated in the Bogotá Declaration.[27]

The Bogotá Declaration is a political statement based upon alleged scientific and technological facts, from which certain legal conclusions have been drawn.[28] These alleged scientific and technological facts, as stated in the Declaration, do not exist. Consequently, the legal conclusions drawn by the Bogotá Declaration are invalid. What is left of the Bogotá Declaration, therefore, is a naked political statement unsupported by either scientific and technological facts or international law. This is clearly seen in the statement by a representative of the United States at the 281st meeting of the COPUOS Legal Sub-Committee (Sixteenth Session) on April 6, 1977.[29] Addressing the claims made by the Bogotá Declaration, the U.S. representative made the fol-

23. N. JASENTULIYANA & R. LEE, *supra* note 15, at 386.

24. *Id.*

25. *Id.* As of December 3, 1976, the 1967 Treaty had been ratified or acceded to by the following countries which on that date signed the Bogotá Declaration: Brazil, Ecuador, and Uganda. Colombia, Indonesia, and Zaire had signed the Treaty but still had not ratified it as of the end of 1978. Congo and Kenya had not even signed. It is also relevant to note that the two equatorial countries which did not sign the original Bogotá Declaration, Gabon and Somalia, also had not ratified, acceded to, or otherwise indicated that they were bound by the Treaty by the end of 1978, although Somalia had signed the Treaty. SENATE COMM. ON COMMERCE, SCIENCE, AND TRANSPORTATION, 95TH CONG., 2D SESS., SPACE LAW-SELECTED BASIC DOCUMENTS, SECOND EDITION 35-36 (Comm. Print 1978).

26. N. JASENTULIYANA & R. LEE, *supra* note 15, at 386.

27. *Id.* at 387.

28. *See* note 18 *supra* and accompanying text.

29. Remarks by Mr. Stewart, U.S.A., U.N. Doc. A/AC.105/C.2/SR.281, at 2-3 (1977).

lowing counterpoints, which because of their significance are repeated here in their entirety from the Summary Record:[30]

> 1. *Mr. STEWART* (United States of America) said that, while the geostationary orbit was a natural phenomenon of particular importance with respect to communications and other applications, there was no scientific or legal basis for a unilateral claim to exclusive national sovereignty over that orbit. Geostationary and other orbits of artificial Earth satellites lay in outer space and, according to the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, were not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. For most applications, the effective utilization of space required the placement of satellites in elliptical and circular orbits around the Earth. Ascendancy into those orbits could be effected from a wide range of locations on the Earth's surface, and the characteristics of the orbit were 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 was derived from the total mass of the Earth, and except for small effects, was independent of the detailed characteristics of the Earth's surface. It was utterly unaffected by political boundaries.
>
> 2. In the 1976 Bogotá Declaration, it had been claimed that the geostationary orbit was a physical fact linked to the reality of the Earth because its existence depended exclusively on its relation to gravitational phenomena generated by the Earth. However, a geosynchronous orbit was like any other repeated orbit, except that the motion of the orbital vehicle was synchronized, or nearly so, with a particular location on the surface of the Earth. In geostationary and other orbits, a satellite's path through space was determined not by any single factor, but by a combination of factors, including the energy imparted by the launching vehicle, the mass and altitude of the space craft, the forces of gravity of the Earth, the moon and the sun, and the radiation pressure of the sun. Accordingly, the geosynchronous orbit was essentially a regime of satellite flight paths, not a physical natural resource. There was no causal relationship between orbital mechanics and the Earth's current rotational velocity on the one hand and locations on the Earth's surface on the other; the geostationary orbit depended on properties of the Earth as a whole.

30. *Id.* Note that the use of the term "geosynchronous" orbit here refers to the geostationary orbit. *See* note 13, *supra*.

3. In his report to the Legal Sub-Committee, the Deputy Secretary General of ITU, referring to the geosynchronous orbit, had spoken of "nominal orbits" and "nominal orbit locations." Those terms reflected the fact that such positions in space were only nominal and that satellites in geosynchronous orbits required constant monitoring if they were to maintain their positions. While there was no scientific or technical basis for assuming any special relationship between the geosynchronous orbit and an underlying State, there was a clear scientific basis for recognizing that such an orbit derived its main characteristics from the properties of the entire Earth and was affected by other forces at work in the orbital location. The area in which satellites could be placed in geostationary orbit lay approximately 35,500 kilometres above the Equator, and was not a single point on a unidimensional plane, but was rather a three-dimensional belt. Furthermore, most Earth-related activities regarded as taking place in outer space occurred at altitudes equal to or below the geostationary orbit. Accordingly, despite the absence of any specific definition or delimitation of outer space, it could not reasonably be argued that the geostationary orbit did not lie in outer space. The use of the geostationary orbit was clearly permitted under, and must be guided by, the provisions of the 1967 Outer Space Treaty. That Treaty, and in particular Articles I and II, gave no indication that a particular portion of outer space should be treated differently from any other. Taking into account the codification of international law and practice under international law, including the Treaty in question, the principles contained in the Treaty applied to the geostationary orbit and precluded any claims to national sovereignty over that orbital location.

4. As for the claim that there existed a gap in the law with respect to particular uses of outer space and the geostationary orbit, including communications, it must be recalled that during the negotiation of the 1967 Outer Space Treaty, the phrase "and use" of outer space had been added specifically to indicate international acceptance of peaceful activity other than scientific exploration in outer space. Commercial satellite communications utilizing the geostationary orbit had been widely known at that time, and no exception to those activities had been made either in the text of the Treaty or during the related negotiations. Furthermore, during the preparatory work, no country had indicated that the Treaty should not apply to commercial activities. His delegation could not, therefore, agree that such a "gap" existed in current international law.[31]

31. Note that the use of the phrase "single point on a undimensional plane" in para-

Other delegations presented their views on the status of the geostationary orbit or on the definition/delimitation issue,[32] beginning a more detailed consideration of the definition/delimitation issue than had ever occurred before in the Legal Sub-Committee.[33]

---

graph three really means a "line on a plane," and specifically a circular or elliptical line, as implied in paragraph one. The point is that geostationary orbit should not be visualized as a circle around Earth situated 35,500 km from the Earth's surface but rather as a three-dimensional "belt" or "ring" around Earth. This "belt" or "ring" is technically called an "annulus." *See* Gehrig, *supra* note 13, at 268. The volume of the "annulus" of geostationary orbit contains approximately 300 thousand million cubic kilometers, according to one estimate. *Id.*

32. For example, the Canadian representative made the point that

> from the scientific and technical point of view, the geostationary orbit was not a single entity, but an infinity of geostationary orbits each determined by its parameters. Most so-called geostationary satellites were slightly inclined to the Equator and therefore drifted; they were also affected by other celestial bodies and the station-keeping ability of the satellite. . . . In addition, the properties governing geostationary orbit were derived from the total mass of the earth, and geostationary orbits, like all orbits, had no special relationship with the underlying countries:

Remarks of Mr. Dickson, Canada, U.N. Doc. A/AC.105/C.2/SR281, at 5 (1977). The Soviet Union's representative stated that

> his delegation agreed with the representative of Canada that there was as yet no sufficiently complete and accurate definition of a geostationary orbit. Such a definition could be based on differing criteria. His delegation deeply regreted that the Bogotá Declaration contained some general principles for the application of space law which were unfair and unjustified. In his delegation's view, the legal status of the geostationary orbit at the current stage of development of space technology and space law should be governed by the following principles: (1) The geostationary orbit was inseparable from outer space and was covered by all the relevant provisions of the 1967 Outer Space Treaty; under that Treaty, the geostationary orbit, like outer space as a whole, was not subject to national appropriation by any means whatsoever; (2) the positioning by States of artificial satellites in a geostationary orbit created no rights of ownership over the corresponding positions of satellites or segments of the geostationary orbit; (3) all States had an equal right to the use of the geostationary orbit, which use must not harm the interests of other States; (4) States should co-operate in questions concerning the positioning of communications satellites in a geostationary orbit, bearing in mind the recommendations and decisions of the International Telecommunications Union concerning the use of the radio-frequency spectrum assigned to the various types of space communications.

Id. at 6 (remarks of Mr. Maiorski, U.S.S.R.). The representatives of Australia, Sweden, Japan, and the Federal Republic of Germany also supported the basic United States position against the Bogotá Declaration, while other delegations expressed neither concurrence nor non-concurrence at that time. *Id.* at 3-7. The representative of Kenya had supported the Bogotá Declaration the previous day. *See* remarks by Mr. Simani, Kenya, U.N. Doc. A/AC.105/C.2/SR.280, at 2 (1977).

33. The issue of the definition/delimitation of outer space and outer space activities was first identified in 1959 by the *Ad Hoc* Committee on the Peaceful Uses of Outer Space, predecessor to the present COPUOS. The issue was first placed on the agenda of the Legal Sub-Committee in 1967, at its sixth session. Except for the 1970 background paper prepared for the Legal Sub-Committee by the U.N. Secretariat, *supra* note 6, little was accomplished *vis-à-vis* the issue, and it remained a low priority agenda item between 1970 and 1976. The 1977 Addendum, *supra* note 9, updating the 1970 background paper and the sixteenth session of the Legal Sub-Committee, meeting in 1977, marks the beginning of a greater consideration of the definition/delimitation issue. *See* remarks by Chairman Wyzner of the Legal Sub-Committee, U.N. Doc. A/AC.105/C.2/SR.279, at 2-3 (1977).

Note, however, that delegates to the Legal Sub-Committee have been giving their views on the definition/delimitation issue for a number of years during the "general exchange of

In 1978, the subject of definition/delimitation was further discussed at the Seventeenth Session of the Legal Sub-Committee, and the more specific issue of the geostationary orbit had now been included as an agenda item. With regard to the geostationary orbit, the views expressed were basically those which had been stated during the previous (sixteenth) session in 1977, with some delegations supporting the principles of the Bogotá Declaration, and others attacking the principles as scientifically, technologically, and legally invalid.[34] Other delegations expressed the view that further technical and legal studies were needed before consideration could be given to whether special rules governing the use of the geostationary orbit should be established.[35] In this regard, it was noted that the Scientific and Technical (S & T) Sub-Committee had discussed the "physical nature and technical attributes of the geostationary orbit" earlier in 1978 at its Fifteenth Session.[36] In that session, the S & T Sub-Committee heard views which were basically the same as those already voiced at the 1977 and 1978 sessions of the Legal Sub-Committee.[37] The S & T Sub-Committee recommended that it make itself available to perform any specific work on the geostationary orbit which either the Legal Sub-Committee or the full COPUOS might wish.[38]

When the full COPUOS met in 1978, it considered the reports of the S & T and Legal Sub-Committees. In regard to the S & T Sub-Committee, the COPUOS simply noted the recommendation of the Sub-Committee that it continue to follow developments relating to the geostationary orbit and to report its findings to COPUOS.[39] The COPUOS noted the divergent views which had been expressed in the Legal Sub-Committee on the geostationary orbit issue, and the more general definition/delimitation question (including the need for a defi-

---

views" portion of each annual session of the Legal Sub-Committee. This is not, however, the same as formal consideration of a given issue as an agenda item, which in theory is directed toward the eventual resolution of the issue, often by preparing a draft convention.

34. *Report of the Legal Sub-Committee on the Work of Its Seventeenth Session*, U.N. Doc. A/AC.105/218, at 10 (1978).

35. *Id.*

36. *Id.* at 9. The full COPUOS had referred to the question of the geostationary orbit in paragraph 33 of its report on its twentieth session in June 1977, and the U.N. General Assembly itself had recommended later in 1977 that the Legal Sub-Committee continue in 1978 to discuss questions relating to the definition and/or delimitation of outer space and outer space activities, also bearing in mind questions relating to the geostationary orbit. *Id.*

37. *Report of the Scientific and Technical Sub-Committee on the Work of Its Fifteenth Session*, U.N. Doc. A/AC.105/216, at 26 (1978).

38. *Id.* at 33. It should also be noted that the U.N. Secretariat had prepared a study on the "physical nature and technical attributes of the geostationary orbit," U.N. Doc. A/AC.105/203 (1979) for the Scientific and Technical Sub-Committee, which would be updated as appropriate. *Id.* at 26.

39. *Report of the Committee on the Peaceful Uses of Outer Space*, 33 U.N. GAOR, Supp. 20, U.N. Doc. A/33/20, at 9 (1978).

nition in the first place). The tentative Soviet proposal for a 100 (110) kilometer altitude boundary for outer space was also noted.[40] The COPUOS recommended that the Legal Sub-Committee should pursue its work on these issues at its Eighteenth Session in 1979.[41]

In 1979, the Legal Sub-Committee heard more discussion on the definition/delimitation issue. In general, the discussion proceeded along lines similar to the 1978 session,[42] except that the Soviet working

---

40. *Id.* at 12-13. The Soviet proposal, it should be remembered, was first put forth at the 1978 session of COPUOS. *See* note 2 *supra* and accompanying text.

41. *Report of the Committee on the Peaceful Uses of Outer Space*, *supra* note 39, at 13. As to the geostationary orbit issue, the COPUOS itself heard discussion from the delegations. *Id.* at 15-16.

42. Note that in 1978 the Space Shuttle was brought up for the first time in relation to the definition/delimitation issue. In 1977 at the Sixteenth Session of the Legal Sub-Committee, the Shuttle was mentioned during the "general exchange of views," but only as a point of information by the U.S. representative, who briefed the Sub-Committee on the developmental status of the Shuttle and the Space Transportation System of which it is a part. Remarks of Mr. Hosenball, U.S.A., U.N. Doc. A/AC.105/C.2/SR.268, at 5 (1977). In 1978, however, the representative of Colombia mentioned the Shuttle during the "general exchange of views," asserting that "technological advances made it impossible to establish a boundary between outer space and air space, as had been demonstrated by the United States Shuttle capability," implying that the sovereign claims of the equatorial countries to geostationary orbit were, therefore, valid, since the proposition that geostationary orbit was in outer space could not be supported. Remarks of Mr. Samper, Colombia, U.N. Doc. A/AC.105/C.2/SR.291, at 7 (1978). Without trying to unravel the Gordian knot of nonlogic which surrounded this assertion, the U.S. representative simply stated later that the Space Shuttle would not be capable either of going into geostationary orbit itself or of carrying other objects into such orbit; rather, the satellites would be placed into lower orbits by the Shuttle and would then be boosted to geostationary orbit by their own rocket stages. *Id.* at 10 (remarks of Mr. Hosenball, U.S.A.). When the definition/delimitation agenda item came up, the Colombian representative again mentioned the Shuttle while trying to defend the claims of certain equatorial countries to geostationary orbit. He asserted that the introduction of the Shuttle "had vastly expanded the concept of navigable air space," and, therefore, made it necessary to define outer space. He later asserted that the life of geostationary satellites could be extended through the delivery of replacement parts by the Shuttle. Remarks of Mr. Samper, Colombia, U.N. Doc. A/AC.105/C.2/SR.296, at 3-4 (1978). The U.S. representative responded the next day by stating that the

> question whether an advanced space vehicle such as the Space Shuttle necessitated the extension of air space to greater altitudes had no more merit now than when manned flight had been undertaken by the Apollo or Soyuz spacecraft. The Shuttle was launched vertically and re-entered the atmosphere as a falling body under the influence of gravity; however, instead of relying on parachutes to slow it down, it 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 [a powered] aircraft; it was a spacecraft in design, purpose and behavior.

Remarks of Mr. Bond, U.S.A., U.N. Doc. A/AC.105/C.2/SR.297, at 4 (1978).

In 1979, the Shuttle was mentioned only by the observer for the European Space Agency, and only as a point of information in relation to Spacelab, the manned space laboratory the Agency was developing for the U.S. Space Shuttle program. Remarks of Mr. Arets, ESA, U.N. Doc. A/AC.105/C.2/SR.305, at 6 (1979).

The Shuttle Orbiter underwent a successful series of Approach and Landing Tests (ALT) between February and October 1977 involving the Orbiter being carried piggyback on a Boeing 747 aircraft. These tests were accompanied by world-wide publicity similar to an actual space mission, and it is possible that this "inspired" the Colombian representative's remarks at the 1978 session of the Legal Sub-Committee. At any rate, the Colombian

paper on the establishment of a 100 (110) km delimitation altitude for outer space was introduced.[43] As could have been expected, the working paper became a focal point for comments made by a number of delegations,[44] although the geostationary orbit was also debated.[45]

IV. THE SOVIET PROPOSAL

The Soviet representative orally introduced his delegation's work-

---

representative's remarks at the 1978 session indicate inadequate knowledge about the Space Shuttle and must be regarded as nothing more than "orbiter dicta."

The author's views on the Space Shuttle *vis-à-vis* the definition/delimitation issue are set forth in Sloup, *Why the NASA Space Shuttle Will Not Require a Specific Altitude To Be Chosen As The Legal Boundary Between Air Space and Outer Space*, TWENTIETH COLLOQUIUM ON THE LAW OF OUTER SPACE 56 (Schwartz ed. 1978).

43. *Supra* note 2.

44. *Report of the Legal Sub-Committee on the Work of Its Eighteenth Session*, U.N. Doc. A/AC.105/240, at 8-9 (1979).

45. *Id.* at 9-10. The U.S. representative made a notable statement on the geostationary orbit by pointing out some technical aspects relevant to certain assertions made by countries supporting the Bogotá Declaration:

> Under the International Telecommunications Convention and Radio Regulations of the International Telecommunications Union (ITU), the geostationary orbital arc and the radio frequency spectrum were regarded as limited natural resources. Unlike certain terrestrial natural resources, however, the geostationary orbit could not be depleted. In fact, that resource was expanding as technological developments made its use more efficient. For example, one orbital position could support several entirely different transmissions on the same frequency.
>
> Lengthy studies carried out by the International Radio Consultative Committee (CCIR) of ITU had shown that, because of the divergent requirements of satellite services, efficient and equitable use of the geostationary orbit would not be achieved by adopting rigid plans or legal regimes. Such rigidity would tend to cause inefficiency and possibly inhibit technological developments that could make the use of the orbit more efficient and equitable.
>
> CCIR had, *inter alia*, concluded that: (1) the technology which determined efficient and equitable use of the geostationary orbit was rapidly changing; (2) some system parameters might be adjusted to improve orbit utilization, including repositioning of satellites and careful frequency use; (3) with improving technology, increased advantages from the aforementioned techniques would be available as the orbit became more congested; (4) while the number of geostationary satellites which might share the same frequency bands was finite, the upper limit was constantly being raised; and (5) efficient and equitable orbit utilization would be harmed if unnecessary constraints were imposed on the system parameters of satellites utilizing the orbit; it had further concluded that flexible use of the orbit was the best method of accommodating a variety of uses by as many satellites as possible, providing the fullest and most advantageous use for all countries.
>
> Since the orbit was part of outer space, its legal status was governed by the 1967 (Outer Space) Treaty. The Treaty declared outer space to be the province of all mankind, free for exploration and use by all States on a basis of equality. Furthermore, the ITU Convention stated that the geostationary orbit and the radio frequency spectrum should be used efficiently, so that countries or groups of countries might have equitable access to both, in conformity with the Radio Regulations, according to their needs and the technical facilities at their disposal.

The U.S. representative concluded by stating that his delegation "believed that the instruments mentioned already ensured equal access to the geostationary orbit and equitable use thereof and that, accordingly, there was no need for new legal principles on the matter." Remarks of Mr. Bond, U.S.A., U.N. Doc. A/AC.105/C.2/SR.318, at 2-3 (1979).

ing paper on April 2, 1979.[46] Other delegations, including the United States, responded between April 2 and April 4. The Chairman of the Legal Sub-Committee concluded the discussion of the Soviet proposal by stating that there seemed to be general agreement that the combined definition/delimitation and geostationary orbit agenda item should remain on the agenda of future sessions of the Sub-Committee, but that there was no agreement on the method of arriving at a definition of outer space, on the content of such a definition, or on the degree of urgency of its formulation.[47] The Chairman also noted that while there was disagreement on the status of the geostationary orbit, there was a possibility of preparing a special régime for the geostationary orbit in the future.[48]

Perhaps the most efficient way to analyze the Soviet proposal is to examine each of its three main points in order, noting relevant comments made by various delegates in the Legal Sub-Committee.

A. The Region Above 100 (110) km Altitude from the Sea Level of the Earth is Outer Space

The initial question presented is whether it is necessary to establish a precise altitude at which the legal régime of outer space begins. The next question is why this or any particular altitude should be chosen.

In regard to the initial question, it should be accepted, *ab initio*, as a point of general legal philosophy, that the establishment of any given altitude as the legal beginning of outer space involves the creation of a new positive law rule. The creation of positive law—whether municipal or international[49]—is justified only to prevent or correct a problem which would either begin or continue in the absence of the creation of such new law. This is logical, regardless of what legal system one has been trained in. It must also be accepted *ab initio*, that while it is not presently known the precise altitude at which outer space legally begins, *this state of affairs is not a problem in and of itself*. It is the responsibility of those who argue for the need of a delimitation to demonstrate exactly *why* such a delimitation is needed. This would involve showing what past problems have arisen, and more importantly, what present problems do exist and what future problems will exist because of the lack of a delimitation.

Furthermore, it is not enough to argue that the creation of a delim-

46. Remarks of Mr. Kolossov, U.S.S.R., U.N. Doc. A/AC.105/C.2/SR.314, at 2 (1979).
47. Remarks of Mr. Wyzner, Poland, U.N. Doc. A/AC.105/C.2/SR.316, at 5 (1979).
48. *Id.*
49. The adoption of the Soviet proposal as international law would no doubt cause a number of countries to create their own municipal law rules to the same effect.

itation would add certainty to the present state of affairs, that is any and all objects which are in orbit around the Earth (and, of course, any and all objects which are beyond Earth's orbit) are in the international legal régime of outer space (Bogotá Declaration notwithstanding). Rather, delimitation proponents must demonstrate specific problems arising from the lack of a delimitation which can only be solved by creating a delimitation. If specific problems cannot be demonstrated, the creation of a delimitation would actually add *uncertainty* to the current state of affairs since an unnecessary law would be thrust into a continuing satisfactory situation, with unforeseen and possibly detrimental results to international peace and stability. Again, *the lack of a delimitation of outer space is not a problem in itself*, but is only a state of affairs from which problems might or might not arise.

As to the second question—why the particular altitude(s) suggested in the working paper—it should be realized that they are totally arbitrary with no valid scientific or technological criteria which make 100 or 110 km more valid than, say, 80, 90, 99.5, 103.33 km, etc.[50]

Some delegations to the Legal Sub-Committee have within the past few years expressed at least tentative acceptance of the concept of an arbitrary delimitation, while these same or different delegations have also recognized that other altitudes are no less valid than 100 km.[51] The U.S. delegate stated the U.S. position on the Soviet proposal at the 1979 session of the Legal Sub-Committee. Responding to the initial question of why such a delimitation is needed in the first place, as well as to the question of arbitrariness, the U.S. delegate recalled that several years earlier the Scientific and Technical Sub-Committee had, after detailed study, concluded that there were no scientific or technical characteristics of the Earth's upper atmosphere that would serve as a natural determinant of the lower limits of outer space.[52] It had requested guidance from the parent Committee (COPUOS) regarding the purposes for which various criteria under which a definition of outer space should be reviewed. The subject has, however, since been dropped from the agenda of the Scientific and Technical Sub-Committee because the COPUOS has been unable to identify practical

50. As a psychological point, 100 km is attractive to those who seek a specific delimitation altitude because it is a nice, round number. Why the Soviets chose 110 km as an alternative is not clear.

51. *See, e.g.*, the remarks of the representatives of France (arbitrary altitude accepted, probably between 80 and 120 km), *supra* note 47 at 3 (remarks of Mr. Le Gourrière, France); Belgium (arbitrary altitude of 100 km considered "practical"), *supra* note 46 at 4; Italy (90-100 km) U.N. Doc. A/AC.105/C.2/SR.289, at 7 (1978); and Iran (80 or 100 km "seemed logical") U.N. Doc. A/AC.105/C.2/SR.290, at 13 (1978). Views of delegations as of early 1977 are set forth in the *Synoptic Table of Proposals and Suggestions, supra* note 10.

52. *Supra* note 47 at 2-3 (remarks of Mr. Bond, U.S.A.).

problems that would require a definition. That point was central to the U.S. position.[53] Any proposal on the definition of outer space should be viewed in light of whether the difficulties involved are worth accepting, given the absence of practical problems relating to the exploration and use of outer space whose solution would be facilitated by such a definition.[54]

The U.S. delegate further stated that the Soviet proposal to establish a boundary at the arbitrary altitude of 100 to 110 km involved significant difficulties.[55] First, the region is devoid of physically observable milestones. Most countries have no capability for accurately determining the altitude of space objects and therefore have no way to monitor an altitude boundary. Second, such a boundary would substantially affect not only the sovereign rights of countries, but also their ability to work together as a community of nations. In the U.S. delegation's view, the Sub-Committee representatives could not confidently predict the consequences of choosing an arbitrary altitude.[56] Third, an arbitrary line might inhibit future efforts to explore and use space. For example, according to the Committee on Space Research (COSPAR) of the International Council of Scientific Unions, past estimates of the lowest altitude to which satellites could descend without falling out of orbit had been too high, especially for satellites with highly eccentric orbits which penetrated the atmosphere for a limited time during each

53. *Id.* at 2.

54. *Id.* The French delegate noted that even though the lack of a definition of outer space had not yet led to major problems, the question of such a definition should not be dismissed as being too theoretical. Sooner or later, concrete problems were bound to arise, given the increasing number of countries engaged in space activities. *Id.* at 3 (remarks of Mr. Le Gourrière, France). The Polish delegate, supporting the Soviet proposal, pointed out that the recent controversy over the status of the geostationary orbit (*i.e.*, the Bogotá Declaration) was convincing proof of the need for a legal definition of outer space. U.N. Doc. A/AC.105/C.2/SR.315, at 3 (1979) (remarks of Mr. Gorbiel, Poland). It is true that the Soviet proposal would, if it became international law, completely bar the claims made under the Bogotá Declaration; this, no doubt, is why the Colombian delegate opposed the Soviet proposal, actually criticizing it as "arbitrary and completely without scientific or technical basis!" *Id.* at 2 (remarks by Mr. Bonilla, Colombia). Of course, this characterization also applies to the Bogotá Declaration.

55. *Supra* note 47 at 2-3 (remarks of Mr. Bond, U.S.A.).

56. *Id.* at 2. Also with regard to this point, Mr. Bond stated that his delegation did not believe that there had yet been adequate examination of the many scientific, legal, technical and political factors relevant to the drawing of any particular line in the sky. Was it certain, for example, that any eventual norms for the use of nuclear power sources in outer space should be applicable only above 100 km? Furthermore, complex physical and chemical processes were going on in the upper atmosphere and in near-Earth space, affecting both subjacent countries and the entire world community. For example, the scientific community questioned whether adequate consideration had been given to such factors as the adverse global effects of disturbances in the ozone layer which surrounded the planet at an altitude of about 35 km, far below the proposed boundary. *Id.*

orbit around the Earth.[57] Countries represented on the COPUOS should be grateful that COPUOS did not act precipitously in adopting a demarcation line based on assumptions which now appeared to be invalid. It was by no means certain that the present proposals are based upon better physical assumptions; for example, one satellite launched in 1974 was known to have a perigee of 96 km.[58]

B. 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

The second paragraph of the Soviet proposal is actually a corollary of the first point. One of the main reasons some people want to know exactly where the legal régime of outer space begins is to know exactly where the legal régime of their national (sovereign or territorial) airspace terminates. This is not an invalid concern, for the legal régime of airspace has been well-defined at least horizontally,[59] if not vertically.[60]

The second paragraph of the Soviet proposal, however, would not automatically make the lower limit of outer space equal to the upper limit of airspace, but rather, would make the boundary between air space and outer space "subject to agreement among States," to be established subsequently "by a treaty at an altitude *not exceeding* 100 (110) km above sea level" (emphasis added). In other words, the upper limit of airspace might be established by treaty *lower than* 100 (110) km. This is not likely to occur, however, since the establishment of an upper limit of airspace below, not coincidental with the lower limit of outer space, would create some type of *middle zone*, creating new jurisdictional problems and receiving little support from countries on

57. *Study on Altitude of Artificial Earth Satellites*, U.N. Doc. A/AC.105/164, at 58 (1979).

58. *Supra* note 47 at 2-3. U.S. delegate Bond also said that his delegation appreciated the effort taken by the Soviet Union in producing its proposal and recognized the difficulties involved. However, the delegation did not believe that the proposal avoided the problems he had mentioned. He then made a comment about paragraph three of the Soviet proposal (which will be addressed later in this article), and ended by stating that the U.S. delegation continued to believe that no acceptable legal or scientific case could be made for claims of sovereignty over the geostationary orbit. At an altitude of 36,000 km, that orbit was clearly an integral part of outer space. *Id.* at 3.

59. The current horizontal legal régime of airspace, however, basically differentiates between the sovereign airspace superjacent to a country's land areas, internal waters, and territorial seas, on the one hand, and the non-sovereign airspace superjacent to the high seas, on the other. The current régime must be reviewed in light of the continuing Law of the Sea Conference negotiations. Such a review is beyond the scope of this article.

60. In 1978, for example, the Italian delegation spoke of the "vertical frontier," as it had done at earlier sessions of the Legal Sub-Committee. U.N. Doc. A/AC.105/C.2/SR.289, at 7 (1978) (remarks of Mr. Di Bernardo, Italy).

COPUOS. COPUOS representatives could be expected to support (if they favor a delimitation in the first place) the much simpler proposition that airspace terminates where outer space begins.[61] Nevertheless, the Soviet proposal, as it now stands, makes the establishment of a lower limit of outer space and an upper limit of airspace two separate and distinct procedures.[62]

The whole question of the upper limit of airspace *vis-à-vis* the lower limit of outer space leads naturally to the third paragraph of the Soviet proposal.

C. 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

In a sense, this part of the Soviet proposal creates a "Seventh Freedom of the Air" applicable to space objects or, alternatively, assuming in either case that airspace extends to the altitude where outer space begins, modifies the "First Freedom" for space objects.[63] At any rate,

61. For example, the Egyptian delegate stated in 1979 that it was important to establish criteria distinguishing between territorial space, as part of a country's sovereign territory, and outer space, as an international domain, and therefore not under the jurisdiction of any country. Remarks of Mr. Elaraby, Egypt, U.N. Doc. A/AC.105/C.2/SR.306, at 13 (1979). Also, the Indian delegate stated that it was inevitable that sooner or later there should be international agreement on the definition of outer space, if only to delimit the upper reaches of the sovereign air space of countries. Remarks of Mr. Jaipal, India, U.N. Doc. A/AC.105/C.2/SR.308, at 5 (1978).

The comments of the Soviet delegation itself are important in this regard. The Soviet delegate said in 1979 that his delegation considered international outer space law and international air space law to be two independent branches of international law, each with its own particular features. Delimitation of the two kinds of space would further enhance cooperation among countries in both air space and outer space and would help to avoid disputes. *Supra* note 46. The delegate from Indonesia had earlier made a similar comment, saying that air law and space law were distinct and had different implications with regard to jurisdiction. There was, therefore, an obvious need for a clear definition of outer space. Remarks of Mr. Suwondo, Indonesia, U.N. Doc. A/AC.105/C.2/SR.308, at 3 (1979).

62. The Belgian delegate did state that while his delegation supported the Soviet proposal's arbitrary altitude of 100 km as the practical boundary between air space and outer space, his delegation was still hesitant to link that proposal to the question of defining the upper limit of air space. It should not be forgotten, he continued, that to apply the principle of sovereignty of countries to air space at an arbitrary altitude could have implications for the operational responsibilities of countries whose sovereignty was involved and countries whose spacecraft crossed the air space of other countries. Remarks of Mr. Debergh, Belgium, U.N. Doc. A/AC.105/C.2/SR.314, at 4 (1979).

63. The traditional "Six Freedoms of the Air" refer to scheduled international air services performed by aircraft, and are established either by bilateral or multilateral treaty. They are:

1. The right of one country to fly across the territory of another country without landing;
2. The right of one country to land in the territory of another country for non-traffic purposes (repairs, refueling, and other necessaries);

the most significant aspect of paragraph three is that it applies only to space objects returning to the territory of the launching state. This very restrictive aspect of the Soviet working paper was noted by the U.S. delegate at the 1979 Legal Sub-Committee.[64] The U.S. representative stated that for the purposes of paragraph three it was not clear how a space object was to be defined, that there was also some doubt about the usefulness of a provision that would prevent a space object from returning to Earth in the territory of any country except the launching state, and that the consequences of such a provision could only inhibit international cooperation.[65] Other delegations made reference to and supported the proposed right of space objects to enter the airspace of other countries.[66]

V. SOME IMPLICATIONS FOR PRIVATE ENTERPRISE

While the Soviet proposal might pose a threat to private enterprise in outer space if it eventually becomes international law, the whole definition/delimitation issue, including the geostationary orbit aspect, poses such a threat to private enterprise if the issue is resolved improperly.

Beginning with the Bogotá Declaration, it can be concluded that it has absolutely no scientific or technological basis and no basis in international space law. These points have been made many times both in and out of the United Nations.[67] Although the geostationary orbit is a

---

3. The right of one country to put down in another country passengers, mail and cargo taken on in the country of the aircraft's nationality;
4. The right of one country to take on in another country passengers, mail and cargo destined for the country of the aircraft's nationality;
5. The right of one country to take on in another country passengers, mail and cargo destined for a third country, and the right to put down passengers, mail and cargo coming from a third country;
6. Fifth Freedom traffic (passengers, mail and cargo) carried via the country of nationality of the aircraft.

See RHYNE, MUTUC, & SANDS, LAW-MAKING ACTIVITIES OF THE INTERNATIONAL CIVIL AVIATION ORGANIZATION 5-6 (World Association of Lawyers, 1976); and KIHL, CONFLICT ISSUES AND INTERNATIONAL CIVIL AVIATION DECISIONS: THREE CASES 54 (Univ. of Denver, 1971). The "Six Freedoms," of course, are modifications, agreed to by the countries involved, of the basic right of "complete and exclusive sovereignty" which each country has over its airspace above its territory, as specified in Article 1 of the Chicago Convention. Convention on International Civil Aviation, Dec. 7, 1944, 61 Stat. 1180, T.I.A.S. No. 1591, 15 U.N.T.S. 295 (entered into force with respect to the United States, Apr. 4, 1947).

64. *Supra* note 47, at 3 (remarks of Mr. Bond, U.S.A.).

65. *Id.* at 3. *See also* the remarks of the Belgian delegate, *supra* note 62.

66. The East German and Polish delegates, for example, supported the Soviet proposal (as could have been expected) but made special mention that countries should be granted transit rights through the air space of other countries for space objects going to or coming from outer space. They made no mention of the restrictive aspect, however. Remarks of Mr. Enterlein, G.D.R., and Mr. Gorbiel, Poland, U.N. Doc. A/AC.105/C.2/SR.315, at 2-3 (1979). The Italian delegate made a similar statement. *Id.* at 5 (remarks of Mr. Lay, Italy).

67. Examples of forums outside the United Nations are the International Institute of

limited natural resource, as is the electromagnetic spectrum, both are renewable—and cannot be depleted like oil or natural gas. The capacity of both the geostationary orbit in regard to satellites and the electromagnetic spectrum in regard to radio, television, and other desired frequencies can and will be increased through improved technology. The efficient and equitable use of these resources in the interests of all countries and peoples will be better served by a proper understanding of the technology in the first instance, followed by enlightened regulation through the International Telecommunications Union. This should be the preferred course of action by the world community, rather than conceding to the policies expressed in the Bogotá Declaration.

The Bogotá Declaration remains a bare political fact, and can be the source of great difficulties if it receives support from the majority of less developed countries (LDCs) outside the ten equatorial countries. It is this spectre of block voting by the LDC's in support of the Bogotá Declaration which makes it a subject which cannot be ignored. It is the responsibility of the countries and organizations which oppose the Bogotá Declaration to convince any potential supporters that, if implemented, it would be very detrimental not only to the efficient and equitable use of the geostationary orbit in the interests of all countries and peoples, but also to the cause of world peace in general.[68]

The Soviet proposal for a 100 (110) km lower boundary for outer space, if it becomes international law, would completely bar claims made under the Bogotá Declaration. This could be one of the reasons that promoted the Soviet Union proposal in the first place. Being a space power, the Soviet Union has a great desire to keep the legal regime of outer space as free as possible for basic navigation by its own space objects.[69] On this issue, the U.S.S.R. would side with the United

Space Law (IISL) of the International Astronautical Federation (IAF), as well as various non-governmental national organizations, such as the American Bar Association and its various committees.

68. In 1977 the COSPAR observer to the Legal Sub-Committee asked whether the countries supporting the Bogotá Declaration were planning to levy taxes on the use of the space they had claimed (geostationary orbit) and how their claim would be enforced. Remarks of Ms. Rynen, COSPAR, U.N. Doc. A/AC.105/C.2/SR.266, at 6 (1977). Such specifics have not yet been elaborated upon by the supporters of the Bogotá Declaration, which is just as well. The Declaration's supporters will probably try to use the general claims made in the Declaration to bargain with the developed countries for various material goods, services, or concessions on other (and perhaps non-space-related) issues.

An example is the 1979 World Administrative Radio Conference, in which the bloc of developing countries reportedly is trying to have geostationary orbit slots and frequencies for the operation of communications satellites allotted on a country-by-country basis, rather than according to actual need. AVIATION WEEK & SPACE TECHNOLOGY, June 18, 1979, at 15.

69. The Soviet Union has stated its support for the 1967 Outer Space Treaty, in particular Articles I and II on freedom for exploration and use and non-appropriation of outer

States and other developed countries.

On the other hand, looking at the restrictive nature of paragraph three of the proposal, which would allow space objects to fly over the territory of other countries under 100 (110) km during their return to Earth only if the space objects were returning to the territory of the launching country, it becomes more difficult to understand Soviet motives. It is possible that the Soviet Union is concerned that aerospace vehicles, such as the Space Shuttle, might be used to conduct reconnaissance or certain other activities over Soviet territory under 100 (110) km altitude while returning to Earth to land in a country, other than the United States, near Soviet territory.[70] Past Soviet statements support this theory.[71]

---

space. *See* INTERNATIONAL SPACE LAW 82-86 (A. Piradov ed. Progress Publishers, Moscow 1976) (B. Belitsky trans.).

70. Although the Shuttle has a greater capability for maneuvering in the atmosphere during its return to Earth than any previous manned aerospace vehicles have had, it is still quite limited when compared to a conventional jet transport aircraft such as the McDonnel Douglas DC-9. The Shuttle functions only as a glider during the atmospheric portion of its return to Earth and, therefore, cannot increase or even maintain its altitude at any time. On the capabilities of the Space Shuttle and aerospace vehicles in general *see* Sloup, *The NASA Space Shuttle and Other Aerospace Vehicles: A Primer for Lawyers on Legal Characterization*, 8 CALIF. W. INT'L L.J. 403 (1978).

As for reconnaissance, the Shuttle will have the capability to carry reconnaissance satellites into orbit, but these satellites have in the past operated much higher above the Earth's surface than 100 km and the trend is to have them operate even higher. For example, where reconnaissance satellites once operated as close as 80 to 100 miles above the Earth's surface, they now operate as high as 250 miles. *See, e.g.*, AVIATION WEEK & SPACE TECHNOLOGY, Aug. 30, 1971, at 12-13; *id.* July 3, 1978, at 11. For background information on United States and U.S.S.R. reconnaissance satellites see generally KLASS, SECRET SENTRIES IN SPACE (1971).

71. *See* Zhukov, *United Nations and Space Law*, THIRTEENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 24, 32 (Schwartz ed. 1971):

> The further development of techniques of space flight will probably raise an urgent question . . . of how to combine the freedom of exploration and use of near-terrestrial space with the principle of full and exclusive sovereignty of states [in] the air space above their land and water territories. . . . [O]ne aspect of the problem . . . is the danger of making the freedom of flight of space objects over foreign territory the freedom of maneuvering and descent to any height, that is the danger of the establishment of the regime of the so-called 'open skies.'

This concern was later stated in INTERNATIONAL SPACE LAW, *supra* note 69, at 133, 137:

> It should be pointed out that the 1967 [Outer Space] Treaty furnishes no answer to the question of who exercises jurisdiction over a space object and its personnel during its flight through the air space of other states. This problem is becoming particularly acute in view of the forthcoming flights of space shuttles through terrestrial [air] space, since such vehicles are highly maneuverable in the atmosphere during their return from orbit. *In view of this it will, probably, be necessary to establish a lower boundary for the descent of space objects*, so as to ensure traffic and other safety in the air space over the territories of the underlying states. . . .
>
> When speaking of the problems of international law arising in connection with the use of inhabited space stations, it is impossible to ignore the problem of regulating the use of space shuttles for delivering and relieving the crews of orbital stations, supplying them with fuel and materials, removing refuse from them, building various objects in space, etc.
>
> In view of the high maneuverability of such objects and their capability to

As now planned, the Space Shuttle will return to Earth to land only in United States territory during normal flights.[72] This, however, may not always be the case, as one can envision a future time in which advanced versions of the Shuttle, equipped with airbreathing jet engines, would land in and take off from a variety of foreign locations as conventional jet transports do today.[73] Such capabilities would greatly increase the benefits of space exploration and utilization for all countries by providing the means for a totally integrated Earth-space transportation system, and in turn, allowing a total integration of scientific and commercial activities to take place both in space and on Earth, whether conducted by private enterprise, governmental entities, or a combination of the two. The Soviet proposal, with its very restrictive paragraph three, could seriously impede the establishment of an advanced, integrated Earth-space transportation system. The Soviet proposal, therefore, should now be the subject of a very thorough study regarding its adverse effects upon future, as well as present, space activities.[74]

---

overcome large distances within air space, there will arise, as mentioned earlier, the problem of safeguarding the lawful rights and interests of the underlying states, and assuring traffic safety in the space over their territories.

(Emphasis added.)

It should be noted that although International Space Law earlier spoke of the Shuttle in terms of having airbreathing jet engines to assist in its descent back to Earth through the atmosphere, *id.* at 132, the current Shuttle will not have any jet engines to assist in its descent. As stated earlier, it is only a glider. Nevertheless, the above-stated concerns would probably still be held by the Soviet Union.

72. Primary landing sites will be Edwards Air Force Base, California for the first four orbital test flights, then Kennedy Space Center, Florida for subsequent flights. Later, Vandenberg Air Force Base, California will become a second launch and primary landing site. Furthermore, there will be a number of contingency landing sites available, including Edwards and other United States military airfields in locations such as Guam, Hawaii, and perhaps even outside United States territory. These contingency landing sites will be used in the event problems occur which prevent the Orbiter from landing at a primary landing site. *See Hearings on S. 2527 Before the Subcomm. on Science, Technology, and Space of the Senate Comm. on Commerce, Science, and Transportation*, 95th Cong., 2d Sess., pt. 1, at 147 (1978); Brown, Space Shuttle Program Safety Overview, at 8-9 (Paper No. IAF-A-76-11, presented at the XXVII Congress of the International Astronautical Federation, Anaheim, California, 1976).

73. Since the only launch sites now planned for the Shuttle are Kennedy Space Center and, later, Vandenberg Air Force Base, a Shuttle Orbiter landing anywhere else, whether contingency or planned, would need to be flown back to one of the two launch sites by use of the Boeing 747 Shuttle carrier aircraft, used for the Approach and Landing Tests in 1977. *See* note 42 *supra*. A future, advanced Shuttle, with airbreathing jet engines, would be able to take off *on its own* from any appropriate landing site and fly back to either the Kennedy or Vandenberg launch sites. Such a capability was originally planned for the current Space Shuttle but then abandoned. *See* Sloup, *supra* note 70, at 429 n.102.

74. It is illustrative in this regard to recall that John Cobb Cooper, one of the best-known pioneers of space law, thought in 1956 that a boundary between airspace and outer space placed at 300 *miles* altitude would be a reasonable one, because according to then "accepted scientific opinion" no satellite could operate below that height! McDOUGAL, LASSWELL & VLASIC, LAW AND PUBLIC ORDER IN SPACE 335 n.456 (1963). 3). In 1957 Cooper even raised it to 600 miles! *Id.* at 348. Such boundaries, of course, would have

With regard to more near-term space activities, particularly those involving the Space Shuttle, the restriction in paragraph three of the Soviet proposal must be evaluated in view of possible Shuttle Orbiter contingency landings outside U.S. territory. The 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space[75] (the 1968 Agreement) defines the rights and duties of countries *after* a spacecraft has made an emergency or other unintended landing in foreign territory, on the high seas, or in any other place not under the jurisdiction of any country.[76] The Agreement, however, does not address the initial question of the right of a spacecraft to make an emergency or other unintended landing by flying over foreign territory at less than 100 (110) km altitude toward a landing in the same or other foreign territory, on the high seas, or in any other place not under the jurisdiction of any country.[77]

In short, the 1968 Agreement does not resolve the problem caused by the restrictive third paragraph of the Soviet proposal. Removal of the words "in the territory of the launching State" from the end of the third paragraph and putting a period after "earth" would correct this defect. Such an amendment, however, would not satisfy the position of those who initially opposed the establishment of a delimitation of airspace and outer space.

VI. CONCLUSION

This article has not attempted to explore all possible nuances of the definition/delimitation issue, but only to inform those interested in the progressive exploration and utilization of outer space of the salient facts of the issue as it currently stands in the COPUOS and its two Sub-Committees, particularly the Legal Sub-Committee. The new Soviet proposal may become a focal point for consideration of the issue by COPUOS and its Sub-Committees in 1980, while the Bogotá Declaration will probably still be defended by those few countries which now support it. The upcoming use of the Space Shuttle might also provide some additional incentive for discussion.[78]

---

greatly inhibited the exploration and utilization of outer space. *Id.* at 328. Other early attempts to establish such a boundary are discussed, *id.* at 323-49.

75. *Done* Apr. 22, 1968, 19 U.S.T. 7570, T.I.A.S. 6599, 672 U.N.T.S. 119 (entered into force with respect to the United States Dec. 3, 1968).

76. *Id.* arts. 1-5.

77. *Id.*

78. On the agenda of the Scientific and Technical Sub-Committee at its Seventeenth Session in 1980 will be "Questions relating to space transportation systems," an item which first appeared on its agenda at its Sixteenth Session in 1979. The item refers to space transportation systems in a generic sense and not just to the United States "Space Transportation System," which includes the Space Shuttle and related vehicles. In 1979, the Scientific and Technical Sub-Committee heard presentations from the United States on the Shuttle pro-

Furthermore, this article has not attempted to discuss the assertion and supporting evidence that there now exists (and has existed for some time) a customary rule of international law that an object in orbit around the Earth is in the international legal régime of outer space. National airspace, therefore, terminates somewhere below that point. So far as can be determined at this time, this rule, based upon over two decades of world-wide experience in launching over 11,000 objects into Earth orbit,[79] is quite adequate to handle both current and expected future developments in outer space. The point has already been made that proposals such as the Soviet one establishing a specific altitude as the lower legal boundary of outer space would solve no existing or prospective problems but would perhaps create some new problems by introducing greater uncertainty in international space law than now exists.

Nevertheless, the Soviet proposal will be discussed in 1980 at the meetings of COPUOS and its two Sub-Committees,[80] as will the other aspects of the definition/delimitation issue with the Legal Sub-Committee probably providing the main forum for such discussion.[81] As

---

gram, the Soviet Union on its Soyuz and Progress spacecraft, and the European Space Agency on its Ariane launch vehicle. The presentations described the developmental and operational aspects of these programs. The Sub-Committee decided to continue consideration of this item at its 1980 session and requested the U.N. Secretariat to prepare for such session a study on the progress being made in space transportation systems and their scientific, technical, economic and social implications. The Sub-Committee also recommended, to that end, that the views of member states and relevant international organizations should also be sought on this matter. *Report of the Scientific and Technical Sub-Committee on the Work of Its Sixteenth Session*, U.N. Doc. A/AC.105/238, at 19, 23 (1979). Also on the agenda will be the "Examination of the physical nature and technical attributes of the geostationary orbit," but neither it nor space transportation systems will be priority agenda items. *Id.* at 23.

79. *Space Objects Box Score*, 19 SATELLITE SITUATION REPORT, (June 30, 1979) (Office of Public Affairs, NASA Goddard Space Flight Center).

80. The dates and locations for these meetings in 1980 are: Scientific and Technical Sub-Committee, Jan. 28-Feb. 15, New York, N.Y.; Legal Sub-Committee, Mar. 10-Apr. 3, Geneva, Switzerland; Committee on the Peaceful Uses of Outer Space, June 23-July 3, New York, N.Y.

81. The results of the full COPUOS meeting in 1979 were published too late to be included earlier in the text of this article. Generally, the delegations continued to express positions on the definition/delimitation issue which they had expressed at previous meetings of COPUOS and its Sub-Committees. *See* Report of the Committee on the Peaceful Uses of Outer Space, 34 U.N. GAOR Sup. 20, U.N. Doc. A/34/20, at 7-8 (1979). The most important development regarding the definition/delimitation issue was the introduction by the Soviet Union of a new working paper which repeated verbatim the first three paragraphs of the earlier working paper it introduced in the Legal Sub-Committee (U.N. Doc. A/AC.105/C.2/L.121 (1979) but which added four new paragraphs tying the Soviet Union's earlier-stated position on the geostationary orbit with the earlier working paper:

DRAFT BASIC PROVISIONS OF THE GENERAL ASSEMBLY RESOLUTION ON THE DELIMITATION OF AIR SPACE AND OUTER SPACE AND ON THE LEGAL STATUS OF THE GEOSTATIONARY SATELLITES' ORBITAL SPACE
USSR: WORKING PAPER

the matter of the definition/delimitation of outer space and outer space activities is of great importance to the further exploration and utilization of outer space, those who are concerned with the creation and protection of opportunities for private enterprise in outer space would be well advised to give due attention to further developments in this area.

---

1. Same as earlier working paper.
2. Same as earlier working paper.
3. Same as earlier working paper.
4. The geostationary satellites' orbital space is inseparable from outer space as a whole and all relevant provisions of the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, are applicable to it, including *inter alia*, the provision that outer space is not subject to national appropriation by any means whatsoever.
5. The placing by States of geostationary satellites in outer space creates no right of ownership over the respective orbital positions of the satellites or any area of outer space.
6. All States enjoy an equal right to the utilization of outer space for placing geostationary satellites. This right must not be detrimental to the interests of other States.
7. States shall co-operate on questions of the placing of geostationary satellites in outer space with due regard to the recommendations and decisions of the International Telecommunication Union concerning the utilization of the radio-frequency spectrum allocated for the various types of space communications.

U.N. Doc. A/AC.105/L.112 (1979) (original in English and Russian). The Soviet delegate made some comments on this document after presenting it and also expressed some concerns about space transportation systems, particularly the U.S. Space Shuttle. Specifically, the Soviet delegate mentioned the possible use of the Shuttle "for removing from orbit the space objects of other States without their clearly expressed agreement to that effect" and suggested that such use be prohibited. He also said that "it seems to us that the need will arise to elaborate rules for the flights of such systems over the territories of foreign states during the first orbit after launching, that is at the moment when such systems may be at low altitudes and may have some effect on the territory of the underlying States." Remarks by Mr. Kolossov, U.S.S.R., U.N. Doc. A/AC.105/PV.196, at 42-47 (1979). These remarks on Shuttle capabilities reflect earlier Soviet concerns. *See* notes 70 and 71 *supra*.