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Eugene Brooks

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NATIONAL CONTROL OF NATURAL PLANETARY BODIES PRELIMINARY CONSIDERATIONS

BY EUGENE BROOKS†

I. BACKGROUND

AS THE United States and Russia edge closer to the Moon, the question of national control of the Moon and planets looms larger in the port-hole of international law. The topic has been treated extensively by many writers and has been considered in general terms by the United Nations. In most instances the discussion has been limited to the application of state sovereignty on planetary bodies.¹

The well-known United Nations Assembly Resolutions 1721 (XVI) and 1962 (XVIII) express the unanimous view of the delegates that:

- (1) International law, including the Charter of the United Nations, applies to outer space and celestial bodies.
- (2) Outer space and celestial bodies are free for exploration and use by all states on a basis of equality and in accordance with international law.
- (3) Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

These General Assembly Resolutions have advanced only to the perimeter of legal matters that may assume significance in respect to control of celestial areas.

In the near future it is unlikely that any nation will claim sovereignty of an entire celestial body, such as the Moon, at the risk of inviting the ridicule of the world. Nor, in view of the Assembly Resolutions, is it probable that any nation will symbolically annex a disproportionately large sector of any such body. It is submitted, rather, that the real point of issue will be the character and degree of control of specific areas of celestial bodies.

The chief thrust toward interplanetary exploration thus far has been spearheaded by the United States and Russia, on a national basis. This is borne out in the separate draft treaties submitted to the United Nations this June by the United States and Soviet Russia.² Though both drafts renounce "national appropriation by claim of sovereignty, by means of use

† B.A., Montclair State Teachers' College; LL.B., New York University; LL.M., New York University Law Center; Member of the International Institute of Space Law.

¹ New approaches have been unearthed by Schachter, *Who Owns the Universe*, in *ACROSS THE SPACE FRONTIER* 118 (Ryan ed. 1952); HALEY, *SPACE LAW AND GOVERNMENT* 118 (1963); McDUGAL, VLASIC & LASSWELL, *LAW AND PUBLIC ORDER IN SPACE* 819-71 (1963) [hereinafter cited as McDUGAL]; Fasan, *Law and Peace for the Celestial Bodies*, in *PROCEEDINGS, FIFTH COLLOQUIUM ON THE LAW OF OUTER SPACE* (International Institute of Space Law 1962) [hereinafter the various annual proceedings are cited as *COLLOQUIUM*].

² U.N. Doc. Nos. A/AC.105/32 and A/6352 (1966) respectively.

or occupation, or by other means," neither draft characterizes in an affirmative way the legal status of celestial terrain. The United States proposal yields to states exclusive authority over their facilities and personnel on celestial bodies, as well as retention of ownership of objects placed there,³ and the Russian draft has the same effect.⁴

The Legal Subcommittee of the United Nations Committee for the Peaceful Uses of Outer Space, meeting in Geneva, may recommend an agreed draft treaty for General Assembly approval this September. Any such draft is likely to confirm to the nations full overlordship of their planetary installations and artifacts while purporting to disaffirm "sovereignty" and "national appropriation."

Along these lines, the recent announcement by President Johnson authorizing the United States Air Force to develop a manned orbiting laboratory (MOL) for essential military purposes⁵ coupled with reports of parallel Russian plans⁶ is, although understandable in the name of security, a retrograde—but not a fatal step—in the direction of the nationalization of space. Unless this unilateral state of facts is modified, it will have certain practical consequences. Under the law of conservation of political structures, legal and policy models have an inertial stubbornness in that they tend to keep the same shape in which they were first formed.⁷

The issue may not be of critical urgency. Time, competing claims on national resources, and national crises here on earth will postpone the time for decision. Other than for reasons of prestige, there is no indication of an immediate competitive confrontation on the planets over minerals as occurred in Africa. The cost of space travel is too great, and it may be less expensive to search and mine raw materials from the ocean.⁸ Thus, there is not likely to be the "gold rush syndrome" envisioned by Dr. Schachter.⁹

What is of greater significance in the intermediate future is whether space exploration will finally proceed on an international basis or whether it will continue exclusively on a national level. This long-range political question is interlaced with legal questions, and both the legal and political aspects will influence one another. For the sake of clarity, it is proposed

³ Article 7 reads: "A State may exercise authority over its facilities and persons participating in its activities on a celestial body. Ownership of objects shall not be affected by their being landed, constructed or used on a celestial body." Article 6 grants a right of access to all areas of celestial bodies at any time to "representatives of other states" conducting activities there.

⁴ Article V states in part: "A State Party to the Treaty on whose registry an object launched into outer space is carried, shall retain jurisdiction and control over such object and over any personnel thereon, while it is in outer space or on a celestial body. Ownership of objects launched into outer space including objects delivered to or constructed on a celestial body and of their component parts, shall not be affected by their presence in outer space or on a celestial body or by their return to earth." The Soviet draft also provides for free access to all regions of celestial bodies.

⁵ N.Y. Times, 26 Aug. 1965, p. 1, col. 8.

⁶ N.Y. Herald Tribune, 26 Aug. 1965, p. 1, col. 3 (late city ed.).

⁷ See, e.g., the retention of the Cuban invasion plans by the incoming Kennedy Administration, which in the words of Arthur M. Schlesinger, Jr. showed "how contingency planning could generate its own momentum and create its own reality." Schlesinger, *A Thousand Days, Life*, 23 July 1965, p. 65.

⁸ KOPAL, *THE MOON* 133-34 (2d ed. 1964).

⁹ Schachter, *supra* note 1, at 118.

to separate the legal questions from the political questions and deal with the *is* and the *ought* separately.¹⁰

II. THE LEGAL PROBLEM

A. National Sovereignty Of The Planets

The issue of control of the Moon, Mars, or other planets is most often approached in an effort to determine whether celestial territory is *res nullius* or *res communis*. The United Nations has accepted the latter which is a significant advance over past norms of international law. However, both *res nullius* and *res communis* permit a rule of exclusivity over a lunar sector, thus avoiding the questions of national as opposed to international control and the allocation of the burdens and benefits from planetary exploration.¹¹ There exists an embryonic conflict inherent in the principle of free use of celestial bodies. M. Deleau, the French delegate to the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, stated the contradiction precisely at Geneva last year: "How was the exploitation by one State of part of a celestial body to be harmonized with the principle that celestial bodies were free for use by all states?"¹² Certain responsive declarations by national spokesmen indicate national solutions. We are told by the Judge Advocate of the Air Force that Resolution 1721 (XVI) "is of course not intended to preclude the establishment by exploring states of settlements upon such land masses."¹³ Attorney General Katzenbach, while postulating the possibility of joint or partnership interests in celestial facilities on planets, speaks of "a new hybrid principle" that is not sovereignty but "primary rights of a national in a localized facility created by its own efforts."¹⁴

It is difficult to see how "primary rights" would differ from sovereignty except in name, but both would be justified under present international law. This conclusion is reached by the following process: International law reaches to the planets because there is no spatial limitation in international law, and absent a prohibitory rule, states are free to act as they please.¹⁵ The conduct of nations reinforces this conclusion. International law has in fact been unequivocally applied to space in the Moscow Test Ban Treaty of 5 August 1963 signed by one hundred nations.¹⁶

¹⁰ AUSTIN, *THE PROVINCE OF JURISPRUDENCE DETERMINED* (1954).

¹¹ HALEY *op. cit. supra* note 1, at 138. See, *Status of Competing Claims*, in PROCEEDINGS, AMERICAN SOCIETY OF INTERNATIONAL LAW 182 (1963) (comment of Dr. Howard J. Taubentfeld): "[Resolution 1721] does not provide an alternative regime to national claims. . . ."

¹² U.N. Doc. No. A/AC.105/C.2/SR.29-37, p. 47 (1964).

¹³ Menter, *Formulation of Space Law*, in SIXTH COLLOQUIUM (1963).

¹⁴ Katzenbach, *The Law in Outer Space*, in SPACE: ITS IMPACT ON MAN AND SOCIETY 78 (Levy ed. 1965).

¹⁵ Case of the S.S. "Lotus," P.C.I.J., ser. A, No. 10, at 18 (1927): "International Law governs the relations between independent states." See MacMahon, *Legal Aspects of Outer Space*, BRIT. YB. INT'L L. 357 (1962): "[L]ogically, there is no inherent reason why such principles should be earthbound and should not reach out after and govern state activities wherever they take place."

¹⁶ Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, 5 Aug. 1963, T.I.A.S. No. 5433:

Article I. Each of the parties to this Treaty undertake to prohibit, to prevent, and not to carry out any nuclear weapon test explosion or any other nuclear ex-

In order to apply international law to the planets, it is necessary to look to treaties and international custom as principle sources of law.¹⁷ There are no treaties in force governing the situation. The closest analogies are the cited United Nations Resolutions 1721 (XVI) and 1962 (XVIII). They deal with sovereignty in general terms and, strictly speaking, forbid state subjection only of an entire celestial body, not a portion thereof. A more serious deficiency established by the weight of authority is that, in the absence of an international instrument or convention, General Assembly Resolutions, even those unanimously passed, which do not involve the specific responsibilities of that body, are not legally binding on states. They do have, however, great moral force.¹⁸

We look next to the practice of states. Both Russia and the United States have made remote physical contact with the Moon by satellite and have mapped its surface. Russia's Lunik II hit the lunar orb in 1959, thoughtfully scattering pentagonal medallions stamped with the Soviet coat of arms and a Russian flag.¹⁹ These activities do not provide a sufficient basis for claim of ownership under the doctrine of effective occupation.²⁰ Even were they juridically adequate, they were accompanied by denials of claim of sovereignty. As a result the indispensable "intention and will to act as sovereign" is absent, and this absence is fatal to any later claim based on these activities.²¹

What acts would be legally sufficient for a claim of sovereignty on the

plosion, at any place under its jurisdiction and control: (a) In the atmosphere; beyond its limits including outer space; or under water, including territorial waters or high seas. . . .

The United Nations has, of course, assumed the applicability of international law to space, not only in Resolutions 1721 (XVI) and 1962 (XVIII), but also in a third Resolution, 1884 (XVIII), which calls on all states to refrain from "installing such (nuclear) weapons on celestial bodies or stationing such weapons in outer space in any other manner."

¹⁷ STAT. INT'L CR. JUST., art. 38.

¹⁸ See generally Asamoah, *The Legal Effect of Resolutions of the General Assembly*, 3 COLUM. J. TRANS-NAT'L L. 210 (1965); Csafabi, *The U.N. General Assembly Resolutions on Outer Space as Sources of Space Law*, in EIGHTH COLLOQUIUM 337-61 (1965); Johnson, *Effect of Resolutions of the General Assembly of the United Nations*, BRIT. YB. INT'L L. 97 (1955-1956); Sloane, *The Binding Force of a Recommendation of the General Assembly of the United Nations*, BRIT. YB. INT'L L. 1 (1948). For the particular effect of Resolutions 1721 (XVI) and 1962 (XVIII), see Herczeg, *The Legal Character of UNO Resolutions*, in SEVENTH COLLOQUIUM 273 (1964); Higgins, *The Development of International Law by the Political Organs of the United Nations*, PROCEEDINGS, AMERICAN SOCIETY OF INTERNATIONAL LAW 122 (1965). For Russia's position see the pertinent statements of Delegate Ambrosini (Italy), Deleau (France), and Glaser (Romania) in U.N. Doc. No. A/AC.105/C.2/SR.29-37, p. 44; and U.N. Doc. No. A/AC.105/PV.25-35, p. 15 (1964). The United States takes the minority view that the Resolutions presently "state the law as it is accepted by members of the United Nations." Letter from the State Department to this writer, 15 June 1965; see statement of Secretary of State Rusk, 47 DEP'T STATE BULL. 315, 318 (1962); statement of former Ambassador to the United Nations Stevenson, U.N. Doc. No. A/C.1/PV.1342, p. 6-46 (1963); 49 DEP'T STATE BULL. 1005 (1963); and 51 DEP'T STATE BULL. 755 (1964).

¹⁹ Finch, *Territorial Claims to Celestial Bodies*, in A SYMPOSIUM, LEGAL PROBLEMS OF SPACE EXPLORATION, S. Doc. No. 26, 87th Cong., 1st Sess. 626-36(h) (1961) [hereinafter cited as SYMPOSIUM].

²⁰ See generally 1 HACKWORTH, DIGEST OF INTERNATIONAL LAW 393-408 (1941) [hereinafter cited as HACKWORTH]; Von der Heydte, *Discovery, Symbolic Annexation and Virtual Effectiveness in International Law*, 29 AM. J. INT'L L. 448 (1935); Simsarian, *The Acquisition of Legal Title to Terra Nullius*, 53 POL. SCI. Q. 111 (1938); 1 OPPENHEIM, INTERNATIONAL LAW 506 (1955); 1 HYDE, INTERNATIONAL LAW CHIEFLY AS APPLIED AND INTERPRETED BY THE UNITED STATES 162 (2d rev. ed. 1947); LINDLEY, THE ACQUISITION AND GOVERNMENT OF BACKWARD TERRITORY IN INTERNATIONAL LAW 129-59 (1926); JENNINGS, THE ACQUISITION OF TERRITORY IN INTERNATIONAL LAW 30-36 (1963); Finch, *supra* note 19.

²¹ Legal Status of Eastern Greenland, P.C.I.J., ser. A/B, No. 53, at 46 (1933).

Moon and planets? Mere discovery in the sense of visual apprehension of land has long since been discarded, if it ever existed, as a basis of legal claim to new territory. The same is true for disembarkation or extended exploration of specific areas without more.²² The next step in establishing a claim is symbolic annexation. This involves formal taking of possession under authority of the sovereign by means of a ceremony on the new territory. This once gave either immediate right of ownership to the claimed territory²³ or only created an inchoate title which could mature into sovereignty provided reasonably prompt, effective occupation followed.²⁴ It is certain that today the principle of effective occupation is now firmly established as the only means of acquiring lands open to acquisition.²⁵

The principle of effective occupation, however, is an elastic concept which depends on variable factors. These factors are: the size and configuration of the territory; whether the territory is inhabited or not; and the presence or absence of competing claims to the same territory by other nations. The content of effective occupation has changed even in relatively recent times from that of colonization and settlement²⁶ to that of a political character—the continuous and peaceful display of state authority.²⁷

In the eyes of an international tribunal, there is no fixed yardstick, which, placed against all factual situations, answers with certainty the question of the degree of state activity required to give juridical credence to a claim of ownership of a portion of the Moon.²⁸ The few judgments by international tribunals do, however, constitute a series of legal measuring rods of various sizes which may be placed against different fact situations. In the case of a single, unpopulated island a few miles wide, effective occupation may be equivalent to a single act amounting to symbolic annexation, such as a shipboard proclamation followed by a single crew landing.²⁹ It may also consist of remote political control through native princes.³⁰

In the case of large areas in temperate or tropical zones, suitable for habitation, a stricter rule prevails. There some colonization, or the exercise of political control and administrative overlordship through delegated

²² KELLER, LISSITZYN & MANN, CREATION OF RIGHTS OF SOVEREIGNTY THROUGH SYMBOLIC ACTS 1400-1800, 148 (1938).

²³ *Ibid.*; accord, Simsarian, *supra* note 20, at 127.

²⁴ 1 HYDE, *op. cit. supra* note 20, at 166; McDUGAL 833.

²⁵ Island of Palmas Arbitration, 2 U.N. Rep. Int'l Arb. Awards 829-72 (1928), reprinted in 22 AM. J. INT'L L. 867-912 (1928) [hereinafter cited as Palmas Arbitration]; Legal Status of Eastern Greenland, P.C.I.J., ser. A/B, No. 53, at 46 (1933).

²⁶ 1 HACKWORTH 399 (quoting letter of Secretary of State Hughes to A. W. Prescott, 13 May 1924).

²⁷ 1 OPPENHEIM, *op. cit. supra* note 20, at 509-10; Palmas Arbitration.

²⁸ As stated by Judge Huber, "Manifestations of sovereignty assume, it is true, different forms, according to conditions of time and place." Palmas Arbitration 877.

²⁹ Clipperton Island Arbitration, 2 U.N. Rep. Int'l Arb. Awards 1107-11 (1931), reprinted in 26 AM. J. INT'L L. 390 (1932) [hereinafter cited as Clipperton Island Arbitration].

³⁰ Palmas Arbitration. Such cases are discussed in Von der Heydte, *supra* note 20, at 462-63, 465; SVARLIEN, THE EAST GREENLAND CASE IN HISTORICAL PERSPECTIVE 58 (U. of Fla. Monograph 1964); Jessup, *The Palmas Island Arbitration*, 22 AM. J. INT'L L. 735-53 (1928); McDUGAL 840-44, 864; Finch, *supra* note 19; Johnson, *Acquisitive Prescription in International Law*, 27 BRIT. YB. INT'L L. 332, 342, 348 (1950); JENNINGS, *op. cit. supra* note 20, at 22-23.

agents, and the use and enjoyment of the resources of the territory would be required to tip the legal scales.³¹

The application of rules regarding occupation to land masses far removed from civilization is more in point when considering the occupation of planets. Though nations have dealt with, and made claim to, isolated and uninhabitable terrain, as in the case of Spitsbergen,³² the Falkland Islands,³³ and both north and south polar regions,³⁴ only one adjudicated case has dealt extensively with a large land area in an inaccessible and desolate situation comparable to that which may be found on the Moon and Mars. This is, of course, the *East Greenland Case*³⁵ which disposed of 840,000 square miles of ice plateau bordered by a narrow habitable coastal strip. In this case involving Norway and Denmark, Denmark was able to show three discrete, intermittent occasions from 1261 to 1931 in which she exercised certain political rights over one or more colonies, which rights were intended by her to cover the entire island. These regulations and decrees dealt with crimes, monopoly trading powers, restrictions on the trading of other nations, certain police powers, decrees providing for the administrative interconnection of all Greenland, restriction of navigation, hunting and fishing regulations, scientific expeditions, a tour of inspection by a government vessel, and issuance of visitation permits to the island.

The Court took into account the arctic and inaccessible character of the uncolonized parts of the country in holding that Denmark's acts amounted to sovereignty. It was stated that two elements are involved in a claim based on display of authority: (1) the intention and will to act as sovereign, and (2) some actual exercise or display of such authority.³⁶ The Court then noted:

It is impossible to read the records of the decisions in cases as to territorial sovereignty without observing that in many cases the tribunal has been satisfied with very little in the way of the actual exercise of sovereign rights, provided that the other state could not make out a superior claim. This is particularly true in the case of claims to sovereignty over areas in thinly populated or unsettled countries.³⁷

Applying the *East Greenland Case* to prospective lunar or Martian claims, several factors stand out sharply:

First, there must be considerable state activity, physically as well as

³¹ See account of the arbitration between Great Britain and Venezuela as to the boundary line of British Guiana in LINDLEY, *op. cit. supra* note 20, at 152-57; Von der Heydte, *supra* note 20, at 465-71; 1 HACKWORTH 395-98; 1 OPPENHEIM, *op. cit. supra* note 20, at 506-14; and SVARLIEN, *op. cit. supra* note 30, at 53-61.

³² JESSUP & TAUBENFELD, CONTROLS FOR OUTER SPACE 34-39 (1959).

³³ Waldock, *Disputed Sovereignty in the Falkland Islands Dependencies*, BRIT. YB. INT'L L. 311-53 (1948).

³⁴ JESSUP & TAUBENFELD, *op. cit. supra* note 32, at 135-90; 1 HACKWORTH 447-66; HANESSIAN, 2 POLAR AREA SERIES pts. 4-7; Hanessian, *The Antarctic Treaty 1959*, 9 INT'L & COMP. L. Q. 138 (1960); Hayton, *The Antarctic Settlement of 1959*, 54 AM. J. INT'L L. 348 (1960); Svarlien, *The Sector Principle in Law and Practice*, Polar Record, Sept. 1960, p. 248; PROCEEDINGS, AMERICAN SOCIETY OF INTERNATIONAL LAW 135-74 (1958); and SMEDAL, ACQUISITION OF SOVEREIGNTY OVER POLAR AREAS (1931).

³⁵ Legal Status of Eastern Greenland, P.C.I.J., ser. A/B, No. 53, at 45-46 (1933).

³⁶ *Ibid.*

³⁷ *Ibid.*

politically, in the form of exploration, settlement, and laws purporting to deal with the territory as a whole. Though it has been said that very little more than the mere will to extend sovereignty is the lesson of *Greenland*³⁸ and that effective occupation is reduced in the case of wasteland to an ill-defined minimum,³⁹ a claim to territory on celestial bodies must be based on more than fragmentary activities coupled with grandiose declarations. Actual display, but not necessarily a special administration, is still required. One or more permanent lunar or Martian installations, intermittently occupied by persons under the jurisdiction of the claiming nation, would be required for a claim of sovereignty over some portion of the surface for which regulations covering political and economic matters have been publicly proclaimed.⁴⁰

Second, a large land mass that is a geographical unit, an organic whole, or a large, naturally rounded off region may be claimed in entirety on the basis of only one or more such installations effectively occupied as above⁴¹ provided the area is also uninhabited. This might apply to the craters and to the plains or maria, the largest of which is Mare Imbrium, 540 miles in diameter.

Third, related to the above, and irrespective of whether or not an organic whole is involved, a minimum effective occupation would carry with it an ample amount of territory. Effective occupation does not "imply its extension to every nook and corner."⁴² The extent of territory taken into control would be based on a rule of reasonableness. Mere contiguity, except where the geographical configuration is an entity, is not acceptable.⁴³ A balance would have to be struck between the principle of susceptibility to control which, in the case of the Moon, would tend to contract the area claimed⁴⁴ and uninhabitability, which tends to permit expansion of the radius of ownership.

With *Palmas* and *East Greenland* in mind, one might say that sharp physical demarcations, such as crater rims and mountain ranges, would be appropriate boundaries⁴⁵ but that if in any case initially involving areas with no conventional boundaries a radius of 25-50 miles represented the practical limit of a nation's explorative capacity, the control would terminate at that limit. In later eras, with greater control of landing modules and tractors, the diameter of possible sovereignty would grow to larger distances, but in no event exceeding the Moon's largest feature, 540 miles.

³⁸ ROSS, *INTERNATIONAL LAW* 147 (1947).

³⁹ SVARLIEN, *op. cit. supra* note 30, at 68.

⁴⁰ But one writer, indicating that the doctrine of effectiveness is declining both in doctrine and practice, suggests that improved telecommunications, which permit an unmanned vehicle to perform acts previously entrusted to humans, might result in a claim based on the acts of unmanned ships. Verplaetz, *Can Individual Nations Obtain Sovereignty Over Celestial Bodies*, in *FOURTH COLLOQUIUM* 311, 314, 320 (1961).

⁴¹ 1 HACKWORTH 404 (quoting award as to "organic whole" in British Guiana-Brazil boundary dispute of 1904, citing 99 *Brit. & For. S. Papers*, 1905-1906); ROSS, *op. cit. supra* note 38.

⁴² Von der Heydte, *supra* note 20, at 465.

⁴³ SVARLIEN, *op. cit. supra* note 30, at 59-61; 1 OPPENHEIM, *op. cit. supra* note 20, at 511-12.

⁴⁴ Clipperton Island Arbitration. *Accord*, Schachter, *supra* note 1; Von der Heydte, *supra* note 20, at 463.

⁴⁵ Fasan, *The Legal Nature of Celestial Bodies*, in *FOURTH COLLOQUIUM* 286 (1961).

Fourth, the presence or absence of competing activities and claims will constrict the maturation of the claims of one nation as against the claims of others. In *Palmas*, there was no contestation, protest, or display of sovereignty by Spain such as "might counterbalance or annihilate" the Netherlands' sovereignty,⁴⁶ and, once Danish acts were proved, the entire *East Greenland Case* rested on the two pillars of "the absence of any claims to sovereignty by another power, and the arctic and inaccessible character of the uncolonized parts of the country."⁴⁷ In previous territorial controversies featuring heated competing claims, such as the *Oregon Controversy*⁴⁸ and the *British Guiana-Venezuela Case*,⁴⁹ the outcome tended to equitable division of the spoils. Thus, since the essence of present planetary conquest is competition between the United States and Russia, the activities of the two nations, in the same general vicinity, will have a geographically limiting effect on the legal aspirations of each other.

Therefore, from the standpoint of positive law, the nations which meet the foregoing standards may validly claim portions of the Moon and Mars. These norms, however, "are not of a character eternal and unchangeable"⁵⁰ and may be expanded by legal mutation over a period of time. An attempt has already been made to claim large segments of the Antarctic and Arctic areas by application of various "sector" principles, but the sector principle is not generally accepted as a basis of claim to ownership at this time.⁵¹

B. Control Of Planetary Resources

From a territorial viewpoint the legal bonds are somewhat looser with respect to the legal ownership of resources in space or on planetary bodies, as distinguished from the ownership and control of their surfaces. There is no legal problem with the essentially shareable resources such as cosmic rays, electromagnetic radiation, interstellar gas, solar wind, and manifestations of gravity.⁵² One may also suppose that micrometeoroids in space, usually no bigger than a grain of sand, are subject to appropriation by the finder, as they have always been after falling to earth.⁵³ With respect to objects found on celestial bodies or minerals extracted therefrom, the title would likewise seem to follow the finder. This result would be clear in the case where ownership of the area in which the extracted material was located had been established by the finder. Even if this ownership had not been fixed, the situation is much the same as if such products were taken from *res nullius* areas on earth, as gold was taken from the New World by Spain. No rule of international law prevents their acquisition. Other analogies: resources taken from polar regions not admitted to be owned by particular nations, sedentary fisheries, and oyster beds in the sea.

Where the use of a resource such as the Van Allen belt, or the possibility

⁴⁶ *Palmas Arbitration* 909.

⁴⁷ Legal Status of Eastern Greenland, P.C.I.J., ser. A/B, No. 53, at 50 (1933).

⁴⁸ LINDLEY, *op. cit. supra* note 20, at 132-35.

⁴⁹ *Id.* at 152-56.

⁵⁰ Svarlien, *supra* note 34, at 248.

⁵¹ *Id.* at 256, 260.

⁵² McDUGAL 750-55; Jenks, *International Law and Activities in Space*, in SYMPOSIUM 42.

⁵³ Fasan, *Law and Peace for Celestial Bodies*, in FIFTH COLLOQUIUM 8 (1962).

of contamination of earth by transported substances, or the use of material that might cause cyclical changes in the ecology of a planet poses a danger or disadvantage to others, self-survival and self-protection would dictate that such use be a delict.⁵⁴ But in the absence of international agreement, nothing legally prevents appropriation of a rare substance, like the permafrost of Mars, to the exclusion of others, where no person or property is endangered by such appropriation.⁵⁵

Some difficulty may be encountered as one moves toward objects of larger sizes. Is a medium sized asteroid a celestial body or a floating mineral resource? No legal impediment would seem to stand in the way of appropriating the entirety of an asteroid, though for policy reasons a state may deem this inadvisable. The criterion of moveability has been suggested. Under this view no object could be used in toto if it could not be directed and transported through space.⁵⁶ Again, no use would be legally permissible that might affect the orbit of the earth, directly or indirectly disarrange the celestial mechanics of the solar system, or in any way cause injury to person or property.⁵⁷

Further inquiry as to sovereignty of portions of the sun, other stars, or galaxies would be sheer speculation. One writer has denied the possibility of sovereignty over the sun from considerations of natural law as well as from the alleged impossibility of man to exercise control over it.⁵⁸

If sovereignty over portions of celestial bodies is sanctioned by present law, any lesser form of control is legally permissible. It is predicted for the near future that underground lunar installations with closed ecological systems and propellant manufacturing facilities will convert the Moon into a staging place for travel in the solar system.⁵⁹ The Space Science Board of the National Academy of Science has recommended lunar base construction as a subsidiary program. The International Academy of Astronautics has already set up a nongovernmental committee to study the technical problems of a research laboratory on the Moon.⁶⁰ Any form of installation occupies dimension and implies the commandeering of an exclusive portion of planetary surface. Doubtless the example of the Antarctic, with wireless stations and post offices, will be duplicated on the Moon but in the form of radar sets, telescopes, and thermocouples. These installations will be manned by subjects of the exploring state under the

⁵⁴ See U.N. Doc. No. A/5785, Annex III (1964) for a general discussion by the Committee on Space Research (COSPAR) with suggested standards to minimize contamination.

⁵⁵ For the example of the whale on earth, see *Science*, 27 Aug. 1965, p. 943.

⁵⁶ Fasan, *supra* note 53, at 9. Along these lines, Working Group III of the International Institute of Space Law offered the definition that "Celestial bodies . . . are natural objects in Outer Space including their eventual gaseous corona which cannot be artificially moved from their natural orbits." Smirnoff, *Fourth Report of the Working Group III of the International Institute of Space Law*, in SEVENTH COLLOQUIUM 352 (1964). Objection was immediately voiced that eventually it was indeed planned to divert planets by artificial means into new orbits more conducive to the support of life. *Id.* at 356.

⁵⁷ Trail Smelter Arbitration (*United States v. Canada*), 3 U.N. Rep. Int'l Arb. Awards 1905 (1941). See U.N. GEN. ASS. RES. 1962 (XVIII) for optional consultation in the case of potentially harmful interference of other states in the use of outer space.

⁵⁸ Fasan, *supra* note 45, at 282.

⁵⁹ LEVITT & COLE, *EXPLORING THE SECRETS OF SPACE* 58-67, 267 (1963).

⁶⁰ Haley, *Legal Problems of Manned Lunar Lab*, in SEVENTH COLLOQUIUM 62 (1964).

direction of particular governments, so that they will be legally under de facto national control. All the foregoing finds no obstacle in existing international law.

If the current Geneva talks or any future international conference produce a treaty for celestial bodies, the treaty provisions would supplant customary law. They would replace it, however, only to the extent of specific agreements reached and only with respect to the parties to the treaty. A treaty ban on "national appropriation" which permitted de facto acquisitions and uses on the Moon would amount in the end only to an agreement to exercise sovereignty without terming it sovereignty.

III. TELEOLOGICAL CONSIDERATIONS

Are the above solutions what we really want? Is the concept of primary national rights not a declension from the rejection of national sovereignty advocated by the United Nations? The answer to this poses a discussion of what the law should be with respect to ownership, control, and supervision of celestial bodies, and calls into play subjective value considerations. But it also demands a pragmatic determination of what objects and means will be beneficial, and to whom, in the conquest of space.

One may say that the overriding objective should be the maintenance of maximum international concord and the greatest material progress, consistent with national interest. But what is the national interest? Without minimizing the grave responsibilities of national leaders in matters of military security, there is a long range national interest of the people of the United States as opposed to a short range interest. If it were possible to judge all the consequences of acts of State or to be able to see beyond the bend of time, then it would be easy to choose alternatives. Then short range interests and long range interests would merge and be identical.

It may indeed appear to both Russia and the United States that not only the control of space is militarily and physically vital to each, but that the seizure of as much planetary terrain as possible is indispensable politically and economically. But this may be only the appearance of things, not the reality. It is not certain that more may not be lost than gained in moving observation posts beyond a few earth radii,⁶¹ or even that control of space is possible. From purely a national standpoint, the United States must remain strong not only in actuality but in the world's image.⁶² It probably is true also that until the Moon race is finished—since it is a race—the United States must aim at space primacy. This is not said in an absolutist sense; if it were, there would be no point in foregoing the testing of nuclear weapons.

But this does not mean that it must be the ultimate national object of

⁶¹ Ramo, *Choosing Our Space Goals*, in *SPACE WEAPONS, A HANDBOOK OF MILITARY ASTRONAUTICS* 159 (1959).

⁶² GIBNEY & FELDMAN, *THE RELUCTANT SPACE FARERS* 49-64 (1965); Schelling, *The Threat of Violence in International Affairs*, *PROCEEDINGS, AMERICAN SOCIETY OF INTERNATIONAL LAW* 104 (1963).

the United States or of any country to carve up for itself as much lunar or Martian terrain as possible. There is no empirical connection between property rights on celestial bodies and national invulnerability. As for future centuries, in which it is supposed that population pressures will force people to the planets⁶³ or underwater, the present bi-polarity or multi-polarity of power is likely to give way to new international conformations.

Even if the foregoing were not true, the utility of national structuring of space must come into question on other expedient grounds. It is true that the modern state at the center of Western civilization, joining itself to science and technology, is responsible for much of the progress and well-being of people, at least in the advanced nations. To cast a balance between the benefits conferred and the damage wrought by unchecked nationalism is beyond the scope of this note. Four empires, each devoted to its own interest: British, Japanese, German, and Italian, were cast up and then abandoned in the last hundred years alone. Who can foretell where the process will end?

It is plain fact that national rivalries have led to war in the past, irrespective of the moral blame of particular nations. World War II accounted for over twenty million direct fatalities in addition to those wounded, the depleted resources, and a financial cost estimated at one trillion dollars.⁶⁴ If the price of the dead alone, one out of every one hundred and ten of all the world's people, is not considered excessive when weighed against presumed advantages in material progress, it is generally agreed that the toll of future atomic war will be prohibitive.⁶⁵

In connection with the question of national rivalries, one is surprised to hear it announced that peace and international stability must rest on a balance of power, as if a new discovery had been made that guaranteed permanent peace.⁶⁶ It is as if past collapses of balances of power had never taken place. As if the company of nations were a series of mathematical abstractions that responded to mechanistic rules of order. Unfortunately, nations respond to their own interests, rationally or irrationally, and not to general conceptions. There can never be any permanent equilibrium of dynamic opposing national forces. One must always expect that one nation will go too far, dragging the entire fabric of alliances and counter-alliances into general collapse and total war.

Further, the standard of living in the United States is doubled with every generation,⁶⁷ but the gap between Western societies and almost all others has widened.⁶⁸ This poses the necessity of economic and political

⁶³ N.Y. Times, 22 May 1966, p. 85, col. 5, quoting Prof. E. Kolman of the Soviet Academy of Sciences that "escape into cosmic space . . . will become inevitable."

⁶⁴ 25 FUNK & WAGNALL'S STANDARD REFERENCE ENCYCLOPEDIA 9360-61 (1961).

⁶⁵ Morgenthau, *Politics in the Twentieth Century*, in 3 THE RESTORATION OF AMERICAN POLITICS 162 (1962).

⁶⁶ Halle, *Our War Aims Were Wrong*, N.Y. Times, 22 Aug. 1965, § 6 (Magazine), p. 13.

⁶⁷ WALLICH, THE COST OF FREEDOM 10 (1960).

⁶⁸ Maxwell, *Maldistribution of Property*, World Justice, March 1965, p. 317; see also Address by Vice-President Humphrey, Fordham University Commencement, 9 June 1965, reprinted in 53 DEP'T STATE BULL. 56 (1965).

integration, of which space may be a part. Thus, against a natural desire to secure national preeminence on the planets, one must counterpoise the pragmatic benefits of an international solution.

Against a possible deceleration of scientific progress in the event the space race were slowed,⁶⁹ it should be pointed out that an effective world space structure might lay plans for broadgaged, directed progress with the participation of many nations in the exploration of the solar system. There would still be full scope for competition by national components in subsidiary space tasks, such as rocket building and new power sources, as well as in other realms, such as physics, chemistry, medicine, and atomic energy. The case for international tension as the chief technological stimulant is not proved, in view of the fact that the world made its sharpest industrial progress from 1815 to 1914, a period of relative peace.

Against the speculation that far-reaching economic benefits to the United States or Russia justifies national spheres of interest on celestial bodies, the possibility of sharing the economic space burdens and benefits should be seriously explored. A manned expedition to Mars will cost \$100 billion.⁷⁰ Investors should be welcomed. There is little danger that the advanced nations will lose scientific preeminence, and the prospect is that a small rise in the standard of living of underdeveloped nations would create new markets for the developed nations.

International solutions have been advocated by many commentators, ranging from national colonies under the supervision of the United Nations⁷¹ to direct space administration through a Cosmic Development Corporation attached to the United Nations.⁷² Dr. Schachter, with rare foresight, perceived very early that the doctrine of effective occupation, like that of discovery, was outmoded in juristic terms and social applicability. He proposed a system of United Nations licensing and regulation of resources, somewhat limited to states with necessary technical ability.⁷³ Dr. Jenks added the refinement of title to be vested in the United Nations, and exploitation to be carried on under a licensing arrangement.⁷⁴ The David Davies Memorial Institute of International Studies put together a very comprehensive draft code which permits nations to establish stations and retain jurisdiction of them under the supervision of the United Nations. Military bases, but not military activity, would appear to be banned as well as nuclear testing. The Draft Code, unfortunately, appears to preserve almost full freedom of national action and disposition of any resources.⁷⁵ A working group of the International Institute of Space Law under the chairmanship of Dr. Michael Smirnof of Yugoslavia⁷⁶ has

⁶⁹ Taubenfeld, *Status of Competing Claims*, PROCEEDINGS, AMERICAN SOCIETY OF INTERNATIONAL LAW 185 (1963).

⁷⁰ GIBNEY & FELDMAN, *op. cit. supra* note 62, at 143.

⁷¹ Menter, *Jurisdiction over Land Masses in Space*, in *FOURTH COLLOQUIUM* 61 (1961).

⁷² JESSUP & TAUBENFELD, *op. cit. supra* note 32, at 281-82.

⁷³ Schachter, *supra* note 1.

⁷⁴ Jenks, *International Law and Activities in Space*, in *SYMPOSIUM* 33.

⁷⁵ 29 *J. AIR L. & COM.* 141 (1963).

⁷⁶ Dr. Smirnof has brilliantly collected the work of others in *The Legal Status of Celestial Bodies*, 28 *J. AIR L. & COM.* 385 (1961-1962).

formulated a preliminary draft resolution which, though denying national or private appropriation of portions of celestial bodies, permits states untrammelled use of same.⁷⁷

It would seem possible to take a further step forward, vesting all title to celestial bodies and products from celestial bodies in the United Nations or some such corporation as suggested by Jessup and Taubenfeld, which would retain full jurisdiction of all installations and activities but permit administration by the nation or organization establishing the station. The corporation would itself be encouraged to establish planetary stations, and multi-national installations would likewise be promoted. In this respect, the suggestion of the Association of the Bar of the City of New York, that the nations adopt any further decision as to celestial bodies that may be agreed to by a two-thirds vote of the General Assembly,⁷⁸ is a step in the right direction. It might be more useful, however, to insert a decision-making formula in treaty form, according to a weighted vote structure that would protect the interests of the large space powers.

Under this arrangement, the world community would make the decisions as to the disposition of any proceeds of exploration and to the use of celestial terrain, and would finance its own operations. States would not be prohibited from space exploration or the establishment of stations, but would have to turn them over to the United Nations.

Such an arrangement would not work to the disadvantage of any nation because the staggering cost of space exploration would be shared by many nations. At the same time, the principle expressed by Dr. Cocca of Argentina⁷⁹ that the benefits of space activity "belong *ab initio* to humanity" with due and profitable compensation to the agent who does the material work and that celestial products should serve the benefit of all states, irrespective of the stage of their economic or scientific development, is consistent with the repeated declarations of national leaders. The Agreements establishing Interim Arrangements for a Global Commercial Communications Satellite System is an example of a device that permits multi-national operation of a scientific enterprise at the same time that it provides weighted voting in accordance with state contributions.⁸⁰ Not surprisingly, overall control of such an international corporation should be placed in the United Nations, which would also provide the major share of funds. In 1948 the United States itself suggested a multiple condominium for the Antarctic continent,⁸¹ and in 1956 the Prime Minister of New Zealand proposed a United Nations trusteeship over the area and its establishment as "World Territory."⁸² Though these suggestions were shelved in favor of the preservation of the status quo, it is a source of

⁷⁷ Smirnoff, *Fourth Report of the Working Group III of the International Institute of Space Law*, in SEVENTH COLLOQUIUM 351-54 (1964).

⁷⁸ Reprinted in JENKS, *SPACE LAW* 445 (1965).

⁷⁹ Cocca, *General Principles for the Utilization of Outer Space*, in SIXTH COLLOQUIUM (1963); Cocca, *Legal Status of Celestial Bodies and Economic Status of the Celestial Products*, in SEVENTH COLLOQUIUM 15 (1964).

⁸⁰ Communications Satellite System (COMSAT), 20 Aug. 1964, T.I.A.S. No. 5646.

⁸¹ Hanessian, *The Antarctic Treaty 1959*, *supra* note 34, at 438.

⁸² *Id.* at 450.

regret that the opportunity was missed to set an international precedent for space exploration at the time it would have been most timely.

The mechanics for various degrees of international arrangements have been set forth exhaustively by Jessup and Taubenfeld.⁸³ They warn that history demonstrates the unworkability of division of governmental responsibilities and powers between States and international organizations. For this reason, full control should be given to the United Nations.

Since only three years may pass before the first manned lunar landing, it is suggested that a first step be taken now in the form of an agreement among space powers to permit a United Nations observer in any future manned orbital laboratory. A second step would be the formation by such international scientific organizations as the International Astronautical Federation, the Committee on Space Research (COSPAR), and the International Academy of Astronautics of space academies in various countries to train astronaut-administrators for space duties. A third step would be to embody the above principles in an international convention which would provide for an international organization having full jurisdiction over all activities on celestial bodies.

The chief difficulty may be in persuading Russia to participate in these ventures. Russian commentators have been silent on the question of control of celestial areas. Their comments, sketchy thus far, indicate that they favor reservation of national control of installations.⁸⁴ One feels that this silence must be broken.

IV. CONCLUSION

It is submitted that the legal analysis of the first part of this note has demonstrated how, in the words of Dr. Jessup, sovereignty is "the quicksand upon which the foundations of traditional law are built." The substitution of a "Space Discovery" program⁸⁵ that would channel human enterprise into productive areas and absorb immense defense establishments would be the start of an international structure that would help all peoples without hurting any nation.

⁸³ JESSUP & TAUBENFELD, *op. cit. supra* note 32, at 275-82.

⁸⁴ Smirnoff, *supra* note 76, at 395-96; Crane, *Soviet Attitude Toward International Space Law*, 56 AM. J. INT'L L. 685, 700-06 (1962).

⁸⁵ GIBNEY & FELDMAN, *op. cit. supra* note 62, at 150-74.