

# Northwestern Journal of International Law & Business

---

Volume 7  
Issue 4 *Fall*

---

Fall 1986

## From Ice to Ether: The Adoption of a Regime to Govern Resource Exploitation in Outer Space

Grier C. Raclin

Follow this and additional works at: <http://scholarlycommons.law.northwestern.edu/njilb>



Part of the [Air and Space Law Commons](#), and the [International Law Commons](#)

---

### Recommended Citation

Grier C. Raclin, *From Ice to Ether: The Adoption of a Regime to Govern Resource Exploitation in Outer Space*, 7 *Nw. J. Int'l L. & Bus.* 727 (1985-1986)

This Article is brought to you for free and open access by Northwestern University School of Law Scholarly Commons. It has been accepted for inclusion in Northwestern Journal of International Law & Business by an authorized administrator of Northwestern University School of Law Scholarly Commons.

# From Ice to Ether: The Adoption of a Regime to Govern Resource Exploitation in Outer Space

*Grier C. Raclin\**

## CONTENTS

I. INTRODUCTION .....	728
II. BACKGROUND .....	730
III. TREATIES GOVERNING UNITED STATES OUTER SPACE ACTIVITIES .....	732
A. The Principles Treaty .....	732
B. The Astronaut Rescue Agreement .....	733
C. The Liability Convention .....	734
D. The Registration Convention .....	734
IV. THE MOON TREATY .....	735
A. The Common Heritage of Mankind .....	737
B. Objections .....	738
C. The Law of the Sea Analogy .....	739
D. Replies .....	742
V. THE ANTARCTIC TREATY SYSTEM .....	745
A. Background and Terms .....	745
B. Minerals Discussions .....	747
C. The Beeby Proposal .....	749
D. Concerns of Developing Countries .....	752
VI. FUTURE TREATIES .....	753
A. Considerations .....	753
B. Proposals .....	757

---

\* Partner, Heron, Burchette, Ruckert & Rothwell, Washington, D.C. B.A. 1975, J.D. 1978, Northwestern University.

## I. INTRODUCTION

### “Our Ambition: Opening New Resources to Benefit Humanity”<sup>1</sup>

With those words, the United States National Commission on Space (the “Commission”) opened its recently-released report, setting forth an ambitious fifty-year space program for the exploration of the inner solar system and the development of the mineral resources thought to exist on the Moon, Mars, and the asteroids.<sup>2</sup> These resources are known or thought to include oxygen,<sup>3</sup> silicon,<sup>4</sup> carbon, calcium, aluminum, iron, titanium, manganese, magnesium, chromium, water, nitrogen,<sup>5</sup> and hydrogen.<sup>6</sup> The asteroids located within the main belt between Mars and Jupiter alone are thought to contain a rich variety of materials in sufficient quantities to “support a civilization many thousand times larger than the Earth’s population.”<sup>7</sup> The Commission recommended that

---

<sup>1</sup> NAT’L COMM’N ON SPACE, PIONEERING THE SPACE FRONTIER 3 (1986) [hereinafter NAT’L COMM’N REP.].

<sup>2</sup> *Id.* at 5.

<sup>3</sup> Oxygen is thought to appear in the lunar soil at a level of approximately 40% by weight. *Id.* at 85.

<sup>4</sup> Silicon is thought to appear in the lunar soil at a level of approximately 20% by weight. *Id.*

<sup>5</sup> The Martian Moons of Phobos and Deimos are known to possess varying amounts of water, carbon, and nitrogen. *Id.* at 86. In fact, the National Commission on Space has called the moon Phobos an “orbiting fuel depot just 6,000 miles above the red planet.” *Id.*

<sup>6</sup> *Id.* Before the National Commission on Space undertook its investigation, many scientists anticipated that needed benefits could be derived from extraterrestrial resource development. For example, in 1977 Dr. Brian O’Leary suggested that both the Apollo-Armour Class (earth orbit-intersecting) and main-belt asteroids were feasible for mining. B. O’LEARY, ASTEROIDAL RESOURCES FOR SPACE MANUFACTURING (American Institute of Aeronautics & Astronautics, Paper No. IAF-77-77, 1977). Scientists long ago determined that there were dozens, possibly hundreds, of mineral rich asteroid bodies which cross the earth’s orbit and may be reached through current launch technology. A single asteroid, composed almost entirely of solid nickel iron, might satisfy “years of global demand for these elements.” Condara, *Outer Space, Like the Sea and the Air, Whose Frontier?*, 6 HOUS. J. INT’L L. 175, 178 (1984).

<sup>7</sup> NAT’L COMM’N REP., *supra* note 1, at 88. While discussion of this issue within this Article generally focuses on the development and exploitation of “hard” mineral resources (such as metals), other resources of interest are also located in outer space. For example, serious thought has been given to constructing, and placing in earth orbit, a solar power generation satellite capable of both storing massive amounts of solar energy and delivering that energy to receiving, storage, and retransmission stations on earth. *See id.* at 82-83; Comment, *Law in a Vacuum: The Common Heritage Doctrine in Outer Space Law*, 7 B.C. INT’L & COMP. L. REV. 403, 416 n.146 (1984) (citing Comment, *Orbital Saturation: the Necessity for International Regulation of the Geosynchronous Orbit*, 9 CAL. & WEST. INT’L L.J. 139, 139 n.2 (1979)) [hereinafter Comment, *Law in a Vacuum*]. In the past, the Center for Space Policy, a for-profit organization which evaluates proposed space ventures, has rejected the argument that by the year 2000, annual revenues from commercial space activities may equal \$50 billion and may involve areas as diverse as materials processing (primarily related to pharmaceuticals, semiconductors, crystals, and glasses), communications and remote sensing satellites, flight and launch systems, payload servicing, and ground-based aeronautical support services.

The mineral resources obtained from extraterrestrial mines theoretically would be available for earth-based uses and markets. These resources, however, would be used principally in space to allow

steps necessary to undertake the development of such extraterrestrial resources begin at once.

Many have suggested that the mining of the asteroids is already within our technological reach. Robert A. Frosch, past Administrator of the National Aeronautics and Space Administration ("NASA") stated in 1980 that, while efforts had to be taken to develop new transportation systems prior to conducting large-scale mineral recovery activities in outer space, "[b]ased upon NASA studies to date, there are no insurmountable technological impediments to the exploitation of extraterrestrial resources."<sup>8</sup> It has even been suggested that certain materials might be mined more easily on the Moon than in Antarctica<sup>9</sup> or on the deep seabed.<sup>10</sup> Consistent with these predictions, the Commission called for the establishment of pilot mining and production facilities on the Moon by the year 2007, only twenty years from now. A principal recommendation of the Commission with regard to these activities was that "wherever possible, the private sector be given the task of providing specific services or products in space, and be free to determine the most cost-effective ways to satisfy those requirements . . . ."<sup>11</sup>

It is clear that the world community in general, and the United States in particular, intends to move forward in the exploration of space<sup>12</sup>

---

further exploration. Applications might include radiation shields, glasses for specific structure formations and propellants for both known rocket technology and more exotic mass-driven and solar energy propulsion systems. The construction of space structures first centers around silicon, aluminum, and iron resources known to exist on the Moon, followed by the materials thought to exist on the asteroids, such as carbon, iron, nickel, cobalt, chromium, platinum, osmium, rhodium, rhenium, and iridium. *Hearings on the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Before the Subcomm. on Science, Technology and Space, 96th Cong., 2d Sess. 37 (1980) [hereinafter Moon Treaty Hearings]* (statement of Dr. Robert A. Frosch, then Administrator of NASA). Even after taking into account the costs of extraterrestrial mining operations, the in-space development of these resources for in-space use is far more efficient than the development of earth's resources for in-space uses because the energy required to bring materials from the Moon or the asteroids to useable earth orbit is only a small fraction of the energy required to lift those same resources from the earth itself. See NAT'L COMM'N REP., *supra* note 1, at 7.

<sup>8</sup> *Moon Treaty Hearings*, *supra* note 7, at 54 (statement of Dr. Frosch); see also Hartman, *Mines in the Sky Promise Riches, A Greener Earth*, 13 SMITHSONIAN 71, 73 (Sept. 1982).

<sup>9</sup> Interview with Andrienne Stephan, Polar Affairs Officer, Office of Oceans and Polar Affairs, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Dep't State (July 21, 1986).

<sup>10</sup> Interview with Brian Hoyle, Director, Office of Oceans' Laws, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Dep't State (July 17, 1986).

<sup>11</sup> NAT'L COMM'N REP., *supra* note 1, at 11.

<sup>12</sup> In his 1984 State of the Union Address, President Reagan announced that he was directing NASA to develop a permanently manned Space Station and to do it within a decade . . . . We want our friends to help us meet these challenges and share in their benefits. NASA will invite other countries to participate so we can strengthen peace, build prosperity, and expand freedom for all who share our goals.

President's State of the Union Address, 20 WEEKLY COMP. PRES. DOC. 87, 90 (Jan. 25, 1984).

and the commercial exploitation of lunar and other resources. It would seem equally clear that, without law in this area, no country, government, or commercial enterprise is likely to undertake the substantial risks and costs involved in such exploitation.<sup>13</sup> Companies will not undertake these risks without a clear understanding of how the resulting rewards will be allocated. For the United States commercial space program to move forward, it must seek the adoption of a regime to govern such activities which will be accepted and recognized by the international community. The purpose of this Article is to provide a short description of why past efforts to adopt such an international regime have failed. The Article will contrast the currently successful efforts to adopt an international regime to regulate mineral resource activities in a similarly inhospitable environment — Antarctica — and to suggest terms of a regime that the international community might find acceptable.

## II. BACKGROUND

Efforts to explore and regulate resources recovery activities in Antarctica and outer space share a common origin: the International Geophysical Year ("IGY"). The IGY was the thirty-month period from July 1, 1957, to December 31, 1958, during which approximately seventy countries — employing over 30,000 scientists — undertook coordinated scientific research studies of the earth and its environment.<sup>14</sup> The IGY was the direct result of President Dwight D. Eisenhower's efforts to foster, in the midst of the "cold war," cooperative efforts among the world's nations, especially between the United States and the Soviet Union. The IGY was characterized by "remarkable good will and harmony" between the participants<sup>15</sup> which was likely the result of its organization by an international union of scientists, rather than by political leaders.<sup>16</sup>

Interestingly, two programs initiated during the IGY were the

---

<sup>13</sup> See *Moon Treaty Hearings*, *supra* note 7, at 5 (statement of Roberts B. Owen, Dep't State); Note, *Antarctica Resource Jurisdiction and the Law of the Sea: A Question of Compromise*, 11 BROOKLYN J. INT'L L. 45, 69-70 (1985) [hereinafter Note, *Resource Jurisdiction*]. As eloquently stated by Professor Rodolphe De Seife: "Business must know where it is at and where it is going. It is important, *ab initio*, for business to know what it can do, what it cannot do, and how it is to be done." De Seife, *Star War or Star Peace: The Impact of International Treaties on the Commercial Use of Space*, reprinted in AMERICAN ENTERPRISE, THE LAW AND THE COMMERCIAL USE OF SPACE 102 (NLCPI Monograph, 1986).

<sup>14</sup> V ENCYCLOPEDIA BRITANNICA, MICROPEDIA 388 (1974). The information gathered during the International Geophysical Year studies are set forth in over 30 volumes of ANNALS OF THE INT'L GEOPHYSICAL YEAR. See Comment, *Legal Aspects: Exploitation of Antarctic Resources*, 33 U. MIAMI L. REV. 371, 378 (1978) [hereinafter Comment, *Legal Aspects*].

<sup>15</sup> 15 ENCYCLOPEDIA AMERICANA 299 (1978).

<sup>16</sup> *Id.*

United States and Soviet competitive satellite launch programs. These undertakings led to the discovery of, among other things, the Van Allen radiation belt.<sup>17</sup> The IGY also fostered the establishment of numerous research bases on the Antarctic continent by the United States, the Soviet Union, and nine other countries.<sup>18</sup> In contrast to the superpowers' space race, the Antarctic research efforts were characterized by unique cooperation and lack of competition among the participating parties. Indeed, the countries established the Antarctic research bases without regard to preexisting sovereignty claims over various portions of the continent made by numerous countries.<sup>19</sup>

At the same time studies and exploration of outer space and the Antarctic continent started, efforts began to establish mechanisms and regimes to regulate such activities. These efforts were undertaken principally to protect the delicate environmental conditions existing in those areas and to avoid disputes among the world's nations regarding sovereignty claims and rights to exploit resources that might be discovered in the areas. On May 3, 1958, for example, after the Soviet Union announced its intention to remain in that portion of Antarctica previously claimed by Australia following the end of the IGY, the United States invited eleven other countries (ten of which had established research bases in Antarctica) to participate in discussions regarding the future of the Antarctic continent.<sup>20</sup> The resulting Antarctic Treaty was signed by these parties in Washington on December 1, 1959.<sup>21</sup>

Two weeks later, on December 13, 1959, the General Assembly of the United Nations turned its attention to space and adopted a resolution establishing the *Ad Hoc* Committee on the Peaceful Uses of Outer Space (the "Committee"). The Committee's directive was to study and report on the legal problems which might arise from space-based activities.<sup>22</sup>

---

<sup>17</sup> *Id.*

<sup>18</sup> The countries establishing bases in Antarctica during the IGY included Argentina, Australia, Belgium, Chile, France, Great Britain, Japan, New Zealand, Norway, the Soviet Union, and the United States. Comment, *Legal Aspects*, *supra* note 14, at 378 n.46.

<sup>19</sup> Prior to the IGY, portions of the Antarctic Continent had been claimed by Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. *Id.* These claims, although held in abeyance pursuant to the terms of the Antarctic Treaty, continue today. See *infra* text accompanying notes 122-24.

<sup>20</sup> *United States Proposes Conference on Antarctica*, 38 DEP'T STATE BULL. 910 (1958). In addition to the countries that had established bases in Antarctica during the IGY, *supra* note 18, the United States invited the Union of South Africa to participate in the discussions. See Comment, *Legal Aspects*, *supra* note 14, at 378 nn.46, 49.

<sup>21</sup> *Thirteen Nations Signed Treaty Guaranteeing Non militarization of Antarctic and Freedom of Scientific Investigation*, 41 DEP'T STATE BULL. 911 (1959). The Antarctic Treaty was entered into force on June 23, 1961. 12 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71.

<sup>22</sup> G.A. Res. 1348, 13 U.N. GAOR Supp. (No. 18) at 6, U.N. Doc. A/5414 (1958). The *Ad Hoc*

The Committee convened in May 1959 and, on June 25, 1959, issued its report calling for the creation of a permanent, standing committee of the United Nations to pursue and assure the peaceful uses of outer space.<sup>23</sup> The General Assembly unanimously adopted the resolution on December 12, 1959, and established a United Nations Committee on the Peaceful Uses of Outer Space ("COPUOS").<sup>24</sup> Since that time, COPUOS has successfully secured the adoption of four international agreements governing nonterrestrial activities of state parties.

### III. TREATIES GOVERNING UNITED STATES OUTER SPACE ACTIVITIES

#### A. The Principles Treaty

The first and most comprehensive treaty governing outer space activities is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies (the "Principles Treaty").<sup>25</sup> The Principles Treaty embodies three guiding principles which have governed the United Nations' efforts to regulate space-based activities since the IGY: 1) that international law and the Charter of the United Nations should apply to outer space activities; 2) that space should be free for exploration and use by all states; and 3) that outer space should not be subject to national appropriation or sovereignty claims.<sup>26</sup> In pursuit of these goals, the Principles Treaty recognizes in its preamble "the common interest of all mankind in the progress and exploration and uses of outer space for peaceful purposes" and that "the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of economic and scientific development."<sup>27</sup> Article I of the treaty similarly states that the exploration and use of outer space should be carried out "for the benefit and in the interest of all countries" and that outer space shall be deemed "the province of all mankind."<sup>28</sup> The treaty further provides that outer space shall be free for exploration and scientific investigation,<sup>29</sup> shall not

---

Committee consisted of Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, France, India, Iran, Italy, Japan, Mexico, Poland, Sweden, the Soviet Union, the United Arab Republic, Great Britain, and the United States. *Id.* See also Jessup & Taubenfeld, *The United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space*, 53 AMER. J. INT'L L. 877 (1959).

<sup>23</sup> U.N. Doc. A/Ac.98/SR.6 (1959).

<sup>24</sup> G.A. Res. 1472, 14 U.N. GAOR Supp. (No. 6) at 5, U.N. Doc. A/4354 (1959).

<sup>25</sup> Principles Treaty, *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 on Oct. 10, 1967).

<sup>26</sup> G.A. Res. 1721, 16 U.N. GAOR Supp. (No. 17) at 6, U.N. Doc. A/5100 (1961).

<sup>27</sup> Principles Treaty, *supra* note 25, at Preamble.

<sup>28</sup> *Id.* art. I.

<sup>29</sup> *Id.*

be subject to national appropriation by a claim of sovereignty,<sup>30</sup> shall not be the scene of nuclear weapons and shall be used exclusively for peaceful purposes,<sup>31</sup> and that the parties to the treaty shall be guided by the principle of cooperation and mutual assistance.<sup>32</sup>

The Principles Treaty was an important step in international relations because it was the first cooperative effort to regulate activities in outer space and rejected the historical concept of *terra nullus* with regard to the exploration of celestial bodies. This international legal principle, applicable to discovery of unclaimed terrestrial land masses, permits a state party to obtain sovereignty over an area by effective occupation.<sup>33</sup> As of this date, twenty countries have ratified and are bound by the Principles Treaty.<sup>34</sup>

### B. The Astronaut Rescue Agreement

The next treaty signed by the United States governing space exploration activities was the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Astronaut Rescue Agreement").<sup>35</sup> The Astronaut Rescue Agreement furthered the cooperative nature of international ventures in outer space by obligating all states party to it to render all required aid and assistance to distressed astronauts<sup>36</sup> and to return to the state of launching all space objects coming into the possession of parties to the agreement.<sup>37</sup> The Astronaut Rescue Agreement provides that each party receiving information that the personnel of a spacecraft has suffered an accident must immediately notify the launching authority either directly or through public announcement, must take all steps to aid in the rescue of the astronauts landing in their territory, and must cooperate in the rescue efforts of the launching authority if the launching authority's assistance would effect a more prompt rescue.<sup>38</sup>

---

<sup>30</sup> *Id.* art. II.

<sup>31</sup> *Id.* art. IV.

<sup>32</sup> *Id.* art. IX.

<sup>33</sup> See G. SCHWARZENGERGER, A MANUAL OF INTERNATIONAL LAW 644 (5th ed. 1967).

<sup>34</sup> These countries include Australia, Bulgaria, Canada, Czechoslovakia, Denmark, Finland, the German Democratic Republic, Hungary, Japan, Mongolia, Nepal, Niger, Republic of Korea, Sierra Leone, Sweden, Ukrainian Soviet Socialist Republic, Union of Soviet Socialist Republics, United Arab Republic, Great Britain, and the United States.

<sup>35</sup> 19 U.S.T. 7570, T.I.A.S. No. 6599, 672 U.N.T.S. 119 (entered into force with respect to the United States on Dec. 3, 1968) [hereinafter Astronaut Rescue Agreement].

<sup>36</sup> *Id.* art. 1. The Principles Treaty already had designated astronauts as "envoys of mankind." Principles Treaty, *supra* note 25, art. V.

<sup>37</sup> Astronaut Rescue Agreement, *supra* note 35, art. 4.

<sup>38</sup> *Id.* arts. 1-2.



### C. The Liability Convention

The third treaty successfully adopted through the efforts of COPUOS was the Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention").<sup>39</sup> The Liability Convention defines various circumstances under which liability will arise. It provides, for example, that a launching state shall be "absolutely liable" to pay compensatory damages for harm caused by its space objects on the surface of the earth or to aircraft in flight.<sup>40</sup> As to damage caused elsewhere, liability is apportioned on the basis of fault, with the launching state being liable only if the injury is caused by its fault or the fault of persons for whom it is responsible.<sup>41</sup> The convention also apportions liability and responsibility for damages arising from the activities of more than one state<sup>42</sup> or where the injured party is guilty of gross negligence or intentional misconduct.<sup>43</sup> The convention is not applicable to injury caused to nationals of the launching state or to nationals of third party states which participate in the launch of the space object causing damage.<sup>44</sup> The convention also calls for the creation of a Claims Commission to resolve conflicting claims as to damages caused by a space object if the parties involved in the dispute cannot reach a settlement within one year.<sup>45</sup>

### D. The Registration Convention

The most recently adopted international agreement applicable to United States space exploration efforts<sup>46</sup> is the Convention Governing the

---

<sup>39</sup> Convention on International Liability for Damage Caused by Space Objects, Sept. 1, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762 (entered into force with respect to the United States on Oct. 9, 1973) [hereinafter Liability Convention].

<sup>40</sup> *Id.* art. II.

<sup>41</sup> *Id.* art. III.

<sup>42</sup> *Id.* arts. IV, V.

<sup>43</sup> *Id.* art. VI.

<sup>44</sup> *Id.* art. VII.

<sup>45</sup> *Id.* arts. XIV-XX. In the United States, the Administrator of NASA has been delegated the responsibility for determining domestic damages not covered by the Liability Convention. National Aeronautics and Space Act, 10 U.S.C. §§ 2733-34 (1985) [hereinafter NAS Act].

<sup>46</sup> There are numerous other bilateral and multilateral agreements to which the United States is a party and which apply to this country's use of outer space but which are not directly applicable to mineral exploration or exploitation activities. *See, e.g.*, the Agreement Relating to the International Telecommunications Satellite Organizations ("INTELSAT"), Aug. 20, 1971, 23 U.S.T. 3813, T.I.A.S. No. 7532; Convention on the International Maritime Satellite Organization ("INMARSAT"), Sept. 3, 1976, 31 U.S.T. 1, T.I.A.S. No. 9603. Similarly, the United States is a member of the International Telecommunications Union, which undertakes to regulate the uses of the electromagnetic spectrum both terrestrially and by satellite to assure noninterference among users and uses. International Telecommunications Convention, Oct. 25, 1973, 28 U.S.T. 2495, T.I.A.S. No. 8572. *See infra* text accompanying notes 189-91.

Registration of Objects Launched into Outer Space (the "Registration Convention").<sup>47</sup> The Registration Convention requires launching states to maintain a registry of objects launched into earth orbit or beyond and to supply that list to the Secretary General of the United Nations along with information regarding the objects' flight trajectories, orbital parameters, and intended purposes.<sup>48</sup> The Registration Convention, like the Principles Treaty, Astronaut Rescue Agreement, and Liability Convention, recognizes in its preamble "the common interest of all mankind in furthering the exploration and use of outer space for peaceable purposes."

#### IV. THE MOON TREATY

In 1979, COPUOS proposed the adoption of a fifth treaty to govern activities in outer space — the Treaty Governing the Activities in Outer Space, on the Moon, and Other Celestial Bodies (the "Moon Treaty").<sup>49</sup> The perceived need for a regime governing the exploitation of lunar resources arose from the return of lunar materials (moon rocks) during NASA's Apollo Lunar Landing Program and the general recognition of the feasibility of larger scale resource exploitation activities.<sup>50</sup> In 1970, Argentina submitted to the Legal Subcommittee of COPUOS an early draft of a treaty to govern activities by state parties on the moon.<sup>51</sup> It was not until 1979, however, that the parties to COPUOS reached a consensus as to the present version of the Moon Treaty.<sup>52</sup> On December 5, 1979, notably with the United States and other developed countries abstaining, the United Nations General Assembly adopted the Moon Treaty by a unanimous vote.<sup>53</sup> The treaty entered into force on July 11, 1984.

The Moon Treaty repeats the general policy statements appearing in the prior treaties. These statements call for international law and the Charter of the United Nations to govern activities on the Moon,<sup>54</sup> state that the Moon and other celestial bodies should not be subject to national

---

<sup>47</sup> 28 U.S.T. 695, T.I.A.S. No. 8480; 1023 U.N.T.S. 15 (entered into force on Sept. 15, 1978).

<sup>48</sup> *Id.* arts. II, IV.

<sup>49</sup> G.A. Res. 34/68, 34 U.N. GAOR Supp. (No. 46) at 77, U.N. Doc. A34/46 (1979) [hereinafter Moon Treaty].

<sup>50</sup> *Moon Treaty Hearings*, *supra* note 7, at 11 (testimony of Roberts B. Owen).

<sup>51</sup> U.N. Doc. A/AC.105/C.2/L.71 (1970).

<sup>52</sup> See REIJNEN, *LEGAL ASPECTS OF OUTER SPACE* 133-51 (1976).

<sup>53</sup> See Griffin, *Americans and the Moon Treaty*, 46 J. AIR L. & COMM. 729, 735 (1981). Thus far, the Moon Treaty has been signed by Austria, Chile, France, Guatemala, India, Morocco, the Netherlands, Peru, the Philippines, Romania, and Uruguay.

<sup>54</sup> Moon Treaty, *supra* note 49, art 2.

appropriation by a claim of sovereignty,<sup>55</sup> provide that the Moon shall be used exclusively for peaceful purposes,<sup>56</sup> maintain that there shall be freedom of access to the Moon for scientific investigations and to information obtained from such investigations,<sup>57</sup> and prohibit activities disrupting the Moon's environmental balance.<sup>58</sup> Unlike the Principles Treaty (which sets forth only general principles governing the exploration of space) or the Astronaut Rescue Agreement or Liability and Registration Conventions (which impose relatively noncontroversial obligations on their signatories), the Moon Treaty seeks to impose specific obligations upon parties undertaking the exploration or exploitation of lunar<sup>59</sup> resources.

For example, the Moon Treaty specifies that the exploration and use of the Moon "shall be carried out for the benefit and in the interest of all countries, irrespective of the degree of economic or scientific development,"<sup>60</sup> and that "due regard shall be paid to the interest of present and future generations as well as to the need to promote higher standards of living . . . ."<sup>61</sup> The most controversial provisions of the treaty appear in Article 11 which, among other things, states that "the Moon and its natural resources are the common heritage of mankind, which finds its expression in the provision of this Agreement . . . in paragraph 5 of this Article."<sup>62</sup> Paragraph 5 of Article 11 states, in turn, that "States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as its exploitation is about to become feasible."<sup>63</sup> Paragraph 7 of the same article adds that:

the main purpose of the international regime to be established shall include:  
. . . (d) An equitable sharing by all States Parties in the benefits derived from those resources, whereby the interest and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration.<sup>64</sup>

---

<sup>55</sup> *Id.* art. 11, ¶¶ 2-3.

<sup>56</sup> *Id.* art. 3.

<sup>57</sup> *Id.* art. 6.

<sup>58</sup> *Id.* art. 7.

<sup>59</sup> Just as the Moon Treaty provides that references to the "Moon" shall be deemed to include references to other celestial bodies, Moon Treaty, *id.* art. 1, ¶ 1, reference to the "Moon" or "lunar" resources herein should be deemed to include references to the other celestial bodies and their resources, including the asteroids.

<sup>60</sup> *Id.* art. 4, ¶ 1.

<sup>61</sup> *Id.*

<sup>62</sup> *Id.* art. 11.

<sup>63</sup> *Id.* art. 11, ¶ 5.

<sup>64</sup> *Id.* art. 11, ¶ 7. The Moon Treaty additionally provides that it is to be reviewed ten years

### A. The Common Heritage of Mankind

The concept that certain locations and resources are the common property of mankind was not newly proposed or adopted in the Moon Treaty. In fact, the concept that certain property could be commonly owned by the international community was raised by T. W. Balch in 1910, when he suggested that Antarctica "should become the common possession of all members of the family of nations."<sup>65</sup> The theory that Antarctica cannot be owned by any one nation has been followed consistently by the United States since that time.<sup>66</sup> In 1952, Oscar Schachter, Assistant Director of the Legal Department of the United Nations, suggested similar treatment in space such that: "[O]uter Space and the Celestial Bodies would be the common property of all mankind over which no nation would be permitted to exercise its dominion."<sup>67</sup> In 1958, United States Ambassador to the United Nations Henry Cabot Lodge told the United Nations that a principal goal of the United States was to assure that "outer space will be used solely for the benefit of all mankind."<sup>68</sup> President Lyndon B. Johnson expressed similar sentiments in 1966 when he said that the international deep seabed was the "legacy of all human beings" which should be protected from "unfettered harvesting."<sup>69</sup>

The development of the common heritage concept into a principle of international law was advanced by United Nations Ambassador Arvid Pardo of Malta in 1967 when he described the ownership that should apply to deep sea resources.<sup>70</sup> At the time, Ambassador Pardo stated that property considered the common heritage of mankind "should be

---

after it enters into force, or in 1994, as part of the provisional agenda of the United Nations. *Id.* art. 18.

<sup>65</sup> Carroll, *Of Icebergs, Oil Wells, and Treaties: Hydrocarbon Exploitation Offshore Antarctica*, 36 STAN. L. REV. 207, 219 n.75 (1984-85).

<sup>66</sup> See Antarctic Treaty, Dec. 1, 1959, art. V, 12 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71 (entered into force as to the United States on June 23, 1961) [hereinafter Antarctic Treaty].

<sup>67</sup> Matte, *Limited Aerospace Natural Resources and Their Regulation*, 7 ANNALS AIR & SPACE L. 379 (1982) (quoting Schachter, *Who Owns the Universe?*, reprinted in SPACE LAW — A SYMPOSIUM, U.S. Senate, 85th Cong., 2d Sess. 8, 17 (1958)).

<sup>68</sup> Christol, *The Common Heritage of Mankind Provision in the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, 14 INT'L LAW. 429, 449 (1980). The National Aeronautics and Space Act of 1985 itself states that activities in outer space "should be devoted to peaceful purposes for the benefit of all mankind." NAS Act, *supra* note 45, § 451(a). The Principles Treaty, the Astronaut Rescue Agreement, and the Liability and Registration Conventions all state that outer space is the "province" of, and is to be developed for the "benefit" of, "all mankind."

<sup>69</sup> White, *The Common Heritage of Mankind: An Assessment*, 14 CASE W. RES. J. INT'L L. 509, 516 n.61 (1982) (citing N. REMBE, AFRICA AND THE INTERNATIONAL LAW OF THE SEA 38 (1980)).

<sup>70</sup> G.A. Res. 2340, 22 U.N. GAOR Supp. (No. 16) at 14, U.N. Doc. A/67/16 (1967).

. . . administered by an international authority for the benefit of all peoples . . . ."<sup>71</sup> In 1970, President Richard M. Nixon made a similar proposal that all resources in the deep seabed should be regarded as the common heritage of mankind, to be held in trust by the adjacent coastal state, with the revenues of the trusteeship to be apportioned between the trustee state and an international seabed authority.<sup>72</sup> Argentina submitted a concrete proposal for the application of the common heritage principle to lunar resources in a proposed treaty it submitted to the COPUOS Legal Subcommittee in 1970.<sup>73</sup> The United States also incorporated the principle in a draft moon treaty it submitted to the United Nations for consideration in 1972.<sup>74</sup> In fact, the United States draft concisely stated that "the natural resources of the Moon and other celestial bodies shall be the common heritage of all mankind."<sup>75</sup>

### B. Objections

Notwithstanding the United States' initial subscription to the common heritage principle, the interpretation of the provision by developing countries during the negotiations leading to the adoption of the 1982 Convention on the Law on the Sea ("LOS") quickly caused the United States and other developed countries to abandon the principle and the draft Moon Treaty.<sup>76</sup> The United States took the position that the common heritage principle only denoted that *access* to land subject to the principle would be available to all, but did not embody any substantive

---

<sup>71</sup> White, *supra* note 69 at 516 (quoting Pardo, *Whose Is the Bed of the Sea?*, 62 AM. SOC. INT'L L. PROC. 216, 225-26 (1968)).

<sup>72</sup> *Id.* at 518 (citing 1 T. KRONMILLER, *THE LAWFULNESS OF DEEP SEABED MINING* 33 (1978)).

<sup>73</sup> U.N. Doc. A/AC.105/85, Annex 2, at art. 1; U.N. Doc. A/AC.105/C.2/L.71 at Correction 1 (1970). For a detailed description of the common heritage principle in the Moon Treaty, see Christol, *supra* note 68, at 454-65; White, *supra* note 69, at 521.

<sup>74</sup> G.A. Res. 2340, *supra* note 70, at 14. See also Comment, *Law in a Vacuum*, *supra* note 7, at 419 n.185 (citing Smith, *The Moon Treaty and Private Enterprise*, 18 *ASTRO. & AERO* 62, 65 (1980) and Cocca, *The Advances in International Law Through the Law in Outer Space*, 9 *J. SPACE L.* 13, 15 (1981)).

<sup>75</sup> U.N. Doc. A/AC.105/C.2 (XI)/Wolling Paper 12; U.N. Doc. A/AC.105/196 Annex 1, at 23 (1977). See Menter, *Commercial Space Activities Under the Proposed Moon Treaty*, 7 *SYRACUSE J. INT'L L.* 183, 188 (1979-80).

<sup>76</sup> *Moon Treaty Hearings*, *supra* note 7, at 12 (statement of Roberts B. Owen); Carroll, *supra* note 65, at 219; Comment, *Law in a Vacuum*, *supra* note 7, at 421. Groups opposing adoption of the treaty included the Mineral Resources Law Section of the American Bar Association, The National Association of Manufacturers, The Aerospace Industries Association, The National Ocean Industries Association, and many individual corporations including United Technologies, Inc., and Kennecott Copper. Comment, *Law in a Vacuum*, *supra* note 7, at 421 n.203 (citing Griffin, *supra* note 53, at 731 n.167).

rules or a predetermined legal regime to regulate activities.<sup>77</sup> The developing countries, on the other hand, interpreted the principle as incorporating three central concepts which the United States found adverse to its own interests: 1) the absence of private ownership rights in the property deemed to be the common heritage of mankind; 2) the management of such property by a multinational body; and 3) the benefits flowing from use or exploitation of the property to be shared among all the world's nations, regardless of whether they participated in the exploitation activities.<sup>78</sup>

The principal concern of the United States was that incorporating the common heritage principle into the treaty would result in the developer of lunar resources losing control over those resources, a possibility that would discourage development. As stated by Marne A. Dubs, then Chairman of the American Mining Congress' Committee on Undersea Mineral Resources:

For a majority of nations, "common heritage" has come to symbolize a system in which complete international control over access to, and the disposition of, important natural resources is exercised so as to effect the transfer of wealth, technology, and political control from the industrialized countries to the developing countries.<sup>79</sup>

### C. The Law of the Sea Analogy

The position of those opposed to the United States ratification of the Moon Treaty received support from the developments at the LOS negotiations, which were conducted concurrently with the United States' consideration of the Moon Treaty.<sup>80</sup> Many participants feared that the terms of the regime adopted in the LOS governing deep sea mineral re-

---

<sup>77</sup> *Moon Treaty Hearings*, *supra* note 7, at 12 (statement of Roberts B. Owen).

<sup>78</sup> White, *supra* note 69, at 535 (citing Borghese, *Preface to the Emerging Ocean Regime*, in *PACEM IN MARIBUS* 161-62 (1971)).

<sup>79</sup> *Moon Treaty Hearings*, *supra* note 7, at 134 (statement of M. Dubs, Chairman, American Mining Congress Committee on Undersea Mineral Resources). Northcutt Ely of the Natural Resources Law Section of the American Bar Association ("ABA") stated: "The expression 'common heritage' . . . has come to mean . . . property which is owned by the U.N. agency created by treaty, and subject to private acquisition only with the consent of the new supranational regime [which is dominated by the Soviet Block and Third World]." *Id.* at 84. See also De Seife, *supra* note 13, at 102 (another common heritage interpretation suggests that industrialized nations should pay to develop space for the benefit of all nations); Dula, *Free Enterprise and the Proposed Moon Treaty*, 2 *Hous. J. INT'L L.* 3, 19-20 (1979).

<sup>80</sup> Final Act of The Third United Nations Conference on The Law of the Sea, *opened for signature* Dec. 10, 1982, U.N. Pub. No. E. 83. V.5 (1983) [hereinafter LOS]. Currently, 25 states have ratified the LOS and 104 additional countries have signed it. BUREAU OF PUBLIC AFFAIRS, U.S. DEP'T OF STATE, *GIST, LAW OF THE SEA* (June 1986). It is likely that the LOS will be ratified by the requisite 60 countries, and thus be enforceable, before the end of this decade. Oxman, *The New Law of the Sea*, 69 *A.B.A.J.* 156,162 (1983).

covery efforts<sup>81</sup> would reappear in the regime proposed in the Moon Treaty governing similar exploitation of lunar resources.<sup>82</sup>

Basically, the LOS common heritage regime applies to the "Area," defined in the agreement as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction" specified in the LOS.<sup>83</sup> An International Seabed Authority (the "Authority") is created by the LOS and is charged with the responsibility to license and regulate mineral exploration and exploitation in the Area.<sup>84</sup> The LOS also creates its own intergovernmental mining company (the "Enterprise"), to participate in the exploration and exploitation of resources in competition with private companies licensed by the Authority to develop the Area's resources.<sup>85</sup>

The LOS is similar to the Moon Treaty in that the LOS specifies that the resources in the Area are "the common heritage of mankind,"<sup>86</sup> and are not subject to claims or exercise of national sovereignty. Furthermore, activities in the Area are to be carried out under the LOS:

for the benefit of mankind as a whole, irrespective of the geographical location of States . . . and taking into particular consideration the interest and needs of developing States and of peoples who have not obtained full independence or other self-governing status . . . .<sup>87</sup>

The LOS provides that access to resources may be granted only by license from the Authority<sup>88</sup> and that parties to the convention are prohib-

---

<sup>81</sup> The principal resource thought to exist on the deep sea floor is polymetallic nodules lying at or near the surface of the deep sea ocean beds, particularly in the Pacific and, to a lesser degree, Indian Oceans. The nodules contain nickel, manganese, cobalt, copper, and traces of other metals. *Id.* at 160.

<sup>82</sup> *Moon Treaty Hearings*, *supra* note 7, at 78 (testimony of Leonard J. Theberge, Chairman, Section of International Law, ABA). Most opponents of the Moon Treaty believed it was clear that the developing countries viewed the regime to be adopted as intended to secure a fundamental redistribution of wealth from North to South. *Id.* at 83 (ABA Natural Resources Section Report).

<sup>83</sup> LOS, *supra* note 80, arts. 1, 13, 55-76. The LOS delineates specific areas of national jurisdiction in the oceans and seabeds. Specifically, each state bordering the oceans enjoys a "Territorial Sea" of up to 12 nautical miles from the shoreline, over which the coastal state has absolute sovereignty, *id.* art. 87; a "Contiguous Zone" extending past the territorial sea of up to 24 miles from the shoreline, over which the coastal state may exercise control necessary to enforce customs, immigration or sanitary laws, *id.* art. 33; an "Exclusive Economic Zone" ("EEZ") extending up to 200 miles from shore, over which the coastal state has the exclusive right to conserve, manage, and exploit all resources found therein, *id.* arts. 55-75; and a "Continental Shelf" boundary which, in most cases, coincides with the 200-mile EEZ and within which the coastal state has exclusive "sovereign rights" to explore and exploit natural resources, *id.* art. 76. See *Resource Jurisdiction*, *supra* note 13, at 60.

<sup>84</sup> LOS, *supra* note 80, arts. 156-69.

<sup>85</sup> *Id.* art. 170.

<sup>86</sup> *Id.* art. 136.

<sup>87</sup> *Id.* art. 140.

<sup>88</sup> *Id.* art. 153, annex III.

ited from recognizing mining rights asserted outside the LOS system.<sup>89</sup> In order to obtain a contract, a mining company must be "sponsored" by a state party to the LOS and must designate in its application two mining areas for potential development. Only one of these areas will be awarded to the company; the other will be reserved by the Authority for exploration and exploitation by the Enterprise.<sup>90</sup> The Authority also selects the location to be developed by the applicant and access to a specific site is not assured.<sup>91</sup> In exchange for a license to mine in the Area, the applicant company must: 1) abide by the rules imposed by the Authority; 2) pay to the Authority a specific portion of the value of its mined resources, or a smaller portion coupled with a specific proportion of the profits derived from the activity;<sup>92</sup> and 3) transfer the technology utilized in its mining efforts to the Enterprise.<sup>93</sup>

The LOS requires that the Authority "provide for the equitable sharing of financial and other economic benefits" derived from resource recovery activities.<sup>94</sup> The treaty also requires that parties participating in deep sea mining in the Area shall transfer to the Enterprise the technology utilized in those activities on "fair and reasonable commercial terms."<sup>95</sup> The LOS also contains provisions limiting the total number of contracts that may be issued to a single party. Moreover, the total number of contracts issued for development in a given location is limited by a ceiling based upon the amount of materials that may be removed from that area during a specific time period.<sup>96</sup>

An important characteristic of the LOS regime is that decisions of the Authority are made on a one-nation-one-vote basis. Consequently, most major decisions are controlled by developing countries, which make up a majority of the member states of the United Nations.<sup>97</sup> The Authority is governed by an Assembly consisting of all state parties which, in turn, is governed by a thirty-six member Council and a Secretariat. The Council has veto power regarding the adoption of any legally-binding mining rules and regulations; most substantive decisions require a

---

<sup>89</sup> *Id.* art. 137.2.

<sup>90</sup> *Id.* annex III.

<sup>91</sup> *Id.* annex III, art. 8.

<sup>92</sup> The Authority will use these funds to cover its administrative expenses and then may distribute the remainder to developing countries. *Id.* art. 173.

<sup>93</sup> *Id.* art. 144; annex III.

<sup>94</sup> *Id.* art. 140.

<sup>95</sup> *Id.* art. 144, annex III, art. 5(3)(a).

<sup>96</sup> *Id.* art. 15.

<sup>97</sup> At the present time, the developed western countries represent only about 20% of the votes at the U.N. General Assembly. Interview with Brian Hoyle, *supra* note 10.



two-thirds or three-fourths vote of the Council.<sup>98</sup> Of the thirty-six members of the Council, the countries developing the deep sea resources will hold only approximately eight seats. Thus, it is apparent that the developing countries and the Eastern Bloc collectively would control licenses to exploit and use the deep seabed resources.<sup>99</sup>

The United States refused to sign the LOS when it first opened for signature in 1982. The United States based its decision on what it perceived to be unfavorable terms of the LOS regime, notwithstanding the country's long involvement in the negotiations and its approval of most of the agreement's provisions. Specifically, the United States was concerned that certain provisions of the agreement might deter the development of natural resources. These provisions included: 1) the imposition of specific production guidelines and limits; 2) requirements of mandatory private technology transfer and benefit sharing; 3) the failure to give a valid decision-making role to the countries actively involved in the mining of deep sea resources; 4) the failure to provide assured access to qualified deep sea mining companies to conduct mining activities;<sup>100</sup> and 5) terms that the United States felt would set "undesirable precedents for international organizations."<sup>101</sup> In August 1984, several non-signatories of the LOS — including the United States, the United Kingdom, the Federal Republic of Germany, France, Japan, Belgium, Italy, and the Netherlands — signed a Provisional Understanding Regarding Deep Seabed Matters, resolving, between those parties, most issues governing deep seabed mining exploration.<sup>102</sup>

#### D. Replies

As indicated above, many opponents of the Moon Treaty have expressed concern that the regime adopted in the LOS sets an undesirable

---

<sup>98</sup> LOS, *supra* note 80, arts. 161-62.

<sup>99</sup> Interview with Brian Hoyle, *supra* note 10.

<sup>100</sup> BUREAU OF PUBLIC AFFAIRS, U.S. DEP'T OF STATE, CURRENT POLICY NO. 416, THE OCEAN LAW OF THE SEA AND OCEAN POLICY (1982).

<sup>101</sup> BUREAU OF PUBLIC AFFAIRS, U.S. DEP'T OF STATE, CURRENT POLICY NO. 371, LAW OF THE SEA (1982). See BUREAU OF PUBLIC AFFAIRS, U.S. DEP'T OF STATE, CURRENT POLICY NO. 819, CURRENT DEVELOPMENTS IN U.S. OCEANS POLICY (1986) (an address by John D. Negro-ponte, Assistant Secretary for Oceans and International Environmental and Scientific Affairs, Mar. 14, 1986).

<sup>102</sup> See *Moon Treaty Hearings*, *supra* note 7, at 80 (statement of Leonard J. Theberge); White, *supra* note 69, at 532. In addition, the United States adopted the Deep Seabed Hard Minerals Resources Act, 30 U.S.C. 1401 (1986). The act acknowledges that investor uncertainty resulting from the United States delay in signing the LOS would likely discourage investment in mining activities, *id.* § 1401(a)(13); provides certain governmental backing of deep sea mineral recovery operations, *id.* § 1472; and requires all mining agreements to guarantee United States citizens access to the deep seabed, *id.* § 1411.

precedent for the adoption of a regime governing outer space resource development efforts. Moreover, these opponents believe that such a system will lead to the adoption of obligations such as required technology sharing, loss of effective input into rule adoption, anticompetitive market planning provisions, and inequitable benefit sharing requirements. On the other hand, proponents of the Moon Treaty point to its many provisions which indicate that other agreements, particularly the LOS, were not intended to establish a precedent for the regime governing extraterrestrial resource development.

Proponents of the Moon Treaty note that the common heritage provision in the Treaty was limited to "the provisions of *this* Agreement, in particular, in paragraph 5 of this Article [11],"<sup>103</sup> and was intended simply to restate the terms of existing space law (i.e., that no state may prohibit the access to space by others).<sup>104</sup> Proponents contend that the inclusion of this provision had the specific purpose of limiting the meaning of the common heritage provision to the Moon Treaty and did not extend to other treaties being negotiated at the time.<sup>105</sup> Moreover, proponents note that the resources thought to be obtainable extraterrestrially are very different from those to be exploited from the deep seabed. Thus, the common heritage principle could have a very different meaning when applied to these two different areas.<sup>106</sup> The proponents also note that the common heritage principle applies to only the resources of the lunar celestial bodies prior to their removal; after mining, ownership may be exercised over these resources.<sup>107</sup>

Supporters of the Moon Treaty also note that the breadth of the

---

<sup>103</sup> Moon Treaty, *supra* note 49, art. 11 (emphasis supplied).

<sup>104</sup> *Moon Treaty Hearings*, *supra* note 7, at 12-13 (statement of Roberts B. Owen) ("[T]he U.S. view was—and is—that this concept [of common heritage] embodies no substantive rules or a predetermined form of legal regime . . . [T]he substance and meaning of the Moon Treaty should be determined independently of other international instruments and negotiations.").

<sup>105</sup> See, e.g., Menter, *supra* note 75, at 188, 193; White, *supra* note 69, at 529.

<sup>106</sup> See Menter, *supra* note 75, at 190. It may also be that many of the developing countries voting in favor of the LOS did so not to obtain "benefits" to be derived from deep sea mining activities, but for the specific purpose of discouraging such activities in order to protect the market for similar land-based resources they had at their disposal. See Peterson, *Antarctic Implications of the New Law of the Sea*, 16 OCEAN DEV. & INT'L L. 137, 164-65 (1986). While it is arguable that the vast majority of the resources to be found extraterrestrially will include resources that are obtainable terrestrially, the great advantage of extraterrestrial mining will be the fact that the resources will be available in space for further processing in space and would not require transportation of those resources from the earth to space. See *supra* note 7. Thus, these same countries that voted in favor of the LOS and its regime would not necessarily support the adoption of a similar regime to govern the exploitation of resources in outer space. See *Moon Treaty Hearings*, *supra* note 8, at 20 (statement of Roberts B. Owen).

<sup>107</sup> *Moon Treaty Hearings*, *supra* note 7, at 30 (statement of Dr. A. Morissey, Office of the President); *id.* at 6 (statement of Roberts B. Owen).

common heritage principle and the rules governing the exploitation of extraterrestrial resources will be determined in future negotiations which will address the adoption of a regime governing such exploitation.<sup>108</sup> The proponents argue that the United States will have the opportunity to control the scope of the provision and terms of the regime only if the United States becomes a party to the Moon Treaty; there will be no such opportunity if the country refuses to adopt the Moon Treaty itself.<sup>109</sup> Proponents thus argue that the United States should become a party to the Moon Treaty in order to preserve the country's opportunity to participate in the discussions and negotiations regarding a proposed regime to control mining activities. These advocates note that the United States may drop out of such negotiations at any time, as it did in the LOS, if its position is not adopted.<sup>110</sup>

With regard to the provisions of the Moon Treaty which call for sharing the benefits derived from resource exploitation, proponents of the Moon Treaty note that it only requires a sharing in the "benefits" derived from the resources, not the resources themselves.<sup>111</sup> Moreover, the treaty's provisions require only an "equitable," not an "equal," sharing of those benefits.<sup>112</sup> Thus, it is arguable that the treaty allows the United States to determine how, and in what manner, it will share in these benefits.<sup>113</sup> Finally, the proponents of the treaty argue that the United States

---

<sup>108</sup> See Christol, *supra* note 68, at 478.

<sup>109</sup> *Moon Treaty Hearings*, *supra* note 7, at 79 (statement of Ronald F. Stowe); Menter, *supra* note 75, at 195; Christol, *The Moon Treaty Enters Into Force*, 79 AM. J. INT'L L. 163, 167 (1985).

<sup>110</sup> *Moon Treaty Hearings*, *supra* note 7, at 69 (statement of R.F. Stowe). See Christol, *supra* note 109, at 167. Only states acceding to the terms of the regime will be bound by them, as such terms do not amount to generally accepted customs of international law. *Moon Treaty Hearings*, *supra* note 7, at 21 (statement of Roberts B. Owen); Interview with Brian Hoyle, *supra* note 10.

Many opponents of the Moon Treaty additionally feared that by calling for the adoption of the regime only as exploitation commences, the treaty adopted a *per se* moratorium on the development on outer space resources until the international community could agree upon the terms of the regime. See, e.g., Dula, *supra* note 79. The United States' position in negotiating the Moon Treaty was exactly contrary to this, stating that the treaty places "no moratorium on the exploitation of natural resources of the Moon, pending establishment of an international regime." *Moon Treaty Hearings*, *supra* note 7, at 12 (statement of Roberts B. Owen); Dula, *supra* note 79, at 10-11 (citing U.N. Doc. A/AC.105/PV.203 (1979)). Commentators note, however, that it is highly unlikely that the United States would authorize or that any private company would undertake such exploitation of lunar resources without assurance that it would retain control and title over at least a portion of the benefits derived from the exploitation. See, e.g., *id.* at 19.

<sup>111</sup> See Menter, *supra* note 75, at 202.

<sup>112</sup> Christol, *supra* note 109, at 165.

<sup>113</sup> *Moon Treaty Hearings*, *supra* note 7, at 18 (statement of Roberts B. Owen). The proponents also note that the benefit-sharing provisions call for consideration not only of the concerns of the developing countries, but also of "the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon." Moon Treaty, *supra* note 49, at art. 11; see White, *supra* note 69, at 530.

could ratify the treaty with "understandings" which set forth the United States position on the provisions of concern.<sup>114</sup> The adoption of such understandings would legally limit United States obligations under the treaty.<sup>115</sup> It should be noted that the United States utilized this option when it adopted the Principles Treaty in 1982.<sup>116</sup>

Notwithstanding the strong arguments made by proponents of the Moon Treaty, the United States declined to sign it or to ratify its provisions. Thus, when the Moon Treaty became effective on July 11, 1984, upon ratification by the fifth signatory, neither the United States nor the Soviet Union had yet ratified or had become a signatory.<sup>117</sup> Neither country has taken any steps in the intervening time to seek the adoption of an acceptable treaty. Therefore, no provisions of international law exist outside the Principles Treaty, the Astronaut Rescue Agreement, or the Liability and Registration Conventions to govern the exploration and exploitation of extraterrestrial resources by those states most likely to undertake these activities.

## V. THE ANTARCTIC TREATY SYSTEM

### A. Background and Terms

Unlike the currently stalled negotiations concerning the adoption of a regime governing mineral exploration in outer space, efforts by the parties to the Antarctic Treaty to adopt a regime governing mineral exploitation in Antarctica have progressed significantly.<sup>118</sup> It now appears that an acceptable regime could be adopted within the next few years.

As stated above, the Antarctic Treaty was the direct result of efforts by the United States, in cooperation with other states actively involved in research or other activities in Antarctica, to impose a legal regime on future activities on that continent which would be accepted internationally.<sup>119</sup> As with the LOS and Moon Treaties, the Antarctic Treaty speci-

---

<sup>114</sup> Menter, *supra* note 75, at 207.

<sup>115</sup> *Moon Treaty Hearings*, *supra* note 7, at 69 (statement of Ronald F. Stowe).

<sup>116</sup> While art. 1 of the Principles Treaty provides that "the exploration and use of outer space . . . shall be carried out for the benefit . . . of all countries," Principles Treaty, *supra* note 25, art. 1, the "understanding" upon which the United States' ratification of the treaty was based stated that "Nothing in Article 1, Paragraph 1 of the Treaty diminishes or alters the right of the United States to determine how it shares the benefits and results of its space activities." Exec. Rep. No. 8 to Accompany Ex. D. U.S. Senate, 90th Cong., 1st Sess. at 4 (1967); *see*, Menter, *supra* note 75, at 207; Christol, *supra* note 69, at 450.

<sup>117</sup> In comparison, both the Principles Treaty and Astronaut Rescue Agreement require the signatures of the United States, the Soviet Union, and Great Britain for the agreements to enter into force. Christol, *supra* note 109, at 163.

<sup>118</sup> Antarctic Treaty, *supra* note 66.

<sup>119</sup> *See supra* notes 18-21 and accompanying text. As of the date of this Article, twenty countries

fies that the continent shall be used solely for peaceful purposes and that activities of a military nature are expressly prohibited.<sup>120</sup> The treaty provides that all parties shall enjoy freedom of scientific investigation on the continent and shall exchange with other parties information obtained in research activities and research personnel.<sup>121</sup> Importantly, the treaty provides that its provisions shall be interpreted neither as a renunciation nor an affirmation of the previously asserted rights by various countries to claims of territorial sovereignty over portions of Antarctica.<sup>122</sup> In fact, the treaty states that “[n]o acts or activities taking place while the present treaty is in force shall constitute a basis for asserting, supporting or denying any claim of territorial sovereignty in Antarctica,”<sup>123</sup> and no new claim shall “be asserted while the present Treaty is in force.”<sup>124</sup>

The Antarctic Treaty is open for accession by “any state which is a member of the United Nations, or by any other state which may be invited to accede to the Treaty with the consent of all the contracting parties.”<sup>125</sup> However, activities on the continent are governed by the Consultative Parties to the treaty, now numbering eighteen states.<sup>126</sup> While any country acceding to the treaty’s provisions may obtain Consultative Party status by undertaking “substantial scientific research activity” in Antarctica,<sup>127</sup> such undertakings are normally well beyond the budgets of most developing countries. Consequently, the Antarctic Treaty system is dominated by industrialized countries in the Western Hemisphere. For example, the Federal Republic of Germany became a Consultative Party only after establishing an Antarctic research station program at a cost estimated to be over \$100 million.<sup>128</sup> The difficulty of becoming a Consultative Party and obtaining the right to participate in

---

in addition to the original twelve have adopted the treaty, including, in order of ratification, Poland, Czechoslovakia, Denmark, the Netherlands, Romania, the German Democratic Republic, Brazil, Bulgaria, the German Federal Republic, Uruguay, Papua New Guinea, Italy, Peru, Spain, People’s Republic of China, India, Hungary, Sweden, Finland, and Cuba.

<sup>120</sup> Antarctic Treaty, *supra* note 66, art. I.

<sup>121</sup> *Id.* arts. II, III.

<sup>122</sup> For a list of claimants, see *supra* note 19.

<sup>123</sup> Antarctic Treaty, *supra* note 66, art. IV, ¶ 2.

<sup>124</sup> *Id.* The treaty also provides that nuclear explosions and disposal of radioactive wastes on the continent are expressly prohibited. The treaty also provides for a system of inspections by the parties themselves to assure compliance with the treaty. *Id.* arts. V, VII.

<sup>125</sup> *Id.* art. IX.

<sup>126</sup> The Consultative Parties include the United Kingdom, South Africa, Belgium, Japan, the United States, Norway, France, New Zealand, the Soviet Union, Poland, Argentina, Australia, Chile, Brazil, the German Federal Republic, Uruguay, the People’s Republic of China, and India.

<sup>127</sup> Antarctic Treaty, *supra* note 66, art. IX, ¶ 2. Examples of such activities include “the establishment of a scientific station or the despatch [sic] of a scientific expedition.” *Id.*

<sup>128</sup> See *Resource Jurisdiction*, *supra* note 13, at 54 n.42 (citing Joyner, *Antarctica and the Law of the Sea: Rethinking the Current Legal Dilemma*, 18 SAN DIEGO L. REV. 415, 421 (1981)).

the resolution of issues affecting Antarctica has been one of the principal issues addressed during United Nations debates on the Antarctic Treaty system.<sup>129</sup>

The Antarctic Treaty establishes only broad principles applicable to activities on the continent. Consequently, the treaty provides for a series of meetings to be held among the Consultative Parties for the purpose of "exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering, and recommending to their Governments, measures in furtherance of the principles and objectives of the Treaty . . . ."<sup>130</sup> Subsequent to the Antarctic Treaty entering into force, the Consultative Parties have held thirteen such meetings, typically biannually, to address various issues that have arisen under the treaty system. The vast majority of these meetings have addressed issues of a scientific nature, such as protection of the Antarctic environment and setting aside various areas for special scientific inquiry. Additional issues addressed at these meetings have included improvements in the telecommunications capabilities of the Consultative Parties' research bases and measures to address increasing tourism in Antarctica. At the present time, over 150 recommendations have been made and adopted by the respective parties' governments.<sup>131</sup>

### B. Minerals Discussions

The Consultative Parties have taken special steps to address issues that will arise during any exploitation of mineral resources located in or on the Antarctic continent. These precautions have been taken, at least in part, to ensure the continued control over resource development efforts on the continent. For example, at the seventh meeting of the Consultative Parties in 1972, they noted the "increasing interest in the possibility that there may be exploitable minerals in the Antarctic Treaty

---

<sup>129</sup> See *infra* text accompanying notes 173-79; Eilers, *Antarctica Adjourned? The U.N. Deliberations of Antarctica*, 19 INT'L LAW. 1309, 1316 (1985).

<sup>130</sup> Antarctic Treaty, *supra* note 66, art. IX. The decision making process allows representatives of the Consultative Parties' meeting to adopt recommendations to be made to their respective governments on a variety of issues. The recommendations are adopted only after reaching the consensus of all parties' representatives, and become binding upon the respective parties only when formally accepted by all Consultative Parties' governments. Parties are often slow to accept of the recommendations because adoption of domestic legislation may be required. See, e.g., Colson, *The Antarctic Treaty System: The Mineral Issue*, 12 L. & POL'Y INT'L BUS. 841, 880-81 (1980).

<sup>131</sup> At the Eighth Consultative Party meeting in 1984, the parties also entered into the Agreed Measures for the Conservation of Flora and Fauna, 17 U.S.T. 996, T.I.A.S. 6058, and later adopted two conventions with nonparties addressing issues related to Antarctica. These conventions, which are open to ratification and signature by all countries include: Convention for the Conservation of Antarctic Seals, 29 U.S.T. 441, T.I.A.S. No. 8826, and Convention on the Conservation of Antarctic Living Resources, T.I.A.S. No. 10240, 19 INT'L LEGAL MATERIALS 841 (1980).

Area” as a result of a growing international concern about the continued availability of petroleum resources.<sup>132</sup> The parties found that such resource development would be “likely [to] raise problems of an environmental nature,” and concluded that “the Consultative Parties should assume responsibility for the protection of the environment and the wise use of resources.”<sup>133</sup> At the Eighth Consultative Party meeting in 1975, the parties agreed to exert all “appropriate efforts” to ensure that no one engage in resource development activity contrary to the principles and purposes of the Antarctic Treaty.<sup>134</sup> Similarly, at the Ninth Consultative Party meeting in 1977, the parties further agreed to continue to “play an active and responsible role” in establishing a regime to govern Antarctic mineral resource exploitation activities.<sup>135</sup> At that time, the Consultative Parties also “urge[d] their nationals and other States to refrain from all exploration and exploitation of Antarctic mineral resources while making progress toward the timely adoption of an agreed regime in Antarctic mineral resource activities.”<sup>136</sup> In 1979, when the parties held their tenth meeting, they considered addressing the mineral resource questions in a series of special meetings to be held in addition to the biannual meetings and to move forward expeditiously to adopt a regime governing mineral exploitation activities.<sup>137</sup>

The eleventh Consultative Party meeting held in 1981 proved to be a watershed for the parties’ consideration of the mineral exploitation issue. In the face of growing pressure from developing countries to share in the benefits of Antarctic mineral resource development,<sup>138</sup> the parties recommended to their governments that a regime on Antarctic mineral resources should be adopted “as a matter of urgency” and that special Consultative Party meetings should be held to consider and adopt the terms of such a regime.<sup>139</sup> The participating parties urged that the re-

---

<sup>132</sup> Recommendation VII-6, May 29, 1975, Antarctica: Measures in Furtherance of Principles and Objectives of the Antarctic Treaty.

<sup>133</sup> *Id.*

<sup>134</sup> Recommendation VIII-14, Dec. 16, 1978, Antarctica: Measures in Furtherance of Principles and Objectives of the Antarctic Treaty.

<sup>135</sup> Recommendation IX-1, Sept. 8, 1983, Antarctica: Measures in Furtherance of Principles and Objectives of the Antarctic Treaty.

<sup>136</sup> *Id.* ¶ 8.

<sup>137</sup> Recommendation X-1, adopted at the Tenth Antarctic Treaty Consultative Meeting, Washington, D.C., Sept. 17 - Oct. 5, 1979.

<sup>138</sup> See *infra* text accompanying notes 173-79.

<sup>139</sup> Recommendation XI-1, Report of the Eleventh Consultative Meeting, Buenos Aires, Argentina, June 23 - July 7, 1981. In opening statements to this meeting, the Consultative Parties recognized that a principal purpose of the regime was to display to nonparties the “effectiveness of the Antarctic Treaty system in adopting rules to govern activities on the continent.” *Id.* Appendix B, at 3 (statement of W.R. Mansfield, Delegate for New Zealand). The parties also noted that the “ur-

gime be based on the principles that: 1) the Consultative Parties continue to play an "active and responsible role" in dealing with the question of Antarctic mineral resources; 2) the Antarctic Treaty be "maintained in its entirety;" 3) the protection of the Antarctic environment be treated as a "basic consideration;" 4) dealings with these issues should not "prejudice the interests of all mankind in Antarctica;" and 5) the regime should not prejudice those states that had previously asserted rights or claims to territorial sovereignty in Antarctica.<sup>140</sup> Since 1981, eight special meetings of the Consultative Parties or their working groups have been held to address the issues surrounding the development of Antarctic mineral resources.<sup>141</sup>

### C. The Beeby Proposal

The special minerals discussions held to date have principally addressed a regime proposed, at least in part, in 1983 by Christopher Beeby of New Zealand.<sup>142</sup> The Beeby proposal states that private entities sponsored by state parties, and any state interested in having a state-owned enterprise or domestic private firm carry out mineral exploitation activities, would be invited to become a party to the regime without having to become a Consultative Party to the Antarctic Treaty.<sup>143</sup> Nevertheless, it is likely that parties to the regime would have to agree to be bound by the principles and objectives of the Antarctic Treaty<sup>144</sup> as the regime would be part of the treaty system.<sup>145</sup> All parties to the regime would be allowed to undertake resource development on the Antarctic continent.<sup>146</sup> However, no development would be permitted to take place outside the regime's provisions<sup>147</sup> or until sufficient information is available to allow consideration of the environmental impact of such development<sup>148</sup> and it

---

gency" in adopting such a regime was in part due to the "impending" conclusion of the Law of the Sea negotiations. *Id.* at 1 (statement of P. Tressert, Delegate from Norway).

<sup>140</sup> *Id.* See generally Colson, *supra* note 130.

<sup>141</sup> R.T. Skully, *The Antarctic Mineral Resource Negotiations, A Report* (1986) (unpublished manuscript in possession of author). See *infra* note 143.

<sup>142</sup> See Skully, *supra* note 141, at 11.

<sup>143</sup> Peterson, *supra* note 106, at 147. In a recent speech, however, R. Tucker Skully, Director of the United States State Department Office of Oceans and Polar Affairs, stated that "[t]here is a growing view that being a party to the Antarctic Treaty should be a condition precedent for accession to the Antarctic mineral resource regime." Skully, *supra* note 141, at 17-18.

<sup>144</sup> Peterson, *supra* note 106, at 147.

<sup>145</sup> Skully, *supra* note 141, at 21.

<sup>146</sup> *Id.* at 40.

<sup>147</sup> *Id.* at 18.

<sup>148</sup> *Id.* at 19. The Consultative Parties have also agreed that, pending the adopting of the regime, they will not unilaterally undertake mineral resource exploitation activities and will continue to apply the voluntary restraints adopted in Recommendation IX-1 in 1977. *Id.*



is determined that the Antarctic environment would not be affected adversely.<sup>149</sup>

Pursuant to the Beeby proposal, resource development activities would be overseen by an Antarctic Mineral Resources Commission ("Commission").<sup>150</sup> The Commission would consist of the Consultative Parties and states either engaged in Antarctic resource activity or having their nationals engaged in such activity. The Commission would appoint a variety of committees which would focus on specific issues arising from Antarctic resource development, such as a Scientific, Technical and Environmental Advisory Committee.<sup>151</sup> The Commission's decisions concerning resource exploitation proposals would depend principally upon the risk such activities pose to the Antarctic environment and the manner in which they would be undertaken.<sup>152</sup>

The Beeby proposal calls for resource development on the continent to progress in stages; each stage subject to different criteria. The first stage is "Prospecting," which incorporates activities aimed at locating areas of mineral resource potential. Such activities would be permitted without the prior approval of the Commission as long as the prospector provided the Commission with notice of the activity and complied with various standard criteria.<sup>153</sup> Prospecting would not generate any rights to resources discovered and the data resulting from the prospecting activity could be deemed proprietary to the prospector.<sup>154</sup> The second stage, "Identification of Areas of Development," would require a general decision by the Commission that a specified area was appropriate for potential development.<sup>155</sup> Such a description would not, however, constitute the Commission's authorization that specific development may take place in the area.<sup>156</sup>

The third phase, "Exploration/Development — Pre-Application Phase," would involve a regulatory committee of the Commission establishing requirements applicable to development of resources in a specified area.<sup>157</sup> The regulatory committee's decision would take into consideration the advice of technical committees appointed by the Commission to

---

<sup>149</sup> *Id.*

<sup>150</sup> Peterson, *supra* note 106, at 148. See Skully, *supra* note 141, at 25. Unlike "enterprise" potential pursuant to the LOS, the Antarctic Mineral Resources Commission will not undertake mineral resource exploitation activities itself. Peterson, *supra* note 106, at 148.

<sup>151</sup> Skully, *supra* note 141, at 27-28.

<sup>152</sup> *Id.* at 29.

<sup>153</sup> *Id.*

<sup>154</sup> *Id.* at 30.

<sup>155</sup> *Id.*

<sup>156</sup> *Id.*

<sup>157</sup> *Id.* at 31-32.

review a specific development proposal. This decision would be based upon: 1) the consistency of the proposed development with the terms of the overall regime; and 2) the "need to ensure that any area identified constituted a coherent unit from the resource management point of view."<sup>158</sup> Ideally, these requirements would give potential developers a clear picture of the prerequisites to undertaking commercial activity in the designated area and, consequently, the basis for determining the feasibility of mineral exploration and development activities.<sup>159</sup> Applications for development in the area would not be accepted until the regulatory committee had specified all requirements applicable to such development activity.<sup>160</sup>

The final phase, "Exploration/Development — Post-Application Phase," would provide sponsored developers with the opportunity to apply for the authority needed to explore for and to develop minerals in areas approved by the Commission.<sup>161</sup> Applicants would be required to establish their technical and financial abilities to undertake the proposed development. They would also be required to demonstrate that all proposed activities are consistent with the regime and the requirements established for development.<sup>162</sup> The Commission's grant of an application would provide the applicant with the exclusive right to explore, and a presumptive right to develop, resources found in the specified area.<sup>163</sup> Applicants would be required to notify the regulatory committee of the applicant's intention to proceed from exploration to development.<sup>164</sup> The proposal currently being considered by the Consultative Parties does not articulate standards for deciding among competing applicants for the same development rights.<sup>165</sup> Nevertheless, the parties have agreed that there should be "maximum incentives" for competition.<sup>166</sup>

Several issues remain unresolved between the parties. These include the methods which will be used to enforce the rules of the regime, inspection rights, liability assessments, dispute settlement mechanisms, charges to be imposed upon those undertaking resource exploitation activities, and the methods of dividing the revenues from these charges.<sup>167</sup> Another important issue is the decision-making process to be followed by the

---

<sup>158</sup> *Id.* at 31.

<sup>159</sup> *Id.* at 32.

<sup>160</sup> *Id.* at 35.

<sup>161</sup> *Id.*

<sup>162</sup> *Id.* at 36.

<sup>163</sup> *Id.*

<sup>164</sup> *Id.* at 37.

<sup>165</sup> *Id.* at 36.

<sup>166</sup> *Id.* at 36-37.

<sup>167</sup> *Id.* at 21-24.

Commission and its committees.<sup>168</sup> There is a strong preference for the consensus method adopted by the Antarctic Treaty itself.<sup>169</sup>

The role of parties to the regime which are not Consultative Parties has been a key issue in these discussions as has the role and opportunity for nonparties — especially developing countries — to participate in the mineral development in Antarctica.<sup>170</sup> Despite the recognition of the developing countries' demands to participate in development activities, there also is "considerable resistance to the establishment of mandatory obligations for international participation."<sup>171</sup> At the present time the consensus of the Consultative Parties appears to be that the Commission should undertake incentives to encourage developing countries to participate in mineral development efforts, but the parties have rejected the imposition of mandatory requirements for such participation.<sup>172</sup>

#### D. Concerns of Developing Countries

While the Consultative Parties have advocated the Antarctic Treaty system as the best example of international cooperation among those with vested interests in Antarctica, developing countries have sought mightily to increase their participation in the benefits anticipated from mineral resource activity on the continent. The developing nations succeeded in having a "Question of Antarctica" placed on the United Nations General Assembly's agenda in 1983. Pursuant to this question, the Secretary General of the United Nations was called upon to "prepare a comprehensive, factual and objective study of all aspects of Antarctica, taking fully into account the Antarctic Treaty System and other relevant factors."<sup>173</sup>

The Secretary General delivered the report to the General Assembly in 1984, but debate on the report has, thus far, been deferred. At the present time, the Consultative Parties and members of the "Group of 77"<sup>174</sup> developing nations are negotiating the terms of proposed General Assembly resolutions intended to address these issues. Moreover, the de-

---

<sup>168</sup> *Id.* at 40-41.

<sup>169</sup> *Id.*

<sup>170</sup> *Id.* at 39.

<sup>171</sup> *Id.* at 45.

<sup>172</sup> *Id.*

<sup>173</sup> G.A. Res. 77, 38 U.N. GAOR (97th Plen. Mtg.) 1, U.N. Doc. A/RES/38/77 (Prov. ed. Jan. 1, 1984); Question of Antarctica: Report of the Secretary General (Agenda item 66) U.N. Doc. A/39/583/Part 1 (1984). The Secretary General's report describes Antarctica, the history of the regulation of that continent, and the legal and scientific issues confronting exploration and development of resources on the continent, setting forth various member states' views on the Antarctic Treaty system and its future.

<sup>174</sup> The "Group of 77" was established in 1963 by 77 nonaligned nations, but it now incorporates

veloping countries have requested the Secretary General to "update and expand" the earlier study.<sup>175</sup>

That the Consultative Parties recognize the pressure placed upon them by the developing nations is indicated by the parties' belief that the adoption of a regime governing mineral exploitation activities is a matter of "urgency."<sup>176</sup> The parties clearly believe that the adoption of such a regime would indicate to the developing countries of the United Nations that the Consultative Parties are sensitive to regulating affairs concerning Antarctica in a manner that will benefit all nations.<sup>177</sup> The Consultative Parties also have agreed to forward detailed reports of their mineral resource discussions to the Secretary General for consideration by the General Assembly.<sup>178</sup> Unfortunately, the reports provided to date have not proven to be extraordinarily illuminating.

## VI. FUTURE TREATIES

### A. Considerations

It is obvious that many fundamental differences exist between the terms and conditions of the Antarctic Treaty, the LOS, and the Moon Treaty. These differences principally reflect the time periods in which those agreements were negotiated. One difference is that the regulation of mineral resource activities in Antarctica is governed by those states currently undertaking, or which have the potential to undertake, such activities. The world community as a whole governs the regime applicable to activities under the LOS and the proposed Moon Treaty, regardless of the specific countries directly involved in the regulated activity. Another basic difference is that the member states under the Antarctic Treaty operate by consensus, not majority vote. Amendments to or provisions of that treaty are binding upon parties only to the extent that they agree with those provisions.<sup>179</sup> Thus, while under the Antarctic Treaty system the United States has only one vote, the United States is not

---

over 100 nations. See Young, *Resource Jurisdiction and the Law of the Sea: A Question of Compromise*, 11 BROOKLYN J. INT'L L. 45, 61 n.93 (1985).

<sup>175</sup> *Id.*

<sup>176</sup> See Recommendation XI-1, *supra* note 139.

<sup>177</sup> *Id.* In setting forth the framework for the regime, Recommendation XI-1 specifically noted that, while the Antarctic Treaty is to be maintained and any regime is to be a part of that treaty, the regime must not "prejudice the interests of all countries in Antarctica's future." See *supra* text accompanying note 140.

<sup>178</sup> Interview with Adrienne Stefan, *supra* note 9.

<sup>179</sup> Other obvious differences include the absence in the Antarctic Treaty of technology transfer provisions, production limitations, and benefit sharing requirements. See *supra* text accompanying notes 83-96.

forced to comply with provisions with which it does not agree. It is important to note in this regard that the Antarctic Treaty Consultative Parties have never failed to reach a consensus on the issues brought before them.

From the United States' perspective, the adoption of a regime similar to the Beeby proposal being discussed among the Antarctic Treaty Consultative Parties would be most advantageous. It has been suggested by some that the United States could achieve the adoption of such a regime in outer space simply by refusing to participate in any regime not characterized by either significant, or possibly dominant, United States participation. Recent events reveal that there may be merit to this position. For example, the United States and the Soviet Union's failure to adopt or ratify the provisions of the Moon Treaty or the LOS have resulted in those conventions becoming practically irrelevant.<sup>180</sup> The two countries are the only ones with the technological and financial ability to develop deep sea, Antarctic, or outer space resources. Thus, a regime without the participation of these countries is a regime without practical consequence.<sup>181</sup> Moreover, by failing to adopt or ratify a treaty governing certain activities in outer space, nothing prohibits the United States from going forward, as it has done with the LOS, to form an appropriate convention among other nonsignatory parties or to undertake unilateral action to develop lunar and other resources.<sup>182</sup>

Recent events regarding the Moon Treaty, the LOS, and the Antarctic Treaty system reveal that the United States may not be entirely free to proceed at its own will. It is generally recognized that the United States has certain practical as well as moral obligations not to act in a manner adverse to the interests of other countries, particularly developing countries.<sup>183</sup> The United States has found it advantageous for these reasons to enter into numerous treaties regulating its activities beyond its

---

<sup>180</sup> Similarly, in deliberations at the United Nations during the 1980s, threatened nonparticipation by the United States became increasingly successful in convincing the General Assembly and its committees to adopt positions consistent with the United States' objectives. For example, the United States successfully de-emphasized the politicization of the Legal Subcommittee of COPUOS and directed COPUOS' energies in a more scientific and technological direction. Interview with William Lowell, Deputy Director, Office of Advanced Technology, Bureau of Ocean and Environmental and Scientific Affairs, U.S. Department of State, July 17, 1986. Similarly, the United States has succeeded in having arms control and space war issues deleted from the agenda of the Legal Subcommittee of COPUOS and has influenced COPUOS to adopt United States proposed principles to govern the remote sensing activities of member states. *Id.*

<sup>181</sup> See, e.g., *Resource Jurisdiction*, *supra* note 13, at 62; Comment, *Law in a Vacuum*, *supra* note 7, at 420.

<sup>182</sup> See *supra* note 102 and accompanying text.

<sup>183</sup> See, e.g., De Seife *supra* note 13, at 101-02; Christol, *supra* note 68, at 453; Carroll, *supra* note 76, at 220; White, *supra* note 69, at 509 ("a growing consensus maintains that the more advanced

own territories. Some of these treaties — such as the Principles Treaty — recognize some characteristic of *res communis* with regard to the territory bound by the treaty.<sup>184</sup> Similarly, in an effort to obtain the cooperative efforts of its partners in the proposed United States space station,<sup>185</sup> the United States has agreed to a variety of groundrules which significantly undercut the United States' ability to dominate the station's affairs.<sup>186</sup> For example, the United States has agreed to share with its partners overall management authority for the station, to guarantee to its partners open, continuous, and nondiscriminatory access to the station via the space shuttle, and even to grant access to the station via other launch systems in any manner compatible with safe and nondisruptive operation.<sup>187</sup>

Initially, the United States will continue to be confronted with the requirement that it must seek international accord regarding its activities in outer space in order to maintain cohesive and amenable relationships on the ground. Recent steps by developing countries to exercise collective political power, while not entirely successful, have illustrated to the United States that strength in numbers renders the developing countries a force to be reckoned with, even in those areas where the countries are not actively engaged in resource exploitation activities. The terms adopted into the LOS and the Moon Treaty reflect this fact and even the Antarctic Treaty system has been affected by the efforts of developing countries not party to the Antarctic Treaty.<sup>188</sup>

Developing countries have successfully made developed countries consider the former's views and concerns in other areas as well. For example, the developing nations sought to politicize the 1985 meeting of the World Administrative Radio Conference ("WARC") of the International Telecommunications Union.<sup>189</sup> Such meetings are held to allocate slots in the geostationary orbit for communication satellites and traditionally have concerned purely engineering matters, such as the ability of satellites to operate effectively and without interference. Several equato-

---

members of this [international] community have a duty to help their developing neighbors make social and economic improvements").

<sup>184</sup> It is recognized in this regard that the "province of mankind" language applicable in prior treaties to extraterritorial locations is not the same as the "common heritage of mankind" language incorporated into the LOS and the Moon Treaty. See Galloway, *The Space Station: United States Proposals and Implementation*, 14 J. SPACE L. 14, 21 (1986).

<sup>185</sup> Thus far, the United States has entered into space station joint venture agreements with the European Space Agency, Japan, and Canada. See *infra* note 195.

<sup>186</sup> Pederson, *Space Stations: Risks and Vision*, 14 J. SPACE L. 1, 7-8 (1986).

<sup>187</sup> *Id.*

<sup>188</sup> See *supra* notes 173-79 and accompanying text.

<sup>189</sup> See *supra* note 46.

rial countries recently declared, however, that their sovereign territory included that portion of the geostationary orbit directly above their land and demanded that slots in the orbit be reserved for their use in the future, whether or not they have the capacity or plans to launch satellites.<sup>190</sup> The United States rejected this rigid *a priori* allocation scheme. Instead, the United States proposed not to change the existing first-come-first-served allocation methodology. While the reservation system proposed by the developing countries was rejected at the WARC, the developing nations succeeded in having the conference adopt an allocation scheme calling for arcs of space in the geostationary orbit to be allocated to countries for future operations on specific frequencies.<sup>191</sup>

It must be recognized that more than half of the countries constituting the United Nations won independence within the last twenty years. These countries reject the traditional method of obtaining sovereignty and benefits through simple occupation of territory.<sup>192</sup> They seek to develop industrially quite quickly, hoping to establish a new international economic order in which developed countries are called upon to assist developing countries in a modernization campaign.<sup>193</sup> Unless the United States seeks to withdraw from the numerous international organizations governed by one-nation-one-vote systems — a move which would render its terrestrial activities extremely difficult — the United States must now recognize, at least to some extent, developing countries' demands to have a voice in the development and exploitation of Antarctic and outer space resources.<sup>194</sup>

From a purely practical standpoint, unilateral action by the United

---

<sup>190</sup> Declaration of the First Meeting of Equatorial Countries, Dec. 3, 1976 (the "Bogotá Declaration"), reprinted in II N. JASENTULIYANA & R. LEE, *MANUAL ON SPACE LAW* 383 (1979).

<sup>191</sup> The frequencies subject to this arc-allocation system are the expansion bands associated with the 6/4 GHz and 14/11-12 GHz frequencies. *WARC 1985: The Politics of Space*, BROADCASTING, Sept. 23, 1985, at 57, col. 1.

<sup>192</sup> For a good discussion of the traditional methods of acquiring sovereignty over unclaimed land, see Comment, *Legal Aspects*, *supra* note 14, at 390-97.

<sup>193</sup> Comment, *Law in a Vacuum*, *supra* note 7, at 422. Through the concurrent effort of individual developing countries and groups of nonaligned nations, such as the "Group of 77," see *supra* note 174, the "common heritage" principle has acquired NIEO overtones notwithstanding the opposition of the United States. See Peterson, *supra* note 106, at 181-62.

<sup>194</sup> Negotiating treaties in a more comprehensive manner will also help avoid some of the inconsistencies that the United States has encountered in addressing treaties on a case-by-case basis. For example, with regard to Antarctica, the United States has refused to recognize any claims of sovereignty over portions of the Antarctic continent. See *supra* text accompanying notes 122-24. A logical corollary of this position is that the waters off the continent must be considered "high seas," subject to the LOS regime governing resource recovery in the "Area." See *supra* text accompanying notes 83-99. Efforts to place those resources beyond the reach of unattractive LOS provisions, however, implies recognition of various claims of sovereignty to portions of the Antarctic continent. See Carroll, *supra* note 65, at 225.

States to explore and exploit lunar and other resources would be extremely inefficient. Such an undertaking would require duplicative research and development, construction, transportation, and management efforts and activities that could be shared more profitably among numerous countries. As the United States has recognized the practicality of shared efforts regarding its plan to share the construction of the space station with Japan, Canada, and the European Space Agency,<sup>195</sup> so will the world's countries undoubtedly find it advantageous to unify in order to explore outer space. The early establishment of a predictable method of sharing the benefits of extraterrestrial resource development also will lessen the likelihood that inefficient "get-it-while-you-can" activities will characterize development efforts.

Finally, adoption of an international accord to regulate commercial activities in outer space and to allocate the benefits of such activities in a predictable manner would appear to be a prerequisite to financing these activities. Banks and investors will be reluctant to lend funds to any mining entrepreneur or consortium that did not have the uncontested, or at least predictable, right to the benefits of the resources it plans to develop or prospect. Similarly, it cannot be expected that an entrepreneur will take on the significant risks associated with extraterrestrial mining activities if its ability to obtain the benefits of those activities is open to question. Indeed, were the United States to fail to adopt a regime governing extraterrestrial resource exploration, it must be anticipated that entrepreneurs might seek the protection of parties to such a convention. Thus, the failure of the United States to secure such an agreement may result in the United States losing its ability to participate in such activities.<sup>196</sup>

## B. Proposals

In sum, practicalities as well as moral precepts support the United States' renewed efforts to secure the adoption of an internationally-accepted regime to govern commercial (especially mineral) exploitation activities in outer space. The first step the United States should take is to initiate the adoption of an acceptable regime, yet recognize that it is unlikely that such an agreement can be negotiated by the world community.

---

<sup>195</sup> Pederson, *supra* note 188, at 2 n.3 (citing Memorandum of Understanding for Conduct of Parallel Definition and Design Studies (Phase B) of Permanently Manned Space Station, June 3, 1985, NASA — European Space Agency; Memorandum of Understanding for Definition and Design Activities Program of Permanently Manned Space Station, May 9, 1985, NASA — Science and Technology Agency of Japan; Memorandum of Understanding for Definition and Design Program (Phase B) of Permanently Manned Space Station, Apr. 16, 1985, NASA — Canadian Ministry of State for Science and Technology).

<sup>196</sup> See Christol, *supra* note 109, at 168.



The irrelevant LOS and Moon Treaties stand as memorials to such failed past efforts. Rather, as was suggested by Professor Rodolphe de Seife<sup>197</sup> and pursued by parties actively engaged in deep sea mining activities<sup>198</sup> and the Antarctic Treaty Consultative Parties, the United States should first seek an agreement between the countries actively engaged in, or realistically proposing to become actively engaged in, such activities. Only in that manner will the consensus of those parties be presented to the world community as a unified position; only then will such a consensus have a reasonable chance of adoption by other countries.<sup>199</sup>

Regarding the substantive terms of a regime governing the development of lunar resources, the United States' positions concerning the treaties discussed above indicate that an acceptable treaty could incorporate significant provisions of the LOS and Moon Treaty as well as the procedures outlined in the Beeby proposal for a regime governing mineral exploitation in Antarctica.<sup>200</sup> For example, the agreement could incorporate the regulation of such activities by an international body, similar to the International Telecommunications Satellite Organization ("INTELSAT") or the International Maritime Satellite Organization ("IMARSAT"), with seats on the governing board held, in part, by developing countries not capable of undertaking such activities. Access to development sites would be guaranteed to all states acceding to the treaty and specific sites might even be reserved for development by developing countries, either directly or through contracts with countries taking an active role. The United States might even accept the creation of a transnational entity similar to the LOS Enterprise, as long as that entity were not empowered to compete unfairly with private development efforts. Indeed, it is likely that most of the terms of the draft Moon Treaty could be retained,<sup>201</sup> provided that the following terms were incorporated into the agreement:

1. Ultimate control over the regime governing exploitation activities must

---

<sup>197</sup> De Seife, *supra* note 13, at 102-03.

<sup>198</sup> See *supra* note 102 and accompanying text.

<sup>199</sup> If the understanding of such efforts appears to be unlikely, the passage of an extraterrestrial mineral resources law similar to the Deep Seabed Mineral Resources Act adopted during the long LOS negotiation could be considered. *Id.*

<sup>200</sup> See *supra* text accompanying notes 142-72.

<sup>201</sup> It may also be possible for the United States to accept the incorporation of a "common heritage" provision into the agreement, as long as that language was limited by all parties to a narrower definition than that presently proposed by developing countries. See *supra* text accompanying notes 71-79. For example, it has been suggested that the provision could be interpreted within traditional notions of sovereignty and private property, as was incorporated into the United States position that the common heritage provision guarantees equal access to resources, but that the developers of the resources retain ownership over the resources they develop and the benefits that flow therefrom. See Comment, *Law in a Vacuum*, *supra* note 7, at 427-30.

not be granted to parties that are not actively engaged in development efforts. While developing countries may have a valid claim to a vote in the adoption and implementation of such a regime, i.e., an opportunity to convince others to adopt certain views, these countries do not have a valid claim to dictate the terms of that regime contrary to the will of the countries subject to the risks associated with the activities;

2. Parties to the regime must not be obligated to comply with terms or amendments adopted without their consent or approval; and

3. The regime should not incorporate wholesale and predetermined transfers of technology or wealth to parties not undertaking development activities. It must be noted that many countries (including, increasingly, the United States) have only technology to export. The requirement that countries be obligated to transfer such technology in order to receive the opportunity to participate in outer space commercial activities virtually assures their lack of participation.<sup>202</sup>

The adoption of a regime incorporating the considerations outlined above is not the only possible method of resolving the present standoff in international efforts to develop a regime governing commercial activities in outer space. A very different alternative would be for the world community to adopt, for extraterrestrial mineral claims, a system similar to the patent system enforced in the United States. The principal basis of the United States patent system is that the inventor receives the exclusive right to enjoy the benefits that flow from the invention for a fixed term of years in return for disclosing the invention to the public.<sup>203</sup> The patent system is enforced under the laws of the United States and is regulated by the Patent and Trademark Office, an independent agency established exclusively for that purpose.

By analogy, parties or states undertaking the significant risks involved in outer space mineral development could be granted exclusive rights to the benefits of those developments for a fixed term of years. After that period, other parties would be given the opportunity to participate and to utilize the technology relied upon in the exploitation.<sup>204</sup> A

---

<sup>202</sup> In the words of the United States Supreme Court:

[A]nd it cannot be doubted that the settled purpose of the United States has ever been, and continues to be, to confer on the authors of useful inventions an exclusive right in their inventions for the time mentioned in their patent. It is the reward stipulated for the advantages derived by the public from the exertions of the individual, and is intended as a stimulus to these exertions.

Grant v. Raymond, 31 U.S. (6 Pet.) 218, 241-42 (1832) (J. Marshall, Ch.J.).

<sup>203</sup> It has been proposed that the United States and other developed countries participating in exploitation activities could adopt their own regime without any involvement of the developing countries, while agreeing to provide a certain degree of benefit or equivalent wealth sharing with them. *Resource Jurisdiction*, *supra* note 13, at 76. Such an alternative would appear shortsighted, however, and assuredly will complicate international relations.

<sup>204</sup> Other suggested alternatives have included granting joint jurisdiction over resources or adopting a regime similar to the INTELSAT or INMARSAT systems whereby a commercial corporation

transnational regulatory authority similar to the European Patent Office in Munich could be empowered with authority to serve as the depository of outer space development "patents" binding on all parties, issue patent grants, and resolve disputes between parties. Another alternative would be for interested states to establish the equivalent of the Paris Union, created pursuant to the Paris Convention of 1882. This organization would not create a separate transnational patent system, but would recognize for a term of years other parties' claims to extraterrestrial mining rights and technology.

The specific terms of the regime to be adopted are not the most important issues. It is the undertaking by the United States to adopt an acceptable regime which is the crucial step. The most convenient timeframe for such efforts would be the International Space Year ("ISY") which was recently proposed by President Ronald W. Reagan and Congress for the year 1992.<sup>205</sup> That year will be the thirty-fifth anniversary of the IGY, which "ushered in the space age."<sup>206</sup> The anniversary also will come only one year after the Antarctic Treaty is scheduled to be reviewed by its parties, two years before the Moon Treaty is scheduled to be reviewed by its parties,<sup>207</sup> and a few years before the space station is scheduled to be operational.<sup>208</sup> The coincidence of relevant events provides an ideal opportunity for industrialized and developing countries to structure an acceptable regime governing outer space resource recovery activity and to ensure the peaceful exploration and exploitation of suspected resources.

The President proposed that a major objective of the ISY should be to "emphasize the involvement of both the developed countries and the developing countries in ways that demonstrate the benefits to everyone from discoveries in space science and the practical utilization of space."<sup>209</sup> In light of the lofty goals and demanding timetables set forth in the recent report by the National Commission on Space, holding such negotiations as soon as practicable clearly would be in the best interest of

---

would be created by state parties to undertake regulated activities. *See Moon Treaty Hearings, supra* note 7, at 173 (statement of Eilene Galloway).

<sup>205</sup> On May 15, 1986, President Reagan submitted to the Congress a report describing the desirability of holding in 1992 an ISY modeled after the IGY of 1957-59. *International Space Year*, 22 WEEKLY COMP. PRES. DOC. 638 (May 15, 1986). The United States proposed the ISY to 28 separate countries actively involved in space-based activities and received affirmative support from all respondents. *Id.*

<sup>206</sup> *Id.*

<sup>207</sup> *Id.* *See supra* note 64.

<sup>208</sup> *See supra* note 12.

<sup>209</sup> *See supra* note 205.

the United States' stagnant space program.<sup>210</sup> Given the present international climate and technological capabilities of potential developers, steps must be undertaken soon to assure that United States interests are fully protected when large-scale commercial activities in outer space begin.

---

<sup>210</sup> Although development of Antarctic resources is not expected to occur until the next century, Skully, *supra* note 141 (Introductory Notes to the Press), the Antarctic Treaty Consultative Parties some time ago recognized the desirability of undertaking the long process of negotiating the adoption of an agreement to govern these activities. In Antarctica, as on the Moon, development might be some years away, but the first step to that development — prospecting — could begin very soon.