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ANTARCTICA: AN INTERNATIONAL LABORATORY

*Colin Deihl**

May this continent, the last explored by humankind, be the first one to be spared by humankind. Out of the errors of the past, may there rise a dawn of respect and love for the free-living creatures and pristine beauty of the last virgin land on Earth—Antarctica.

Jacques-Yves Cousteau¹

I. INTRODUCTION

In June 1988, the member nations of the Antarctic Treaty System² signed, but did not ratify, the Convention on the Regulation of Antarctic Mineral Resources Activities (CRAMRA).³ CRAMRA's purpose is to establish a regime governing the exploration and exploitation of minerals in Antarctica while simultaneously preserving

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¹ *Antarctica: Highest, Coldest, Darkest, Driest*, CALYPSO LOG, Apr. 1989, at 12 [hereinafter CALYPSO LOG].

² See generally Multilateral Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71 [hereinafter Antarctic Treaty]. As of June 1988, 19 nations were voting members of the Antarctic Treaty System. These voting members, referred to as "Consultative Parties," were Argentina, Belgium, Brazil, Chile, China, France, German Democratic Republic, Federal Republic of Germany, India, Italy, Japan, New Zealand, Norway, Poland, South Africa, Union of Soviet Socialist Republics, United Kingdom, United States, and Uruguay.

In addition to the Consultative Parties, thirteen "Contracting Parties," or "Non-Consultative Parties," initialed CRAMRA. These parties are nations that have agreed to the terms of the Treaty System, but have not done sufficient scientific research to become Consultative Parties. The Contracting Parties were Bulgaria, Canada, Czechoslovakia, Denmark, Ecuador, Finland, Greece, Republic of Korea, Netherlands, Papua New Guinea, Peru, Romania, and Sweden.

³ Convention on the Regulation of Antarctic Mineral Resource Activities, *opened for signature* Nov. 25, 1988, 27 I.L.M. 859 [hereinafter CRAMRA].

Antarctica's pristine environment.⁴ CRAMRA has generated criticism from environmentalists who believe that it would allow oil companies to begin test drilling on the Antarctic continental shelf. These critics contend that ratification of CRAMRA will lead to the continent's ruin. Largely because of the environmentalists' criticism, CRAMRA probably never will be ratified. At the most recent Antarctic Treaty system meeting in December 1990, CRAMRA had lost most of its earlier support.⁵ Only Japan continued to support CRAMRA in its original form.⁶ Consequently, CRAMRA did not have sufficient support to be introduced for ratification.⁷

CRAMRA and the accompanying controversy over Antarctic oil exploration deserve close examination. In many respects Antarctica represents a microcosm of global environmental problems. No nation legitimately can claim sovereignty over the Antarctic continent; therefore, its environmental problems must be solved in the same manner that the world's environmental problems must be solved—through treaties and unilateral actions. As a result, Antarctica can serve as an accurate laboratory for international environmental law. The conflict over the future of Antarctica encapsulates many of the key political issues of the 1990s: environmentalism versus economic growth, the developing nations versus the industrial powers, and international cooperation versus unilateral action.

This Article's purpose is to determine how Antarctica's environment best can be protected. Proponents of CRAMRA believe that the Antarctic Treaty members need to enter into a minerals regime in order to avoid an unregulated gold rush in Antarctica. They argue that only by ratifying a minerals regime will Treaty members be able to control and regulate mineral exploitation in Antarctica. Critics of CRAMRA advocate a complete ban on mineral exploration and exploitation. They propose that setting aside Antarctica as a World Park is the only way to protect Antarctica's environment.

This Article examines both the World Park proposal and CRAMRA to determine which is better for the Antarctic environment. Although the Article discusses geopolitical influences, it only looks at these influences as they affect environmental protection. Section II of this Article describes Antarctic geography, geology,

⁴ *Id.*, preamble, at 868.

⁵ See Crawford, *Antarctic Conference Ends in Dismal Failure*, *Fin. Times*, Dec. 8, 1990, § 1, at 2.

⁶ See Hunt, *Campaign for Mining Ban Splits Antarctic Nations*, *The Independent*, Dec. 6, 1990, at 15.

⁷ *Id.*

and politics, providing an introduction to the physical realities of Antarctica. Section III explains the Antarctic Treaty System and examines CRAMRA. To a large extent, CRAMRA has shaped the current controversy over Antarctica's future. Moreover, although CRAMRA has lost almost all of its supporters, it remains important since there is still a slight possibility that the Treaty members may decide to use it as the basis for a new minerals agreement. Section III also evaluates the concept, proposed by CRAMRA's critics, of a World Park. Section IV compares the views of those who support a minerals regime like CRAMRA with the views of those who support setting aside the continent as a World Park. The purpose of section IV is to analyze critically the two dominant perspectives shaping the debate over Antarctica and to determine which perspective, if adopted, would be protective of Antarctica's environment. This Article concludes that the best way to prevent the despoliation of Antarctica is to follow the recommendations of environmentalists and to prohibit minerals exploration in the Antarctic region permanently.

II. THE PHYSICAL CONTINENT

A. Geography

The isolation of Antarctica, combined with the harshness of its climate, must be considerations in any plan to drill for oil or mine for minerals. Antarctica's extreme environment makes minerals exploration there more difficult than anywhere else on earth. Moreover, the harsh Antarctic environment will magnify the environmental impacts of any mineral exploration.⁸

Of the seven continents, Antarctica is the least hospitable to human activities.⁹ It is the coldest continent on earth.¹⁰ Summer temperatures average about 0° centigrade along the coast and -20° centigrade in the interior. Winter temperatures average about -20° centigrade along the coast and -65° centigrade in the interior.¹¹ The average year-round temperature in the coastal regions is -15° cen-

⁸ See Bogart, *On Thin Ice: Can Antarctica Survive The Gold Rush?*, GREENPEACE, Sept.-Oct. 1988, at 7, 8.

⁹ U.S. OFFICE OF TECHNOLOGY ASSESSMENT, POLAR PROSPECTS: A MINERALS TREATY FOR ANTARCTICA 126 (1989) [hereinafter POLAR PROSPECTS].

¹⁰ U.S. CENTRAL INTELLIGENCE AGENCY, POLAR REGIONS ATLAS 35-39 (1978).

¹¹ POLAR PROSPECTS, *supra* note 9, at 126.

tigrade.¹² The lowest temperature ever recorded on earth, -89.6° centigrade, was recorded on July 21, 1983, at the Soviet Union's Volstock station.¹³ These extreme temperatures are aggravated by continual high winds with wind speeds often exceeding 200 kilometers per hour.¹⁴ During a severe storm in 1960, scientists estimated that gusts exceeded 250 kilometers per hour (140 miles per hour).¹⁵

Anyone proposing minerals exploitation on Antarctica also must take into account the continent's magnitude. The Antarctic continent and its surrounding oceans cover an enormous area. It is the fifth largest continent, covering about 5.4 million square miles or approximately ten percent of the earth's surface.¹⁶ Ninety-nine percent of Antarctica's area is covered in a layer of ice.¹⁷ This icecap contains seventy percent of the world's fresh water and ninety percent of its ice.¹⁸ On average, the icecap is 1600 meters thick.¹⁹ If the icecap melted completely, it would raise the level of the world's sea level by fifty-five meters.²⁰ The icecap extends beyond the continent's coastline as ice shelves. The largest such shelf, the Ross Ice Shelf, is the size of France.²¹ Occasionally, huge chunks of the ice shelf break away and float into the Southern Ocean, presenting enormous hazards to ships transiting the area.²²

Antarctica is also isolated. South America is 1000 kilometers (620 miles) away across the roughest stretch of water in the world. Australia is 2500 kilometers (1550 miles) away, and Africa is 4000 kilometers (2500 miles) away.²³ The continent and its ice shelves are separated from the rest of the world by a barrier of shifting pack ice and a stormy Southern Ocean. The pack ice varies in size according to the seasons. In summer, its ice shrinks and breaks apart, forming channels that can be kept clear for ships. In winter, it can extend as far north as Tierra del Fuego in South America. During severe winters its expansion can double the size of Antarctica's summer ice cover.²⁴

¹² *Id.*

¹³ J. MAY, *THE GREENPEACE BOOK OF ANTARCTICA* 16 (1988).

¹⁴ B. BREWSTER, *ANTARCTICA: WILDERNESS AT RISK* 5 (1982).

¹⁵ 13 *THE NEW ENCYCLOPEDIA BRITANNICA* 847 (15th ed. 1975).

¹⁶ *POLAR PROSPECTS*, *supra* note 9, at 126.

¹⁷ J. MAY, *supra* note 13, at 16.

¹⁸ *POLAR REGIONS ATLAS*, *supra* note 10, at 35.

¹⁹ B. BREWSTER, *supra* note 14, at 1.

²⁰ *POLAR REGIONS ATLAS*, *supra* note 10, at 36.

²¹ J. MAY, *supra* note 13, at 30.

²² Swithinbank, *The Ice Shelves*, in *ANTARCTICA* 202 (T. Hatherton ed. 1965).

²³ J. MAY, *supra* note 13, at 18.

²⁴ H. KING, *THE ANTARCTIC* 2 (1969).

B. Potential Mineral Resources

Despite the obvious difficulties associated with attempting any mineral extraction in such a harsh and remote continent, numerous countries and multinational corporations have expressed interest in exploring Antarctica for mineral wealth.²⁵ Although there are no known commercially valuable deposits of either hydrocarbons or hard minerals in Antarctica, many scientists believe that Antarctica may contain economically valuable mineral resources.²⁶ This belief is based on a geological theory known as plate tectonics.

According to plate tectonics theory, the earth is made up of rigid plates that move with respect to one another a few centimeters per year.²⁷ Approximately 200 million years ago, the continents of the Southern Hemisphere were joined together into a supercontinent known as Gondwanaland.²⁸ One way of accessing Antarctica's potential mineral wealth is by analogizing to the mineral wealth found on the continents that once were joined to Antarctica.²⁹

According to geologists, Australia, India, and parts of southern Africa once were joined with eastern Antarctica. All of these areas

²⁵ As early as 1969, the governments of the United States, Australia, and New Zealand were approached by commercial interests for prospecting rights in Antarctica. In 1969, New Zealand received an application for developing a large area for petroleum. In 1970, Texaco asked the United States how it could obtain a license for oil exploration in the Atlantic section of Antarctica. In 1979-1980, Gulf was reported to have had a survey ship working in the South Georgia area, and the company proposed joint surveys between the government and private companies. As a global strategy, Gulf "is raising cash to carry out the huge programme of [Antarctic] exploration that alone will ensure its survival as a leading force in the world's oil supply." B. BREWSTER, *supra* note 14, at 90. See also Friedheim & Akaha, *Antarctic Resources and International Law: Japan, the United States, and the Future of Antarctica*, 16 *ECOLOGY L.Q.* 119, 133-34 (1989) (reporting that in 1975, Texas Geophysical requested from the United States exclusive rights to explore the Ross and Weddell Seas, but was turned down).

Several nations also have engaged in mineral exploration in Antarctica. The United States, Norway, Germany, Japan, Great Britain, France, the U.S.S.R., and Poland all have been searching recently for oil under the guise of purely scientific research despite a moratorium on commercial exploration for resources. See Luard, *Who Owns the Antarctic*, 1984 *FOREIGN AFF.* 1175. In 1985, the German ship *Polarstern* found evidence that rock just beneath the sea floor contained organic material suggestive of petroleum at lower depths. In late 1986, a New Zealand team drilled into the Ross Sea and found a six-foot-thick layer of sand stained by a waxy hydrocarbon residue indicating that petroleum had existed there in the past. See Mitchell, *Undermining Antarctica: A Pact to Regulate Mineral Exploitation in Antarctica Threatens That Unique Environment*, *TECH. REV.*, Feb.-Mar. 1988, at 48. More recently, the Japanese Agency of Natural Resources and Energy (ANRE) has been exploring for minerals in the seas surrounding Antarctica. See Friedheim & Akaha, *supra*, at 138.

²⁶ POLAR PROSPECTS, *supra* note 9, at 93.

²⁷ See generally Elliot, *Tectonics of Antarctica: A Review*, 275A *AM. J. SCI.* 45 (1976).

²⁸ *Id.*

²⁹ POLAR PROSPECTS, *supra* note 9, at 99.

contain Precambrian Shield rocks that hold some of the world's most valuable mineral deposits. Minimal exploration in Antarctica has revealed that the continent contains huge quantities of coal, as well as deposits of platinum, chromite, copper, molybdenum, gold, silver, and many other minerals.³⁰ Nevertheless, minerals experts think that the price of these minerals would have to rise substantially before they would become commercially exploitable.³¹

Currently, no one knows if any valuable hydrocarbon deposits exist. Nevertheless, interest in Antarctic oil has been building since a United States scientific drilling ship, the *Glomar Challenger*, discovered the presence of gaseous hydrocarbons in three out of four holes drilled in the Ross Sea continental shelf.³² Although, the appearance of hydrocarbons does not indicate necessarily the presence of commercial oil or gas deposits,³³ scientists consider the Ross Sea area promising for future oil and gas exploration. According to current theories about Gondwanaland, the Ross Sea once adjoined the Gippsland basin of Australia.³⁴ In 1974 that area of Australia had proven reserves of 2.5 billion barrels of oil and 220 billion cubic meters of gas.³⁵

Without more drilling, estimates of oil reserves are not likely to be accurate.³⁶ Nevertheless, estimates have been widely quoted.³⁷ In 1974 and again in 1983, the United States Geologic Survey studied Antarctica's mineral potential.³⁸ This research, known as the Wright-Williams Report,³⁹ estimated that the Ross Sea area contained forty-five billion barrels of oil, of which only fifteen billion barrels could be extracted.⁴⁰ This amount of oil is comparable to the amount of oil on the United States Atlantic continental shelf and less than the thirty to sixty billion barrels believed to be off the coast of Alaska.⁴¹

³⁰ For a discussion of the current knowledge of hard mineral wealth in Antarctica, see D. SHAPELY, *THE SEVENTH CONTINENT: ANTARCTICA IN A RESOURCE AGE* 134-45 (1985).

³¹ *See id.* at 138-39.

³² *Id.* at 124.

³³ *Id.*

³⁴ *Id.* at 130.

³⁵ *Id.*

³⁶ POLAR PROSPECTS, *supra* note 9, at 107-09.

³⁷ B. BREWSTER, *supra* note 14, at 89.

³⁸ D. SHAPELY, *supra* note 30, at 124-25.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.* In 1979, a representative of Gulf Oil stated that the oil potential of the two most likely areas in the Ross and Weddell Seas was in the range of 50 billion barrels, but probably much more. By comparison, the North Slope oilfield of Alaska is believed to contain 8 billion barrels. *Id.*

Although these published estimates appear to be fueling the international quest for Antarctic minerals, there is no way to know the petroleum potential of the offshore basins without further study of the underlying geology.⁴²

C. Commercial Viability

Drilling for oil in Antarctica may become technologically feasible. Recent scientific drilling demonstrates that offshore geologic surveys are possible using existing technology.⁴³ Furthermore, the past decade has witnessed the oil industry's entry into increasingly challenging environments such as the North Sea, the coast of Labrador, and the Beaufort Sea.⁴⁴ Proponents of Antarctic mineral exploration point to the success of oil drilling operations in the Arctic as an indication that such drilling will become technologically feasible in the Antarctic.⁴⁵

Nevertheless, drilling will be more difficult in the Antarctic than in the Arctic. The Ross Sea differs from the Arctic in several ways. Most importantly, the waters off Antarctica are very deep. Experience in the Arctic, most notably in the Beaufort Sea, has been limited to shallow inshore waters.⁴⁶ Because of the pressures of high winds and ice, companies operating in the Beaufort Sea have used artificial gravel islands instead of the conventional drilling platforms. Such islands would be impossible in the Antarctic, where the water depth is an average of ten to twenty times deeper than that of the Arctic.⁴⁷ Furthermore, the waves in the Beaufort Sea are moderate compared to the waves of the Ross Sea.⁴⁸ Finally, the icebergs encountered in Antarctica are gigantic. Although crews operating off the coast of Labrador have developed methods to avoid icebergs while operating oil platforms, those methods are not applicable to the Antarctic due to the immense size of Antarctic icebergs.⁴⁹ The only existing option is to make the drilling rigs capable of quick evacuation.⁵⁰ These gigantic icebergs often scour the seabed in the

⁴² B. BREWSTER, *supra* note 14, at 89.

⁴³ D. SHAPELY, *supra* note 30, at 124.

⁴⁴ B. BREWSTER, *supra* note 14, at 93.

⁴⁵ See F.M. AUBURN, *ANTARCTIC LAW AND POLITICS* 248 (1982).

⁴⁶ A. PARSONS, *ANTARCTICA: THE NEXT DECADE* 91 (1987).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.* at 92.

⁵⁰ *Id.*

Antarctic. As a result, sub-sea pipelines and wellheads will have to be buried below the depth of maximum scour to be protected.⁵¹

Even if technology could be developed that would allow operators to drill safely in the Antarctic, there would still be enormous problems associated with oil production. Because of the build-up of ice in the winter months, the whole production system would have to be below the surface and would have to function nine months of the year without surface maintenance.⁵² Additionally, there would be tremendous problems designing and building a storage and export facility. There are no analogous oil producing areas anywhere in the world.

D. Antarctica's Significance

Antarctica's importance may not be immediately apparent. Antarctica is no person's home. Most of the continent is covered by a frozen ice sheet that supports very limited life forms. Although the surrounding ocean is home to a complex and varied ecosystem, it is separated from the rest of the planet, and consequently there is little danger that human life will be threatened. Nevertheless, the integrity of the Antarctic environment is important for at least three reasons. First, Antarctica is important to scientists. Second, it plays a major role in stabilizing the planetary environment. Finally, Antarctica is one of the last remaining wilderness areas on earth.

1. Scientific Value

Antarctica's importance as a scientific laboratory was recognized officially by the signing of the Antarctic Treaty in 1959.⁵³ Article II of the Treaty states that freedom of scientific investigation and cooperation shall continue.⁵⁴ Moreover, all scientific research is supposed to be shared.⁵⁵ As a result, Antarctica is host to some fifty science stations operated by twenty-one different countries. The largest such station, the United States' McMurdo Station, is home to approximately 1200 scientists during the summer months.⁵⁶

⁵¹ *Id.*

⁵² *Id.* at 93.

⁵³ See *infra* notes 79-90 and accompanying text.

⁵⁴ Antarctic Treaty, *supra* note 2, art. II, 12 U.S.T. at 795, T.I.A.S. No. 4780, at 2, 402 U.N.T.S. at 74.

⁵⁵ *Id.* art. III, 12 U.S.T. at 796, T.I.A.S. No. 4780, at 3, 402 U.N.T.S. at 74 (stating that scientific program plans, personnel, observations and results shall be freely exchanged).

⁵⁶ Bogart, *supra* note 8, at 37.

Antarctica offers scientists ideal opportunities to study global environmental problems, including sea-level change, global climate, and global levels of atmospheric constituents such as ozone. In recent years, Antarctica's importance as a scientific laboratory increased due to greater awareness of these problems. Antarctica's isolation from the rest of the planet, combined with its harsh climate, makes it relatively unaffected by man. Therefore, it provides a base line for studies on global pollution of various kinds.⁵⁷

Antarctica already has provided scientists with a number of important findings. Its snow and ice contain a history of the earth's pollution levels over the last few hundred thousand years.⁵⁸ The discovery of a hole in the ozone was made by Antarctic scientists.⁵⁹ Antarctic scientists are able to monitor global warming by measuring carbon dioxide levels in the otherwise unpolluted Antarctic atmosphere.⁶⁰ Theories about the impact of the greenhouse effect on the global sea level came from research in Antarctica.⁶¹ By studying the West Antarctic Ice Sheet, scientists were able to determine that a temperature rise of five degrees centigrade will cause the ice shelves to disintegrate, leading to a rise of five meters in the world's sea level.⁶² Antarctica's importance as a scientific laboratory depends on the existence of a relatively undisturbed ecosystem.⁶³ Negative impacts of mineral exploration might threaten the continent's scientific value.⁶⁴

2. Global Significance

Scientists have just begun to understand Antarctica's importance in stabilizing the global environment. Antarctica represents the planet's thermostat. Even in mid-summer, the Antarctic atmosphere serves as a global heat sink, drawing warm air from other continents and thus keeping them cooler than they otherwise would be.⁶⁵ Furthermore, its volume of ice effectively controls world sea level.⁶⁶

⁵⁷ B. BREWSTER, *supra* note 14, at 37.

⁵⁸ See CALYPSO LOG, *supra* note 1, at 14.

⁵⁹ Hall, *The World's Frozen Clean Room*, BUS. WK., Jan. 22, 1990, at 72.

⁶⁰ B. BREWSTER, *supra* note 14, at 37, 39.

⁶¹ *Id.* at 39.

⁶² *Id.*

⁶³ *Id.* at 37.

⁶⁴ *Id.* at 47.

⁶⁵ *Id.* at 38.

⁶⁶ See *id.* at 38-39.

The seas surrounding Antarctica are also important. The Southern Ocean teems with tiny zooplankton called krill.⁶⁷ The principal Antarctic krill concentrations lie within 200 miles of the continent in an area geologists believe is promising for oil exploration.⁶⁸ Almost all the other species in the Southern Ocean depend on krill for survival. Many predator species, such as whales, migrate throughout the world. Thus, a decrease in the population of the Antarctic krill would cause a decline in whale species worldwide.⁶⁹

3. Wilderness

Several environmental organizations argue that mineral exploration should be banned from Antarctica because of the continent's significance as one of the last undisturbed areas on the earth's surface.⁷⁰ In many ways this "wilderness argument" mirrors the two previous arguments. The argument from science stresses Antarctica's importance as a base line study area.⁷¹ The argument about the Antarctic's importance in balancing the global environment stresses the vital role Antarctica plays in keeping the planet livable.⁷² Both of those arguments emphasize Antarctica's benefit for human science and research.

The wilderness argument, in contrast to others, contends that the continent should be protected regardless of its scientific or global importance because it is important to preserve some areas of the planet from the influence of humanity.⁷³ Preserving the natural state of Antarctica could benefit humankind. For example, one could argue that Antarctica must be preserved so that future generations can experience what "true" wilderness is like. By keeping part of the planet unaffected by human intervention, future generations will be able to assess the changes that man has wrought to determine their relative value and harm. Nonetheless, at its root the wilderness argument is not based in utilitarianism. Rather, those who argue for

⁶⁷ "Krill are delicate, transparent, shrimp-like animals, pink or ocher in color, and measuring 3 to 5 centimeters long with knobby eyes and phosphorescent lights about their legs. They tend to swarm near the surface by day appearing as great reddish patches; their nighttime swarms look like twinkling underwater galaxies." For more detailed information and photographs, see J. MAY, *supra* note 13, at 80-81.

⁶⁸ See B. BREWSTER, *supra* note 14.

⁶⁹ *Id.* at 8.

⁷⁰ J. MAY, *supra* note 13, at 158.

⁷¹ See *supra* note 57 and accompanying text.

⁷² See *supra* notes 65-69 and accompanying text.

⁷³ See J. MAY, *supra* note 13, at 158.

preserving Antarctica as wilderness believe that some areas of the planet are sacred and should be left alone.

III. THE LEGAL REGIME

A. *The Antarctic Treaty*

The Antarctic Treaty was a natural outgrowth of the history of the continent. After a period of exploration, colonial powers began to claim parts of Antarctica. By the mid-1950s, seven countries—Argentina, Australia, Chile, France, New Zealand, and the United Kingdom—had laid claim to sections of the continent based upon the notions of discovery, occupation, geographic connections, and historic rights.⁷⁴ The claimants divided the continent into slices radiating from the South Pole.⁷⁵ The British, Chilean, and Argentine claims overlapped.⁷⁶ Five other countries—Belgium, Japan, South Africa, the Soviet Union, and the United States—operated in Antarctica, but refrained from making any claims of territory.⁷⁷ These five nations also refused to honor claims made by the others.⁷⁸

In 1957–1958, the twelve nations active in Antarctica participated in a year of scientific cooperation and experimentation known as the International Geophysical Year.⁷⁹ This cooperation led to the negotiation of the Antarctic Treaty.⁸⁰ The Treaty protects the continent as a research preserve with nations freely exchanging scientific information. The Treaty applies to the area south of sixty degrees latitude, including ice shelves, but not to the areas of high seas, where the rights of international law controls.⁸¹

To ensure friendly relations, the Treaty parties agreed that “Antarctica shall be used for peaceful purposes only,” and they banned “any measures of a military nature.”⁸² The Treaty also created the world’s first nuclear free zone.⁸³ To further the atmosphere of cooperation, the Treaty provides for the free exchange of scientific

⁷⁴ See D. SHAPELY, *supra* note 30, at 66–68.

⁷⁵ *Id.* at 68.

⁷⁶ *Id.*

⁷⁷ *Id.* at 67–68, 78–82.

⁷⁸ *Id.* at 63–64, 77–82.

⁷⁹ *Id.* at 83.

⁸⁰ See *id.* at 89.

⁸¹ B. BREWSTER, *supra* note 14, at 28.

⁸² Antarctic Treaty, *supra* note 2, art. I, 12 U.S.T. at 795, T.I.A.S. No. 4780, at 2, 402 U.N.T.S. at 72.

⁸³ *Id.* art. V, 12 U.S.T. at 796, T.I.A.S. No. 4780, at 3, 402 U.N.T.S. at 76.

information, personnel, and observations.⁸⁴ It also provides for verification procedures, under which "all areas of Antarctica, including all stations, installations and equipment . . . and all ships and aircraft at points of discharging or embarking cargoes and personnel in Antarctica . . . shall be open at all times to inspection" by observers designated by any one Consultative Party.⁸⁵

Article IV of the Treaty solved, at least temporarily, the deepest conflict between the Treaty parties—conflicts between those claiming sovereignty and those who refused to recognize those claims. Article IV states:

Nothing contained in the present Treaty . . . nor acts or activities taking place while the Treaty is in force . . . shall prejudice the respective positions of the parties in regard to territorial claims or constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty⁸⁶

Article IV helped to stabilize a web of competing national interests: among claimants; between claimants and nonclaimants; between the superpowers; and between rich nations able to maintain Antarctic presences and smaller ones, like Belgium and South Africa, which barely have done so.⁸⁷ By ignoring the sovereignty issue, the Consultative Parties were able to create a Treaty System.

The Treaty's most impressive achievement has been its durability. This durability is due largely to Article IX. Article IX calls for regular meetings "at suitable intervals and places, for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica and formulating, considering and recommending to their Governments measures in furtherance

⁸⁴ Article III reads:

In order to promote international cooperation in scientific investigation in Antarctica as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practical: (a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operation; (b) scientific personnel shall be exchanged in Antarctica between expeditions and stations; (c) scientific observations and results from Antarctica shall be exchanged and made freely available.

Id. art. III, 12 U.S.T. at 796, T.I.A.S. No. 4780, at 3, 402 U.N.T.S. at 74.

⁸⁵ *Id.* art. VII, 12 U.S.T. at 797, T.I.A.S. No. 4780, at 4, 402 U.N.T.S. at 76. A "Consultative Party" is a nation that has adopted the Treaty and been acknowledged a voting member because of its "substantial scientific research activity on the continent." *Id.*

⁸⁶ *Id.* art. IV, 12 U.S.T. at 796, T.I.A.S. No. 4780, at 3, 402 U.N.T.S. at 74.

⁸⁷ D. SHAPELY, *supra* note 30, at 94.

of the principles and objectives of the Treaty."⁸⁸ Because of Article IX, a series of meetings have been held since 1959. These meetings have resulted in a comprehensive system of rules and regulations known as the Antarctic Treaty System.⁸⁹ The Antarctic Treaty System includes three formal treaties that the Consultative Parties have negotiated, adopted, and ratified. It also includes numerous less formal agreements known as recommendations.⁹⁰ These additional recommendations and treaties fill gaps left by the original Treaty.

In 1964, the Consultative Parties adopted the first of these treaties, the Agreed Measures for the Conservation of Antarctic Fauna and Flora. The Agreed Measures protects native Antarctic mammals and birds and preserves several areas as off limits from human interference.⁹¹ In 1972, the Consultative Parties adopted the second treaty, the London Convention for the Conservation of Antarctic Seals. This Convention prohibits the taking of some seal species and sets quotas on other species. Enforcement depends on self-policing by the signatory nations.⁹² In 1980, in response to heavy fishing, the Consultative Parties adopted the Canberra Convention on the Conservation of Antarctic Marine Living Resources (CAMLR).⁹³ CAMLR calls for the conservation and management of all living resources within Antarctica's ecosystem. Like the Seal Convention, enforcement is left to the individual nations.

The Antarctic Treaty peacefully coordinated all the nations with interests in Antarctica. Unfortunately, it has several significant

⁸⁸ Antarctic Treaty, *supra* note 2, art. IX, 12 U.S.T. at 798, T.I.A.S. No. 4780, at 5, 402 U.N.T.S. at 78.

⁸⁹ See POLAR PROSPECTS, *supra* note 9, at 45.

⁹⁰ *Id.* at 44. Nearly 150 recommendations have been adopted since the Treaty went into affect. A wide range of activities are now regulated, including:

- cooperation in meteorology and in the exchange of meteorological data
- cooperation in telecommunications, including procedures for communicating among stations in Antarctica
- cooperation in air transport and logistics
- control of tourism, including development of guidance for visitors to Antarctica
- a recommended code of conduct for stations in Antarctica and recommendations for developing procedures to assess impacts of operations
- the preservation of historical sites

⁹¹ W.M. BUSH, 1 ANTARCTICA AND INTERNATIONAL LAW 146 (1982).

⁹² See Convention for the Conservation of Antarctic Seals, *opened for signature* June 1, 1972, 29 U.S.T. 441, T.I.A.S. No. 8826, 11 I.L.M. 251; see also Siniff, *Living Resources: Seals*, OCEANUS, Summer 1988, at 71-74.

⁹³ Convention on the Conservation of Antarctic Marine Living Resources, May 20, 1980, T.I.A.S. No. 10,240, 19 I.L.M. 841. For comment, see Lagoni, *Convention on the Conservation of Antarctic Marine Living Resources: A Model for the Use of a Common Good?*, in ANTARCTIC CHALLENGE 93-108 (Wolfrum ed. 1984).

weaknesses. First, some observers contend that the Treaty creates an exclusive club giving the wealthier nations control over Antarctica.⁹⁴ Although Article VIII permits any member of the United Nations to accede to the treaty by ratifying it, a nation cannot become a voting member of the Treaty (a Consultative Party) unless it engages in "substantial scientific research activity."⁹⁵ Currently thirty-nine nations have acceded, of which twenty-two are Consultative Parties.⁹⁶ More than three-fourths of the world's population is now represented.⁹⁷ Nevertheless, to become a Consultative Party, a nation must be wealthy enough to undertake a scientific research program.⁹⁸

A second weakness is the Treaty System's lack of enforcement mechanisms. Because the Treaty ignores territorial claims, it is difficult to determine which nations are responsible for environmental problems. Consultative Parties have been hesitant to criticize each other's environmental records. For example, in the early 1980s the French started to construct an airfield at Dumont d'Urville in an area they had claimed in the years before the Treaty.⁹⁹ While preparing the landing strip, they injured and killed many penguins and other birds and destroyed the habitat of others.¹⁰⁰ None of the Consultative Parties responded to the French actions.¹⁰¹ The French government stopped the project only after Greenpeace put pressure on them.¹⁰² The lack of any enforcement provisions in the Treaty can

⁹⁴ G. TRIGGS, *THE ANTARCTIC TREATY REGIME* 64 (1987).

⁹⁵ Antarctic Treaty, *supra* note 2, art. IX, 12 U.S.T. at 798, T.I.A.S. No. 4780, at 5, 402 U.N.T.S. at 79.

⁹⁶ Since 1959, the following 10 nations have become Consultative Parties: Poland (1977), Federal Republic of Germany (1981), Brazil (1983), India (1983), People's Republic of China (1985), Uruguay (1985), German Democratic Republic (1987), Italy (1988), Spain (1988), and Sweden (1988). In addition, the following nations have acceded to the Treaty without conducting "sufficient scientific activity" to become a Consultative Party: Czechoslovakia, Denmark, The Netherlands, Rumania, Bulgaria, Papua New Guinea, Peru, Hungary, Finland, Cuba, Republic of Korea, Democratic Peoples Republic of Korea, Greece, Austria, Ecuador, Canada, and Colombia.

It is worth noting that almost all of the acceding members and all of the Consultative Parties did not join until after the oil crisis of 1973 and after "scientific exploration" established that Antarctica probably contains a fairly significant amount of petroleum.

⁹⁷ POLAR PROSPECTS, *supra* note 9, at 45.

⁹⁸ In recent years, India, Brazil, China, Uruguay, Poland, Italy, West Germany, and East Germany have become Consultative Parties, meaning they now can participate in the decisionmaking process.

⁹⁹ Bogart, *supra* note 8, at 11.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

result in significant environmental damage before any international pressure is exerted.

B. CRAMRA

CRAMRA is the most recent treaty signed by the Consultative Parties. After it was negotiated, CRAMRA was heralded as "one of the strongest pacts of environmental protection that has ever been negotiated."¹⁰³ However, support for CRAMRA has waned. At the most recent Antarctic Treaty meeting held in Chile in December 1990, the Treaty members divided over the issue of future mineral exploitation in Antarctica.¹⁰⁴ Approximately ten nations wanted a permanent ban on mineral exploration.¹⁰⁵ Others, led by Britain and Japan, wanted to revive CRAMRA.¹⁰⁶ At the present time, CRAMRA does not have the votes it needs to be ratified and probably never will be revived.¹⁰⁷ Instead, a majority of the Consultative Parties support the World Park proposal.¹⁰⁸

Despite its current lack of support, CRAMRA still represents one possible solution to dealing with future mineral exploitation conflicts. Moreover, it has been at the center of the current controversy over the future of Antarctica. Many nations, including the United States, supported CRAMRA until recently.¹⁰⁹ Some of these nations still support some kind of minerals regime. As a result, CRAMRA may be utilized by negotiators as a framework for any future minerals negotiations. CRAMRA presents a possible solution to the uncertainty about the validity of mineral prospecting in Antarctica.

CRAMRA's proponents contend that CRAMRA will protect the environment while easing tensions over mineral development. Furthermore, they argue that the World Park proposal is unrealistic in light of our global demand for scarce resources.¹¹⁰ By addressing

¹⁰³ Hall, *supra* note 59, at 72.

¹⁰⁴ Crawford, *supra* note 5, at 8.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ *See, e.g.*, Hunt, *supra* note 6, at 15.

¹⁰⁸ The Independent reports that New Zealand, Australia, and France led a group of 10 nations who support a permanent ban on mineral exploitation; the United States and Norway believe the parties should pass a binding moratorium on mining, followed by a regulatory framework. *Id.*

¹⁰⁹ Hall, *supra* note 59, at 72.

¹¹⁰ *See, e.g.*, Tetzeli, *Allocation of Mineral Resources in Antarctica: Problems and a Possible Solution*, 10 HASTINGS INT'L & COMP. L. REV. 525, 539-41 (1987); Rich, *A Minerals Regime for Antarctica*, 31 INT'L COMP. L.Q. 709 (1982). The United States government also argued in favor of CRAMRA. *See, e.g.*, POLAR PROSPECTS, *supra* note 9.

both environmental and mineral concerns, CRAMRA will allow the Treaty System to remain intact. Because CRAMRA is the result of years of negotiations, the Consultative Parties may have difficulty formulating such an agreement again.¹¹¹

The history of minerals negotiations supports the arguments of CRAMRA's proponents. When the Antarctic Treaty was negotiated in 1959, the minerals issue was so controversial that the subject of minerals exploration and exploitation was ignored. If it had been pursued, the parties would not have agreed to a Treaty at all.¹¹² Partially in response to concerns about minerals development, the original signatories to the Treaty agreed that the Treaty would run for only thirty years, at which time it would be open to review and renegotiation.¹¹³ From 1959 until 1972, it was not even possible to discuss the subject of minerals exploitation at any of the Consultative Meetings.¹¹⁴ The combination of the shock from oil shortages in the mid-1970s and the growing knowledge of the potential for oil in offshore Antarctic areas made it increasingly difficult for Treaty members to ignore the minerals issue.¹¹⁵ Knowing that the Treaty would be open for renegotiation in 1991, and feeling increased international pressure from the developing world in the United Nations General Assembly, the Consultative Parties began to fear that if they did not address the minerals issue, the international community might make it more difficult for them to control Antarctic policy.¹¹⁶ CRAMRA was negotiated in this political climate.¹¹⁷

The first real action on the minerals question was taken at the Ninth Consultative Meeting in London in 1977. At that time, the Consultative Parties were receiving criticism from the United Nations General Assembly for their domination of Antarctic matters. After the Law of the Sea Conference in 1974, the "Group of 77"¹¹⁸ voted to establish a one-nation, one-vote organization to oversee deep-sea mining.¹¹⁹ The Group of 77 then turned their attention to Antarctica. They argued that the continent should be incorporated

¹¹¹ See *infra* notes 114–127.

¹¹² Roberts, *International Co-operation for Antarctic Development: The Test for the Antarctic Treaty*, 19 POLAR REC. 107, 111 (1978).

¹¹³ D. SHAPELY, *supra* note 30, at 97.

¹¹⁴ Roberts, *supra* note 112, at 111.

¹¹⁵ D. SHAPELY, *supra* note 30, at 158.

¹¹⁶ *Id.* at 218.

¹¹⁷ *Id.* at 162.

¹¹⁸ See generally D. SHAPELY, *supra* note 30, at 149.

¹¹⁹ The term "The Group of 77" refers to a group of 112 developing nations who were organized at the time of the Third United Nations Conference on the Law of the Sea, which began in 1974 in Caracas, Venezuela.

into the Law of the Sea Conference as part of the common heritage of mankind.¹²⁰ The Group of 77 argued that the United Nations should govern Antarctica according to a one-nation, one-vote organization. The Group of 77's demands frightened the Consultative Parties into beginning serious minerals negotiations.¹²¹ The Consultative Parties did not want the United Nations to assert any influence over the region and resisted any suggestion that the United Nations should act with respect to Antarctica.¹²² As a result, the Consultative Parties adopted a policy known as "voluntary restraint."¹²³ Under this policy, they agreed to "urge their nationals and other States to refrain from all exploration and exploitation of Antarctic mineral resources while making . . . timely adoption of an agreed regime concerning Antarctic mineral resource activities."¹²⁴

On June 2, 1988, after six years of negotiations, CRAMRA was adopted.¹²⁵ CRAMRA seeks to balance the Antarctic Treaty's interest in protecting the environment with creating a workable system for the development of mineral resources.¹²⁶ At the same time that CRAMRA was adopted, the Consultative Parties reaffirmed the "voluntary restraint" policy in an agreement known as the Final Act of the Fourth Special Antarctic Treaty Consultative Meeting on Antarctic Mineral Resources (Final Act).¹²⁷ The Final Act explicitly continues the policy of voluntary restraint, but goes even further by prohibiting prospecting.¹²⁸

Although all of the Consultative Parties signed and initialed CRAMRA, it cannot come into force until it is ratified by sixteen of the twenty parties.¹²⁹ The sixteen ratifying Consultative Parties must include five developing and eleven developed countries.¹³⁰ The regime set up by CRAMRA does not contain a detailed mining code.

¹²⁰ D. SHAPELY, *supra* note 30, at 150.

¹²¹ *Id.* at 218.

¹²² *Id.* at 150.

¹²³ For a complete discussion of Recommendation IX-1, the recommendation that all Treaty parties restrain from any minerals exploration until a minerals regime is negotiated, see W.M. BUSH, 1 ANTARCTICA AND INTERNATIONAL LAW 343-47 (1982).

¹²⁴ *Id.* at 345, para. 8.

¹²⁵ For the complete text of the Convention, see CRAMRA, *supra* note 3.

¹²⁶ CRAMRA defines mineral resources as "all non-living natural non-renewable resources, including fossil fuels, metallic and non-metallic minerals." *Id.* art. 1, para. 6, 27 I.L.M. at 869.

¹²⁷ June 2, 1988, 27 I.L.M. 865 [hereinafter Final Act]. Many nations, however, have ignored the "voluntary restraint" agreement by conducting prospecting surveys of the hitherto unexplored Antarctic continental shelf under the guise of scientific studies. See D. SHAPELY, *supra* note 30, at 139.

¹²⁸ Final Act, *supra* note 127, at 865.

¹²⁹ CRAMRA, *supra* note 3, art. 62, para. 1, 27 I.L.M. at 896.

¹³⁰ *Id.*

Rather, it sets basic standards for mineral exploitation and leaves the creation of more detailed guidelines to the new institutions established by the Convention.

1. CRAMRA Institutions

The first and most important institution of CRAMRA is the Antarctic Mineral Resources Commission (Commission).¹³¹ The Commission is charged with the administration of possible mineral resource activities in Antarctica.¹³² The Commission decides which areas in Antarctica should be opened up for possible mineral exploration and development.¹³³ It also is charged with designating areas where mineral resource activities will be prohibited.¹³⁴ The Commission has the authority to place environmental conditions and guidelines on areas it opens for exploration.¹³⁵ It is also responsible for all budgetary matters,¹³⁶ including all fees and levies,¹³⁷ and the disposition of all revenues.¹³⁸

The Commission is the only decisionmaking body set up by CRAMRA to which all of the Consultative Parties belong. Along with the Consultative Parties, other parties to the Convention that either currently are engaged in substantial research relevant to mineral resource activities, or currently are sponsoring Antarctic mineral resource exploration or development, are also members of the Commission.¹³⁹ Therefore, voting membership in the Commission is open to all countries who have previously operated in Antarctica, as well as all those who have the resources to conduct substantial research or to engage in mineral resource activities.

On substantive matters, Commission decisions are taken by a three-fourths majority vote.¹⁴⁰ A decision to identify an area for exploration and development and decisions on budgetary matters require consensus.¹⁴¹ Under the Antarctic Treaty, consensus is defined as the absence of a formal objection.¹⁴² Procedural questions

¹³¹ *Id.* art. 18, para. 1, 27 I.L.M. at 876.

¹³² *Id.* art. 21, para. 1, 27 I.L.M. at 878-79.

¹³³ *Id.* art. 21, para. 1(d), 27 I.L.M. at 878.

¹³⁴ *Id.* art. 21, para. 1(b), 27 I.L.M. at 878.

¹³⁵ *Id.* art. 21, para. 1(c), 27 I.L.M. at 878.

¹³⁶ *Id.* art. 21, para. 1(o), 27 I.L.M. at 878.

¹³⁷ *Id.* art. 21, paras. 1(p), (q), 27 I.L.M. at 878.

¹³⁸ *Id.* art. 21, para. 1(r), 27 I.L.M. at 878.

¹³⁹ *Id.* art. 18, para. 2, 27 I.L.M. at 876-77.

¹⁴⁰ *Id.* art. 22, para. 1, 27 I.L.M. at 879.

¹⁴¹ *Id.* art. 22, paras. 2(a), (c), 27 I.L.M. at 879.

¹⁴² *Id.* art. 22, para. 5, 27 I.L.M. at 879.

are decided by a simple majority vote.¹⁴³ When a question arises as to whether a matter is one of substance or not, that matter is treated as one of substance unless otherwise decided by a three-fourths majority of the members present and voting.¹⁴⁴

If the Commission decides to open an area for exploration and development, the Commission will appoint a Regulatory Committee for that area.¹⁴⁵ Each Committee will consist of ten members selected from Commission members, four of which must be claimants and six of which must be nonclaimants.¹⁴⁶ Included on the Committee must be the members that have made claims in the area being considered,¹⁴⁷ as well as the United States and the Soviet Union.¹⁴⁸ Three of the ten members must be developing countries. In addition to these ten members, the Commission member that proposed opening the area is added as a member if it is not already chosen under the preceding guidelines.¹⁴⁹ The proposing member will remain a member until an application for exploration is lodged. Those parties that lodge application permits and those parties whose applications result in approved Management Schemes remain Committee members while they are operating in the area.¹⁵⁰

A Regulatory Committee is responsible for overseeing its assigned geographical area.¹⁵¹ It promulgates detailed requirements for exploration and development consistent with the guidelines of the Commission.¹⁵² The Regulatory Committee is the primary manager of its assigned area and has the power to set the conduct of operators in its area,¹⁵³ to issue or deny exploration permits, to enter into contracts with developers, and to suspend, modify, or cancel contracts.¹⁵⁴ In many ways the decisions of the Committee are final because the Commission is limited in its ability to overturn Committee decisions.¹⁵⁵

¹⁴³ *Id.* art. 22, para. 3, 27 I.L.M. at 879.

¹⁴⁴ *Id.* art. 22, para. 1, 27 I.L.M. at 879.

¹⁴⁵ *Id.* art. 29, para. 1, 27 I.L.M. at 882.

¹⁴⁶ *Id.* art. 29, para. 2(c), 27 I.L.M. at 882. A claimant is a nation that has made a claim to a portion of Antarctica.

¹⁴⁷ *Id.* art. 29, para. 2(a), 27 I.L.M. at 882.

¹⁴⁸ *Id.* art. 29, para. 2(b), 27 I.L.M. at 882.

¹⁴⁹ *Id.* art. 29, para. 6(a), 27 I.L.M. at 882-83.

¹⁵⁰ *Id.* art. 29, para. 6(b), 27 I.L.M. at 883. A Management Scheme grants a party an exclusive right to exploration and prescribes the terms and conditions with which the party must comply in order to maintain such rights. *Id.* art. 47, 27 I.L.M. at 891.

¹⁵¹ *Id.* art. 31, 27 I.L.M. at 883.

¹⁵² *Id.* arts. 43(3), 47, 27 I.L.M. at 889, 891.

¹⁵³ *Id.*

¹⁵⁴ *Id.* arts. 31(1e), 51, 54, 27 I.L.M. at 883, 892-93, 893-94.

¹⁵⁵ *Id.* art. 49, 27 I.L.M. at 892. Article 49 gives the Commission the right to review the

Three other institutions are envisioned by CRAMRA: the Special Meeting of Parties, the Secretariat, and the Advisory Committee.¹⁵⁶ These institutions do not make decisions, but nevertheless have some input into the decisionmaking process. The Special Meeting of Parties is composed of all parties to CRAMRA.¹⁵⁷ The Special Meeting's only purpose is to present its views about whether a particular area should be opened. It is designed to give input in decisions of the Commission to all those states acceding to CRAMRA.¹⁵⁸ A Secretariat may be established by the Commission as necessary to support the work of the other institutions of CRAMRA.¹⁵⁹ The Scientific, Technical, and Environmental Advisory Committee's purposes are to give expert advice to both the Commission and the Regulatory Committees on all technical questions.¹⁶⁰ Membership is open to all parties to CRAMRA.¹⁶¹

2. Operation of CRAMRA

There are three stages to the mineral exploitation process envisioned by CRAMRA: prospecting, exploration, and development.¹⁶² As soon as CRAMRA enters into force, any party to CRAMRA may begin prospecting in Antarctica without prior approval.¹⁶³ CRAMRA effectively overrides the Final Act because it creates a mechanism through which mineral exploitation can begin.¹⁶⁴ A prospector's

Committee's decisions. However, the Commission "shall not assume the functions of the Regulatory Committee, nor shall it substitute its discretion for that of the Regulatory Committee." *Id.* The Commission may only ask the Regulatory Committee to reconsider a decision. It may not overturn a decision on its own. *Id.*

¹⁵⁶ *Id.* arts. 23, 28, 33, 27 I.L.M. at 879, 881, 884.

¹⁵⁷ *Id.* art. 28(2), 27 I.L.M. at 881.

¹⁵⁸ *Id.* arts. 23, 40, 27 I.L.M. at 881-82, 888.

¹⁵⁹ *Id.* art. 33, 27 I.L.M. at 884.

¹⁶⁰ *Id.* art. 26, 27 I.L.M. at 880-81.

¹⁶¹ *Id.* art. 23, 27 I.L.M. at 879.

¹⁶² *Id.* art. 1, paras. 7-10, 27 I.L.M. at 869.

¹⁶³ Prospecting is the initial stage of mineral resource exploitation. CRAMRA defines prospecting as

activities, including logistic support, aimed at identifying areas of mineral resource potential for possible exploration and development, including geological, geochemical, and geophysical investigations and field observations, the use of remote sensing techniques and collection of surface, sea floor and sub-ice samples. Such activities do not include dredging and excavations, except for the purpose of obtaining small-scale samples, or drilling, except shallow drilling into rock and sediment to depths not exceeding 25 meters or other such depth as the Commission may determine for particular circumstances.

Id. art. 1(8), 27 I.L.M. at 869.

¹⁶⁴ For a discussion of the Final Act, see *supra* text accompanying notes 125-28.

“sponsoring state” must ensure that the prospector meets the financial and technical requirements of the Convention.¹⁶⁵ The sponsoring state also is responsible for notifying the Commission of the planned prospecting and providing an environmental impact assessment.¹⁶⁶ The sponsoring state is the nation that petitions the Commission on behalf of an operator. Operators are strictly liable for any damage caused by their activities.¹⁶⁷ If a prospector obtains commercially valuable information, it can keep the information secret for at least ten years.¹⁶⁸ A prospector, however, does not automatically gain any right to the mineral resources it discovers.¹⁶⁹

A prospector who determines that an area contains viable mineral deposits may ask its sponsoring state to ask the Commission for permission to engage in exploration. Exploration is defined as activities aimed at identifying and evaluating specific mineral resource occurrences to determine their nature and size.¹⁷⁰ The Commission must decide by consensus to open an area for exploration.¹⁷¹ If an area is opened, the Commission will set up a Regulatory Committee for the area. The Regulatory Committee accepts applications from

¹⁶⁵ CRAMRA, *supra* note 2, art. 37(3)(a), 27 I.L.M. at 886. For the definition of a sponsoring state, see *id.* art. 1(12), 27 I.L.M. at 869. Article 8 defines the financial and technical responsibility requirements for an operator. *Id.* art. 8, 27 I.L.M. at 872-73. Article 8(2) holds an operator strictly liable for: (a) damage to the Antarctic environment; (b) damage to an established use such as the operation of scientific stations; (c) loss or damage to property of a third party or loss of life; and (d) reimbursement of reasonable costs to anyone who incurred them as a result of necessary response action where mineral activities result in, or threaten to result in, damage to the Antarctic environment. See *id.* art. 8(2), 27 I.L.M. at 872.

¹⁶⁶ A sponsoring state's responsibilities are laid out in article 37(7). *Id.* art. 37(7), 27 I.L.M. at 886. Article 4(2) states that no mineral activity shall occur until an environmental assessment has been made. *Id.* art. 4(2), 27 I.L.M. at 871. The environmental assessment shall include a finding that the proposed activity would not cause:

- (a) significant adverse effects on air and water quality;
- (b) significant changes in atmospheric, terrestrial or marine environments;
- (c) significant changes in the distribution, abundance or productivity of populations of species of fauna or flora;
- (d) further jeopardy to endangered or threatened species or populations of such species; or
- (e) degradation of, or substantial risk to, areas of special biological, scientific, historic, aesthetic or wilderness significance.

Id.

¹⁶⁷ See *supra* note 165 for a list of some of the activities for which the operator is held strictly liable. Under article 8(4) an operator is not held liable if the damage was the result of an event constituting a natural disaster of exceptional character that reasonably could not have been foreseen or an armed conflict or an act of terrorism. *Id.* art. 8(4), 27 I.L.M. at 873.

¹⁶⁸ *Id.* arts. 37(10), 37(12), 27 I.L.M. at 887.

¹⁶⁹ *Id.* art. 37(1), 27 I.L.M. at 886.

¹⁷⁰ *Id.* art. 1(9), 27 I.L.M. at 869.

¹⁷¹ *Id.* art. 41, 27 I.L.M. at 888.

any interested operators and then either issues an exploration permit or denies exploration. If exploration is permitted, the Regulatory Committee develops a contract or "Management Scheme." The Management Scheme gives the chosen operator exclusive rights to exploration, as well as a presumptive right to development of the specified mineral resources at a specific site within an area.¹⁷² The Management Scheme also defines the responsibilities of the operator.

The holder of an exploration permit may apply at any time for a development permit.¹⁷³ Development is defined as activities that take place after exploration and are aimed at exploitation of mineral resource deposits.¹⁷⁴ Before issuing a development permit, the appropriate Regulatory Committee determines whether the original contract needs modification.¹⁷⁵ The Regulatory Committee may revise the original contract only if the development application modifies the planned development previously envisioned or if the development would cause previously unforeseen impacts on the Antarctic environment.¹⁷⁶ Once the Regulatory Committee has reviewed and approved the development permit, the operator can begin development of the resource.¹⁷⁷

C. World Park

CRAMRA is much more detailed than the preceding summary. The foregoing section, however, provides a glimpse of the proposed system and serves as a basis for further discussion. Before examining the problems of CRAMRA, this Article explains the World Park proposal. Those who have attacked CRAMRA because they thought it would be destructive to the Antarctic environment have generally supported the idea of creating a World Park. To facilitate the comparison of the two regimes, the following section briefly describes the World Park option.

The World Park idea originated at the Second World Conference on National Parks in 1972.¹⁷⁸ The Conference's participants unanimously voted to delimit the Antarctic as an international park.¹⁷⁹ Since that time, several environmental groups persistently have

¹⁷² *Id.* arts. 45-48, 27 I.L.M. at 890-92.

¹⁷³ *Id.* art. 53, 27 I.L.M. at 893.

¹⁷⁴ *Id.* art. 1(10), 27 I.L.M. at 869.

¹⁷⁵ *Id.* art. 54(3), 27 I.L.M. at 893.

¹⁷⁶ *Id.*

¹⁷⁷ *Id.* art. 54(5), 27 I.L.M. at 894.

¹⁷⁸ J. MAY, *supra* note 13, at 158.

¹⁷⁹ Note, *Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise*, 11 BROOKLYN J. INT'L L. 65 n.103 (1985).

urged the Consultative Parties to set Antarctica aside as a World Park. Their World Park proposal would be easy to implement. The proposal advocated by Greenpeace is a prototype of the environmentalists' proposals.¹⁸⁰ Greenpeace contends that there is no need to replace the Antarctic Treaty System. As a result, Antarctica would remain demilitarized and free of nuclear activity. Scientific research would continue to be given top priority on the continent, and there would be even greater coordination of scientific programs. The Greenpeace proposal is essentially a continuation of the status quo with a ban on mineral exploration and development.¹⁸¹

To enforce the ban on mineral exploration and development, an Antarctica Environmental Protection Agency (AEPA) would be created.¹⁸² The AEPA would undertake independent investigations and assessments of proposed scientific activities, conduct inspections of base facilities, monitor operations, and prepare environmental regulations for all activities taking place on the continent.¹⁸³

Until recently, Greenpeace's proposal was supported only by a small group of environmental organizations.¹⁸⁴ In 1984, the Consultative Parties would not even consider the idea of a World Park.¹⁸⁵ In August 1989, however, France and Australia announced that they would support protecting the continent as a World Park.¹⁸⁶ Because ratification of CRAMRA required their support, their announcement indicated that CRAMRA was in trouble. Following their announcement, Senator Albert Gore introduced in the United States Senate a resolution that rejected CRAMRA and called for a stronger Antarctic agreement that would preserve Antarctica as a global ecological commons that would be closed to the commercial exploitation of oil and mineral resources.¹⁸⁷ In October 1990, the United States House of Representatives approved a ban on mining operations in Antarctica.¹⁸⁸ Today, the World Park proposal appears a more politically viable option than CRAMRA.

¹⁸⁰ Greenpeace International, the International Union for the Conservation of Nature, Environmental Defense Fund, the Cousteau Society, and the Antarctic and Southern Ocean Coalition all have been active in advocating a World Park regime, and their proposals are all similar.

¹⁸¹ See generally J. MAY, *supra* note 13, at 158.

¹⁸² *Id.* at 159.

¹⁸³ For an overview of the Greenpeace proposal, see *id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ Lancaster, *U.S.-Backed Antarctic Pact Criticized; Prospecting Could Pave Way to Ecological Disaster, Opponents Say*, Wash. Post, Sept. 30, 1989, at A17.

¹⁸⁷ 135 CONG. REC. S11,906-07 (daily ed. Sept. 25, 1989) (statement of Sen. Gore).

¹⁸⁸ See The Antarctic Protection Act, H.R. 3977, 101st Cong., 2d Sess., 136 CONG. REC. H9605 (1990). The Antarctic Protection Act requires the Secretary of State to negotiate

IV. CRAMRA OR A WORLD PARK

This Article seeks to determine which proposal, CRAMRA or the World Park, is better for the Antarctic environment. At first glance, the obvious answer may seem to be the World Park. By preventing any minerals development, a world park necessarily would result in greater protection. There could be no risk of environmental harm if minerals were not being exploited. Upon a closer look, however, the case is not as clear. Political influences may make the world park idea unworkable. Consequently, it may be better to have a legal system like CRAMRA that could regulate mineral exploitation in the Antarctic. This section will analyze arguments for and against each proposal.

A. *The Argument for CRAMRA*

CRAMRA's proponents argue that, absent an agreement like CRAMRA, there will be unregulated exploitation of Antarctica's resources. They base their argument on several assumptions. First, CRAMRA's proponents claim that mineral exploitation currently is permitted under the Antarctic Treaty System. If CRAMRA is not ratified and mineral exploitation occurs, the Antarctic environment will be without protection. Second, even if the Consultative Parties prohibit mineral exploitation, the pressure to drill for oil may become so great that the Consultative Parties will allow oil to be drilled without creating necessary safeguards. Third, CRAMRA proponents argue that failure to enter into a minerals regime similar to CRAMRA may cause a breakdown of the entire Treaty System.

1. The Antarctic Treaty Permits Exploration

Supporters of CRAMRA argue that failure to ratify CRAMRA will result in unacceptable environmental risks. They argue that the Antarctic Treaty currently permits mineral exploitation activities as long as such activities are consistent with the principles of the Antarctic Treaty.¹⁸⁹ The Treaty is not expensive, and it proscribes only

international agreements to prohibit mining and to protect and preserve the Antarctic environment.

¹⁸⁹ Although the Antarctic Treaty does not forbid mineral exploration, it contains several recommendations for protecting the environment. See Antarctic Treaty, *supra* note 2. The only impediment to minerals exploration in the Treaty System is the Final Act. See Final Act, *supra* note 127, at 865. However, the Final Act only requires parties to refrain from minerals exploration as long as progress is being made on CRAMRA negotiation. See *id.*

enumerated activities.¹⁹⁰ Since the Treaty does not address mineral development, it does not prevent mineral exploitation in Antarctica.

Forces other than the Treaty, which could prevent a nation from acting unilaterally to exploit Antarctica's minerals, may have limited value. While a fear of causing an international dispute could deter some nations from exploiting Antarctica's minerals, that fear might be outweighed by a nation's substantial demand for scarce resources. Moreover, some nations may believe that their exploitation activities will not be challenged strongly. For example, the official position in the United States is that mineral exploitation activities are permitted as long as they conform to the principles of the Antarctic Treaty System.¹⁹¹ Thus, in the absence of a minerals convention, the United States might decide to act unilaterally.¹⁹²

2. Political Pressures Will Result in Exploration

Proponents of CRAMRA have argued that the agreement is necessary to avoid an unregulated scramble of mineral prospecting in Antarctica.¹⁹³ Neither the Antarctic Treaty nor the Final Act prevents mineral exploration. A party legitimately could claim that the Final Act was only valid while CRAMRA was being negotiated.¹⁹⁴ Because CRAMRA has not been ratified, the Final Act is no longer valid. Therefore, mineral exploration presently is permitted in Antarctica, and no environmental protections are in place.

Supporters of a minerals regime believe that oil will be discovered in Antarctica soon. Unless a minerals regime is in place before discovery, the pressure to exploit known resources will be tremendous.¹⁹⁵ Supporters argue that some countries may want to develop Antarctic oil fields even if they are not profitable. For example, an energy-poor country like Japan might undertake unprofitable pro-

¹⁹⁰ See Antarctic Treaty, *supra* note 2.

¹⁹¹ W. WESTERMEYER, *THE POLITICS OF MINERAL RESOURCES DEVELOPMENT IN ANTARCTICA: ALTERNATIVE REGIMES FOR THE FUTURE* 28 (1986).

¹⁹² See, e.g., *id.*

¹⁹³ See, e.g., F. AUBURN, *ANTARCTIC LAW AND POLITICS* 232 (1982). Yet the same commentator argues that a regime is needed to protect the investments of prospecting nations and corporations. See *id.* at 251.

¹⁹⁴ See *supra* note 187.

¹⁹⁵ Although the United States contends that the world supply of oil is now fairly stable, and that even world oil production could be sustained for about 50 years at the present rate, it still believes that a scramble to exploit oil would ensue if oil were discovered in Antarctica. See J. RIVER, *THE WORLD'S CONVENTIONAL OIL PRODUCTION CAPABILITY PROJECTED INTO THE FUTURE BY COUNTRY* 15 (1987).

duction to obtain an assured source of supply.¹⁹⁶ Additionally, some countries may even try to use mineral exploration and development as a way of bolstering their sovereignty claims.¹⁹⁷ More importantly, as the world's oil demand increases, and as stability in the Middle East decreases, some nations could face petroleum shortages. These nations may view Antarctica's resources as a solution to domestic difficulties caused by oil shortages.

CRAMRA's proponents argue that, as a result of the pressures, the absence of a minerals regime will not prevent exploitation. Some nations will take unilateral actions without consulting the Consultative Parties. Alternatively, the Consultative Parties themselves will feel pressure to allow oil exploitation. If there is a minerals regime in place, however, the Consultative Parties can ensure that the Antarctic environment is protected.

3. CRAMRA's Defeat May Cause the Treaty's Defeat

A third argument supporting the Convention concerns the future of the Antarctic Treaty itself. In the absence of the Convention, not only will unregulated oil exploration occur, but conflicts over oil could lead to the breakdown of the entire Antarctic Treaty System. Under the terms of the Final Act, all mineral prospecting is prohibited.¹⁹⁸ The prohibition, however, has been largely ignored. Numerous ships currently engaging in "scientific exploration" actually are searching for oil.¹⁹⁹ If an oil field is found before CRAMRA is ratified, the pressure to drill for oil could be substantial. A claimant nation could assert that it has sovereignty over the mineral strike and begin exploiting it. A nonclaimant nation simply could begin exploitation by arguing that the Treaty System does not forbid exploitation. Any unilateral action of this kind could create intense disagreement among Consultative Parties and consequently put the entire Treaty System in jeopardy. The breakdown of the Treaty could result in a return to those elements that were present before the Treaty's negotiation in 1959, namely: the possibility of an arms race in Ant-

¹⁹⁶ POLAR PROSPECTS, *supra* note 9, at 113.

¹⁹⁷ Other countries have used minerals exploration to establish sovereign claims. Before 1925, Svalbard, an archipelago north of Norway, belonged to no country. Several countries entered into a treaty that gave them rights of access to the islands. Partly to consolidate these rights, six countries subsidized mineral development in Svalbard even though they operated at a net loss. See Mitchell, *supra* note 25, at 55.

¹⁹⁸ See Final Act, *supra* note 127, at 865.

¹⁹⁹ D. SHAPLEY, *supra* note 30, at 139.

arctica, a revival of territorial claims, and the uncertainty of a continent without any rules.²⁰⁰

If geologists' theories are correct, one of the exploring nations probably will strike an oil reserve. The results of scientific testing are supposed to be shared with the other Treaty members to prevent the countries from hoarding information or from engaging in illegal pursuits like mineral exploration. This requirement, however, is difficult to enforce. The Japanese Agency of Natural Resources and Energy (ANRE), under the control of the powerful Ministry of International Trade and Industry (MITI), has prospected in the Antarctic under the guise of "scientific research."²⁰¹ The Japanese, however, have not published any details of ANRE's work.²⁰² All of the other Antarctic powers also have been exploring actively for oil in Antarctica.²⁰³ This increased exploration activity suggests that the prospectors think that there is a real possibility of finding a major offshore oil or gas field.

Hence, proponents of the Treaty argue that the Antarctic environment will be protected much more effectively if there is some legal framework governing it. Without a minerals regime, the Consultative Parties will be unable to control oil exploration, and the entire Treaty System could collapse. Under either scenario, the Antarctic environment would be in trouble.

B. The Argument for a World Park

To be workable, the World Park proposal needs to answer CRAMRA proponents' concerns about a legal collapse in Antarctica if a minerals regime is not adopted. In addition, the World Park proposal needs to present a viable choice. The proposal must be workable and must protect the Antarctic environment. The following section evaluates the World Park option from these two angles. First, it explains why CRAMRA will fail to protect the Antarctic environment and why a World Park should succeed. Second, it explains why CRAMRA proponents are incorrect in claiming that the absence of CRAMRA will lead to a legal vacuum.

²⁰⁰ See A. PARSONS, *supra* note 46, at 14.

²⁰¹ Friedheim & Akaha, *supra* note 25, at 143.

²⁰² *Id.* at 144.

²⁰³ See *supra* note 25.

1. World Park Will Protect Antarctica's Environment

A World Park is needed because of the importance and fragility of the Antarctic environment.²⁰⁴ It is difficult to imagine any oil regime that would not destroy the fragile Antarctic ecosystem. Even the United States Department of State's environmental impact statement says that "future exploration and exploitation of mineral resources in Antarctica could result in significant harm to its environment."²⁰⁵ The impact statement recognizes two types of impacts. The first impact is the release of "large amounts" of crude oil into the Southern Ocean from tanker accidents and well blowouts. The second impact is damage to onshore ecosystems from the operation of support facilities. Both of these impacts could overwhelm the fragile Antarctic environment.

Offshore oil drilling may not yet be possible in the harsh Antarctic environment. Therefore, it is impossible to predict all the difficulties that will be encountered.²⁰⁶ Even if oil operators were to use perfect technology, accidents still could result from human error. A recent United States government study determined that those operating in Arctic and Antarctic regions are virtually certain to have accidents.²⁰⁷ Furthermore, the Antarctic climate will greatly exacerbate the effects of such accidents.²⁰⁸ For example, if a blowout were to occur at an offshore well, it would be difficult to stop the flow of oil. This would be especially true during the nine months of the year when the sea is covered with ice.

An oil spill can destroy the local ecosystem. It even may weaken the entire continent's well-being because the Antarctic krill, which form the bottom of the marine food chain, will be contaminated.²⁰⁹ Spilled oil will be difficult to clean up. Oil takes much longer to degrade in the cold Antarctic temperatures than in warmer climates.²¹⁰ The recovery rate on land is also slow. Construction of oil storage facilities, tanker ports, or the exploitation of minerals on the

²⁰⁴ See generally Kindt, *Ice Covered Areas and the Law of the Sea: Issues Involving Resource Exploitation and the Antarctic Environment*, 14 BROOKLYN J. INT'L L. 27 (1988).

²⁰⁵ U.S. DEPARTMENT OF STATE, FINAL ENVIRONMENTAL IMPACT STATEMENT ON THE NEGOTIATION OF AN INTERNATIONAL REGIME FOR ANTARCTIC MINERAL RESOURCES, at vii (1982) [hereinafter FINAL EIS].

²⁰⁶ See *supra* text accompanying notes 43-52.

²⁰⁷ U.S. OFFICE OF TECHNOLOGY ASSESSMENT, OIL AND GAS TECHNOLOGIES FOR THE ARCTIC AND DEEPWATER 163-201 (1985).

²⁰⁸ NATIONAL RESEARCH COUNCIL, OIL IN THE SEA: INPUTS, FATES AND EFFECTS 6 (1985).

²⁰⁹ See *supra* notes 67-69 and accompanying text.

²¹⁰ CENTRAL INTELLIGENCE AGENCY, POLAR REGIONS ATLAS 28 (1978).

dry land areas of Antarctica would involve permanent environmental disturbances.²¹¹

Minor oil spills have occurred in Antarctica demonstrating the effects of oil on the continent's ecosystem.²¹² The largest oil spill to date in Antarctica occurred when the *Bahai Paraiso* ran into submerged rocks, spilling 170,000 gallons of diesel fuel into the ocean.²¹³ After this relatively minor spill, about fifty percent of the limpets,²¹⁴ the food source for kelp gulls, died.²¹⁵ Studies report that the animals most affected by oil spills are those that regularly move in and out of the water.²¹⁶ Hence, penguin and seal colonies would be extremely sensitive to even a small isolated spill.²¹⁷

There are other unacceptable consequences of Antarctic oil exploration. Antarctica plays a major role in regulating the global climate. Some scientists fear that a rise in particulate matter caused by pollution associated with oil and mineral development could alter the ability of Antarctica's ice cap to reflect the sun's heat, thus causing the atmosphere to warm.²¹⁸ Furthermore, an increase in pollution will ruin Antarctica as a global laboratory for monitoring worldwide pollution levels.²¹⁹ In sum, any mineral exploitation in Antarctica will result in significant environmental impacts. Even CRAMRA recognizes environmental hazards by providing for safeguards before oil exploration can begin.²²⁰

²¹¹ B. BREWSTER, *supra* note 14, at 94.

²¹² Spills in other locations give scientists an idea of how oil contamination will affect Antarctica. See B. BREWSTER, *supra* note 14, at 93.

²¹³ See Hall, *supra* note 59.

²¹⁴ A limpet is a mollusk of the intertidal regions that adheres to rocks and other shells. W. AMOS & S. AMOS, *THE AUDUBON SOCIETY NATURE GUIDE: ATLANTIC AND GULF COASTS* (1985).

²¹⁵ *Alerting the World to Save Antarctica*, CALYPSO LOG, Apr. 1990, at 4.

²¹⁶ B. BREWSTER, *supra* note 14, at 97.

²¹⁷ "Penguin colonies along the South African coast were severely distressed by oil spilled in the collision of two tankers in 1977." *Id.* at 62.

²¹⁸ FINAL EIS, *supra* note 205, at 8.

²¹⁹ *Id.*

²²⁰ CRAMRA, *supra* note 3, art. 2, para. 4, 27 I.L.M. at 871. This paragraph states: No Antarctic mineral resource activity shall take place until it is judged, based upon assessment of its possible impacts on the Antarctic environment and on dependent and on associated ecosystems, that the activity in question would not cause:

- (a) significant adverse effects on air and water quality;
- (b) significant changes in atmospheric, terrestrial or marine environments;
- (c) significant changes in the distribution, abundance or productivity of populations of species of fauna or flora;
- (d) further jeopardy to endangered or threatened species or populations of such species; or

2. CRAMRA Will Not Protect the Antarctic Environment

CRAMRA's environmental protection provisions will not be able to protect the Antarctic environment properly. CRAMRA is weak because it lacks strong enforcement measures and is ambiguous. Article 4 of CRAMRA ostensibly provides enough environmental safeguards to prevent destruction of the Antarctic.²²¹ CRAMRA appears to contain relatively strict environmental protection measures.²²² The Commission must vote by consensus to open an area for exploration, and any single Consultative Party can veto exploration.²²³ Nevertheless, judging from the Treaty members' past performance,²²⁴ it is unlikely that members will want to create dissension. Throughout the history of the Treaty, the Consultative Parties have hesitated to criticize one another.²²⁵ The lack of criticism when the French injured wildlife while building an airstrip at Dumont d'Urville illustrates this hesitation.²²⁶ Many scientific bases in Antarctica have failed to comply with a number of the Consultative Party regulations.²²⁷ For example, there have been a number of complaints about waste disposal in Antarctica,²²⁸ and areas near research stations are badly polluted.²²⁹

The Consultative Parties have failed to enforce environmental rules in the past when there was not much economic and political pressure to develop Antarctica's mineral resources. Once oil is discovered, it is doubtful that the Consultative Parties will have the political will to enforce stringent environmental requirements. If the international demand for oil becomes stronger, Commission members may begin to see CRAMRA's requirements as an impediment to their domestic oil demands. Because the interpretation of CRAMRA is up to those states that will benefit from any oil development, they may choose to open areas to exploitation even though such an action will result in substantial environmental damage.

(e) degradation of, or substantial risk to, areas of special biological, scientific, historic, aesthetic or wilderness significance.

Id.

²²¹ *See id.*

²²² *See id.* art. 8, 27 I.L.M. at 872-74.

²²³ *Id.* art. 22, 27 I.L.M. at 879.

²²⁴ *See Bogart, supra* note 8, at 11.

²²⁵ *Id.*

²²⁶ *Id.*

²²⁷ *Id.*

²²⁸ Several of the management practices used at United States Antarctic research stations would violate United States federal environmental statutes. *See Bogart, supra* note 8, at 10.

²²⁹ Liquid wastes have been observed being released directly into the marine environment at a number of bases. *See Friends of the Earth, Cleanup Needed: Antarctic Bases a Shambling*, 48 *ECO* 5 (May 16, 1988).

There also may be difficulties enforcing CRAMRA's liability sections. Under the terms of CRAMRA, a multinational corporation can choose which country will be its sponsoring state. Because the sponsoring state is responsible for making sure that an operator complies with CRAMRA's requirements, an operator may try to choose those sponsoring states that interpret CRAMRA leniently. Furthermore, developing nations, hoping to obtain a foothold in Antarctica, may be inclined to pass less strict rules to attract operators. The international community suddenly may find multinational oil companies negotiating deals with cash-starved developing nations to operate joint ventures in Antarctica. The results could be devastating.

In addition to enforcement problems, CRAMRA contains dozens of ambiguous terms. For example, under article 4, no mineral activity is allowed if the activity will cause *significant* adverse effects on air and water quality. Article 4 also states that the Commission should not make decisions about Antarctic mineral resource activities without *adequate* information. Terms such as "significant," "adequate," "reasonably," and "appropriate" are never defined. Instead, the parties are supposed to interpret the terms if a conflict arises. Unfortunately, the terms will be interpreted by Consultative Parties at a time when they themselves will have an interest in exploiting Antarctic oil. At that time, it is improbable that the Commission will interpret the terms in a manner unfavorable to themselves.

C. Applicability of International Law

Despite CRAMRA's weaknesses, its proponents believe that a minerals regime is the only viable option in light of global geopolitics. CRAMRA proponents claim that, in the absence of the Convention, international law would permit a nation unilaterally to begin exploiting minerals in Antarctica. The following sections discuss why these arguments of political necessity are misguided.

1. Functional Argument

The first reason nations will refrain from unilaterally exploiting minerals in Antarctica is functional. It is unlikely that any nation or corporation would invest the large amount of capital necessary to fund Antarctic mineral exploitation without a guarantee that their claims could stand up under international law. Nations also might worry that they could lose their investment because of a military confrontation. While most nations have engaged in preliminary prospecting, they have done so thinking CRAMRA would be ratified.

Those who have expressed an interest in Antarctic minerals have said that they need a minerals regime in place before they will invest in exploitation. To invest in exploitation without any regime would be far too risky.²³⁰

2. Legal Argument

The second reason nations will refrain from unilaterally exploiting minerals in Antarctica is legal. CRAMRA proponents contend that in the absence of a minerals regime, any party legally may drill for oil as long as they abide by the Antarctic Treaty. This argument assumes that no other international law applies in Antarctica. This assumption is mistaken. Antarctica's legal status is controversial because it is unclear whether claims of sovereignty in Antarctica are valid, or whether the continent is outside of any sovereign's jurisdiction. Despite this confusion, there are international laws that apply in each instance. In addition, the entire Antarctic Treaty System is binding on parties to those agreements. Regardless of how the disputed legal issue of sovereignty is resolved, there is a web of international law that will apply.²³¹

All generally applicable rules of international law apply to Antarctica in the same way they do elsewhere. International law includes specific international duties that apply to the protection of the environment. The first duty prohibits international environmental interference.²³² This duty prevents a state from causing harmful consequences to the environment of other states, or to areas outside national jurisdiction. This duty is manifested in international agreements. For example, The Stockholm Declaration on the Human Environment (Stockholm Declaration) declares that all states have a duty to prevent harm to the environment.²³³ The second duty calls

²³⁰ See, e.g., Tempest, *France Urges Antarctic "Nature Reserve,"* L.A. Times, Oct. 10, 1989, § 1, at 7, col. 1.

A lot of countries that support ratification raise the specter of an unregulated scramble to the continent. . . . But if you talk to companies, or particularly to bankers, and ask them if they would be willing to finance unregulated exploration, they say no. What they are looking for is a framework that guarantees them the right to be there. That is what the minerals convention gives them.

Id. (quoting James N. Barnes, Executive Director of the Antarctic Project).

²³¹ Charney, *The Antarctic System and Customary International Law*, in INTERNATIONAL LAW FOR ANTARCTICA 85 (F. Francioni & T. Scouazzi eds. 1987).

²³² Pineschi, *The Antarctic Treaty System and General Rules of International Environmental Law*, in INTERNATIONAL LAW FOR ANTARCTICA 188 (F. Francioni & T. Scouazzi eds. 1987).

²³³ Stockholm Conference on the Human Environment, June 16, 1972, 11 I.L.M. 1466.

upon the states to cooperate in the duty of preventing and abating international pollution.²³⁴

If Antarctica is considered an international commons like the deep seabeds or outer space, then mineral activities there would be governed by international law. Because exploring for oil in Antarctica necessarily would involve detrimental environmental impacts, those impacts would be considered a violation of the international duty to prevent environmental degradation of common areas. From the Stockholm Declaration, as well as from other sources in international law,²³⁵ it is reasonable to argue that a country can act to prevent harm to the Antarctic environment before any exploitation occurs, by bringing a case before either the International Court of Justice or the United Nations. Several international court cases have ruled that nations have a duty to prevent environmental degradation outside their national boundaries.²³⁶

If Antarctica is not an international commons, then those nations with Antarctic claims may assert that international law does not apply because they are operating inside their own jurisdiction. Nevertheless, international law still may apply to their activities. For the past thirty years, Antarctica has been functioning in a legal "twilight zone" between an international commons and state sovereignty. Throughout this period, Antarctica has been subject to the rules of international customary law. Under international customary law, norms first articulated in international agreements can develop into customary international law.²³⁷ Since all the parties that have had contact with Antarctica during the past thirty years have shown their allegiance to the Treaty, it is likely that the treaty has been enveloped by international law. "The process by which [The Antarctic Treaty] gives rise to a norm of customary law establishes new law which is separate from the originating treaty and would not change directly if that Treaty were to be modified or terminated."²³⁸ Hence, in the thirty years since the Antarctic Treaty System was adopted, the nations of the world have conformed to it either as

²³⁴ See, e.g., *World Charter for Nature*, G.A. Res. 37-7, art. 21(d), 37 U.N. GAOR Supp. (No. 51) at 17, U.N. Doc. A/RES/37-7 (1982), reprinted in 22 I.L.M. 455 (1983); *Charter of Economic Rights and Duties of States*, G.A. Res. 3281, art. 30, 29(1) U.N. GAOR Supp. (No. 31) at 50, U.N. Doc. A/RES/3281 (1974), reprinted in 14 I.L.M. 261 (1975).

²³⁵ See, e.g., *Lake Lanoux Arbitration* (Fr. v. Spain), 24 I.L.R. 101, 129 (1957); *Trail Smelter Arbitration* (U.S. v. Can.), 3 R. Int'l Arb. Awards 1965 (1941).

²³⁶ See, e.g., *Lake Lanoux Arbitration*, 24 I.L.R. at 129; *Trail Smelter Arbitration*, 3 R. Int'l Arb. Awards at 1965.

²³⁷ Charney, *supra* note 231, at 84.

²³⁸ *Id.* at 85.

signatories to the Treaty, or tacitly by accepting its rules. As a result, the Treaty System has been adopted as an international custom, and any nation that drilled for oil would be violating international law.

V. CONCLUSION

Although CRAMRA probably has been defeated, its supporters still think that some sort of a minerals convention is needed to establish a regulatory regime in Antarctica. However, regimes like CRAMRA provide little protection. Rather, they provide the framework that multinational companies need to begin drilling for oil. Furthermore, if CRAMRA is not ratified, Antarctic mineral exploitation cannot proceed without violating international law. It is doubtful that any corporation will invest significant capital in oil exploration without the security of international approval.

The World Park proposal, in contrast, is simple and workable. By declaring Antarctica a World Park, the Consultative Parties will dissuade any party from continuing to search for oil. By preventing the discovery of oil, the World Park proposal will reduce the danger of environmental damage that would accompany oil exploitation. Additionally, by creating an Antarctic Environmental Protection Agency, the Consultative Parties would be creating an institution that could enforce international environmental laws effectively.