

## CHAPTER 15: ANTARCTICA

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Antarctica is the fifth largest continent, followed in size by Europe and Australia. Many nations have laid claims to segments of its territory. Despite the fact that Antarctica is covered by ice, it contains potentially vast mineral wealth. Because there are many environmental issues that would affect mineral exploitation of Antarctica, nations claiming sectors in Antarctica have coupled their claims with declarations that they are best equipped to preserve Antarctica's environmental values and preserve it for scientific research on the environment. These declarations have thus become intermeshed with political claims to authority and control over portions of Antarctica.

The present Chapter looks at Antarctica not from any national perspective but from the perspective of global environmental values.

### A. The Antarctic Treaty Regime<sup>1</sup>

Antarctica has been described as the last frontier. In legal and political terms, it is unique as an entire continent of disputed territory. Despite this, activities there have been conducted under a system of international cooperation within the framework of a number of interlocking treaties, recommendations, and conventions known as the Antarctic Treaty System.

The past decade has witnessed an increasing interest in Antarctica from a broad range of disciplines. As one author has pointed out, "[s]cience, economics, law and politics have begun to converge upon the Antarctic continent at a dizzying speed, creating new dimensions in what had previously been a relatively isolated sphere of cooperation."<sup>2</sup> The recent demise of the negotiations concerning the proposed Convention on the Regulation of Antarctic Mineral Resources (CRAMRA) has intensified the debate over the future of the Antarctic Treaty System.

International public concern for the protection of the environment has increased dramatically. This is particularly evident in the current Antarctic debate, in which environmental organizations have emerged as a powerful lobby in Antarctic politics. There is evidence to suggest that recognition of the importance of the "green" vote is largely responsible for the demise of CRAMRA. During the CRAMRA negotiations, environmentalists repeatedly expressed the concern that no minerals regime could adequately protect the fragile environment of the region against the potentially devastating impact of any mining activity there. They further contended that existing measures for the protection of that environment are largely inadequate; in support of this argument, environmental watchdog groups such as Greenpeace cite the frequent violations of the existing measures by the Antarctic Treaty Consultative Parties (ATCPs) that have occurred without penalty.

Protection of the Antarctic environment is an issue of international significance. Because its marine circulation patterns are linked with those of the world's other oceans, the Antarctic has a substantial impact on the climate of a wide zone of the earth. Its pristine condition and its isolation from the world's main sources of pollution make it an area of great value in monitoring global pollution levels; for example, it was there that scientists first discovered the depletion of the earth's ozone layer. Much of Antarctica's value as the world's largest laboratory will be lost if its relatively pristine condition is not preserved.

Many environmental organizations have proposed that the Antarctic region be set aside as a world park. Those opposed to this notion argue that such a regime would leave the continent open to an exploitation "free-for-all" and may prove disastrous for its environment; they point to the existing record of environmental protection in the Antarctic and say that it is not necessary to alter the status quo.

The world park proposal now has the support of several of the ATCPs. This support, in combination with recent clean-up efforts at several of the largest scientific stations, suggests an increasing recognition among the ATCPs of the importance of protection of the Antarctic environment. While the ATCPs' past record of environmental management has not been unblemished, the numerous examples of mismanagement do not appear to be reflective of a particular disregard for the Antarctic environment on the part of the ATCPs, but rather a reflection of the fact that, until recently, it was not a political necessity for any government to support sound environmental policies.

The present challenge in Antarctic politics is to determine the most effective means of capitalizing on the current support for environmental protection and of securing that protection against the possibility that concern for the environment may once again succumb to the pressure for increased development. A world park, administered within the existing framework of the Antarctic Treaty System, appears to offer an effective means of meeting that challenge.

#### 1. Exploitation

The history of Antarctic exploitation, which provides some glaring examples of the consequences of

unregulated development, and the present expansion of interest in the region indicate the need to regulate activity there. One such example is the commercial exploitation of Antarctic seal stocks that began in the early nineteenth century. Under the doctrine of the freedom of the high seas, this resource was "open access" and not subject to national regulation to ensure rational exploitation. By the latter half of the century, Antarctic seal stocks had been devastated and some species have not yet recovered.

A similar pattern followed in the exploitation of the Southern Ocean whale stocks. The development of pelagic factory ships and catcher fleets allowed whaling ships to operate on the high seas beyond any control but that of the flag state. Estimates suggest that present stocks of blue whales are no more than 5 per cent of their original numbers and humpback whales are no more than 3 per cent. A recent survey by the International Whaling Commission concluded that the total remaining population of blue whales is unlikely to be more than 2,000 and could be much less than that.

Fishing nations have begun to show an interest in the fin fish and krill stocks of the Southern Ocean. Catches of fin fish have been considerable and a number of local stocks such as those at South Georgia and on the Burdwood Bank have already been overcropped and depleted.

On the continent itself, human activity is still a relatively new phenomenon and is primarily focused on areas adjacent to scientific stations. Despite this, there have been a number of localized impacts on the environment.

Much of the current damage relates to the increase in scientific activity. With little more than 2 per cent of the continent free from ice, scientific stations directly compete with polar fauna and flora for space. Considerable disruption of local ecosystems is caused during construction of the bases, with their attendant facilities for fuel, storage, power generation, aircraft landing, and ship docking. The increase in scientific activity has led to an increase in the temporary population of the Antarctic, which has in turn led to problems in the disposal of solid, chemical, and domestic wastes. The scientific processes themselves have had an ever-increasing and often detrimental impact on the environment; geological extraction projects such as the Dry Valley Drilling Project have led to chemical and biological contamination of pristine soils.

The emerging Antarctic tourist industry has also given rise to environmental concern. The increasing number of visitors to the continent has led to the introduction of alien bacteria, viruses, and fungi. Indigenous species are threatened by the increase in non-scientific collecting and souvenir-hunting. In addition, support facilities for this new industry are currently being rapidly developed. Chile has established a town on King George Island in the South Shetlands which includes a hotel, supermarket, bank, post office, tourist facilities, and year-round family housing. Argentina has a counterpart colony at Esperanza. And Britain has further opened the door to Antarctic tourism by constructing an airfield at its Rothera scientific station.

## 2. Existing Environmental Protection Measures

The cornerstone of the Antarctic Treaty System is the Antarctic Treaty. With the exception of the prohibition on the disposal of radioactive waste contained in Article 5, the treaty does not deal directly with the protection of the environment. However, Article 9(1)(f) does recognize that the conservation of living resources in Antarctica is one of the measures within the scope of the Treaty on which recommendations should be made at consultative meetings. The ATCPs have interpreted this provision in a liberal manner as granting them competence over the protection and preservation of the Antarctic environment in general. Of the 140 recommendations adopted by the close of the XIIIth Consultative Meeting in 1985, over half were concerned with environmental protection. At the XVth Consultative Meeting held in Paris in October 1989, twenty-one of the twenty-two proposals put before the meeting dealt with the environment. Thus, it has been argued that a "conservation ethic" has been developed within the Antarctic Treaty System.

The ATCPs have developed a number of broad, nonspecific principles to govern, in a general sense, the protection of the Antarctic environment from the damaging impact of present or future activities. An example of this approach is found in Recommendation VIII-13 which provides:

In exercising their responsibility for the wise use and protection of the Antarctic environment [the Antarctic Treaty Consultative Parties] shall have regard to the following:

- (a) that in considering measures for the wise use and protection of the Antarctic environment they shall act in accordance with their responsibility for ensuring that such measures are consistent with the interests of all mankind;
- (b) that no activity having an inherent tendency to modify the environment over wide areas within the Antarctic Treaty Area should be undertaken unless appropriate steps have been taken to foresee the probable modifications and to exercise appropriate controls with respect to the harmful environmental effect such uses of the Antarctic Treaty Area may have.<sup>3</sup>

A further example is found in Recommendation IX-5:

[T]he Consultative Parties determined to protect the Antarctic environment from harmful interference. . .

declare as follows:

1. the Consultative Parties recognize their prime responsibility for the protection of the Antarctic environment from all forms of harmful human interference;
2. they will ensure in planning future activities that the question of environmental effects and of the possible impact of such activities on the relevant ecosystems are duly considered . . .
4. they will continue to monitor the Antarctic environment and to exercise their responsibility for informing the world community of any significant changes in the Antarctic Treaty Area caused by man's activities.<sup>4</sup>

These recommendations establish a general framework within which to develop specific measures to protect the environment and the ATCPs have introduced a number of measures intended to regulate specific activities that could have a damaging impact on the environment. A unique feature of these measures is that they have all been introduced in advance of any serious impact from the activities they are designed to regulate. It is probable that this apparently precautionary approach to the regulation of future Antarctic activity has been adopted by the ATCPs as a pre-emptive response to repeated demands by several developing nations for international involvement in the Antarctic. The introduction of regulatory measures with little opposition from the majority of the international community lends support to the ATCP's claim that the Antarctic is not part of the global commons.

The most significant regulatory agreement dealing with the protection of Antarctic flora and fauna is the Agreed Measures for the Conservation of Antarctic Fauna and Flora of 1964 (the "Agreed Measures").<sup>5</sup> The preamble to the Agreed Measures designates the entire Antarctic Treaty area as a special conservation area. However, the Agreed Measures likely apply only to land areas and ice shelves within the Treaty area because Article X of the Agreed Measures introduces the wording of Article 6 of the Antarctic Treaty, thus repeating the high seas exception contained in that treaty.

The Agreed Measures contains five principal provisions:

1. It is forbidden to kill, wound, or capture any native mammal or bird without a permit, and provision is made for the publication of statistics of animals killed or captured under permit.
2. Harmful interference with the normal living conditions of native mammals and birds must be minimized and pollution of coastal waters avoided.
3. The introduction of non-indigenous species to the Antarctic Treaty area is banned.
4. Specially protected areas may be designated within which unique or scientifically interesting species or ecological systems can be preserved and access thereto controlled.
5. Specially protected species may be designated.

Article 13 of the Agreed Measures provides that they are binding on all who were ATCPs at the time the measures were negotiated and on any other contracting party to the treaty who agrees to be bound by the Agreed Measures. There is no provision for a non-contracting party to accede to the Agreed Measures.

The Agreed Measures have been praised as "one of the most comprehensive and successful international instruments for wildlife conservation on land that has yet been negotiated." However, this appears to be an overindulgent assessment. While the Agreed Measures were an encouraging move towards protection of Antarctica's land-based fauna and flora, the measures are open to criticism.

One of the greatest defects of the measures is the exception from the prohibition against harmful interference with the normal living conditions of mammals and birds. "Harmful interference" is defined to include flying aircraft in a manner that would disturb bird and seal concentrations; driving vehicles within 200 meters of concentrations of birds and seals; the use of explosives close to concentrations of birds and seals; and any disturbance of bird and seal colonies during breeding season by persistent attention from persons on foot. However, all such activities are permitted to the minimum extent necessary for the establishment, supply, and operation of scientific stations. This exception seriously undermines the concept of preventing harmful interference to fauna. The recent construction of an airfield near the French Dumont d'Urville base on Point GCologie in Adelie Land demonstrates the detrimental effect such a broad exception can have; construction of the airstrip has involved extensive blasting which has resulted in irreparable harm to local penguin breeding grounds.

The protective measures established under the Agreed Measures were further extended by the introduction of the concept of Sites of Special Scientific Interest (SSSI) at the VIIth Consultative Meeting. SSSIs can be established to protect research where there is a demonstrable risk of interference, or where sites are of exceptional scientific interest. The SSSIs are provided with management plans that control the uses to which the sites may be put. By the conclusion of the XIVth Consultative Meeting in 1987, twenty-eight SSSIs had been created.

In addition, the ATCPs introduced a Recommendation for the Protection of Historic Sites. The obligation to preserve historical monuments was articulated in Recommendation VI-14 and a lengthy list of sites was approved for protection in Recommendation VIII-9.

A second group of specific measures is designed to regulate the impact of human activities that do not directly involve the commercial exploitation of natural resources. These measures attempt to limit the pollution, contamination, and damage that result during the ordinary conduct of Antarctic activities.

The first of these measures is the Code of Conduct for Antarctic Expeditions and Station Activities (the "Code of Conduct"). Until recently, waste disposal in the Antarctic was regulated by the Code of Conduct contained in Recommendation VIII-11. This code was heavily criticized on the ground that it was far from comprehensive. For example, it contained no overall waste management plan for the Antarctic. In addition, it treated the Southern Ocean as Antarctica's waste disposal site, recommending that solid non-combustible waste should be disposed of at sea either in deep water, or, if this was not possible, at specified sites in shallow water. This practice of dumping machinery in shallow coastal waters has caused extensive damage. The code also recommended that, where possible, human waste, garbage, and laundry effluent should be flushed into the sea; there was no specified level at which primary treatment would become mandatory and there was no mention of the need for any form of secondary treatment. There have been frequent reports of wastes from inland scientific stations simply being dumped into ice crevasses.

In 1988 the Scientific Committee for Antarctic Research (SCAR), which serves as the scientific advisory body to the ATCPs, recommended the introduction of a new code of conduct. The ATCPs adopted the new Code of Conduct at the XVth Consultative Meeting in October 1989. This code groups Antarctic waste into five categories and outlines a comprehensive disposal scheme for each category. Of particular interest is the requirement that where practicable, solid non-combustible wastes should be removed from the Antarctic Treaty area. The code calls for the preparation of waste management plans, updated annually, for vessels, fixed scientific stations, and field camps operating in the Antarctic; these plans are required to include programs for cleaning up existing waste disposal sites and abandoned work sites. In addition, the new code contains an express provision in Clause 30 that requires non-governmental operators in the Antarctic to comply with the code.

The ATCPs have introduced several measures dealing with regulation of Antarctic tourism. The need for this regulation became apparent in the wake of the crash of an Air New Zealand DC-10 into Mount Erebus on November 28, 1979. Recommendation VIII-9 urges governments to ensure that organizers of tour groups visit only those stations for which consent has been granted by the government maintaining the station. It further provides that permission for these visits should only be granted upon receipt of reasonable assurances from the tour operator of compliance with the Antarctic Treaty and effective Recommendations.

The ATCPs have also recommended the development of a Statement of Accepted Practices and the designation of Areas of Special Tourist Interest. No areas of special tourist interest have yet been designated. However, the ATCPs have compiled a Statement of Principles and Practices of the Antarctic Treaty for the information of all visitors to the Antarctic. In addition, a reporting system has been established to monitor where tourists land. Some of the individual governments active in the Antarctic have also formulated their own tourist guidelines. Finally, in Recommendation X-8 the ATCPs urged that non-governmental expeditions to the Antarctic should carry adequate insurance coverage and that tour operators should, to the extent practicable, carry tour guides with experience in Antarctic conditions.

The preceding recommendations deal with activities that do not involve exploitation of Antarctic resources. The final group of measures is designed to regulate the exploitation of its living resources.

The first of these measures is the Convention for the Conservation of Antarctic Seals introduced in 1972,<sup>6</sup> which applies to the entire region south of 60°. It does not ban sealing completely but regulates the exploitation of all species of seals in Antarctic waters. Ross and Southern fur seals are designated as specifically protected species. In addition, extremely conservative quotas of permissible harvest per annum are established for the more abundant species. The annex to the Convention contains measures concerning closed seasons and closed zones, seal reserves, sealing methods, and the exchange of information. The contracting parties include all the ATCPs and any state that is invited to accede to the Convention with the consent of all contracting parties. A review of the Convention is to be held every five years.

Article 6 provides a mechanism whereby the Convention can be immediately reviewed and modified if commercial sealing commences within the Treaty area. Since the Convention was concluded there has been no commercial sealing in the Antarctic; however, it is not clear how far this is an effect of the Convention rather than of logistical difficulties, costs, and consumer resistance to seal products.

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) builds on the juridical basis of the Antarctic Treaty and the Sealing Convention and is designed to provide a comprehensive management scheme for all species of marine living resources within its area of application. The need for such a convention became apparent as the attention of fishing nations turned to the resources of the Southern Ocean during the 1970s.

The prospect of a radical depletion of krill stocks, with the inevitable consequences this would have on dependant predators, was seen to be very serious. The likelihood of this depletion was evident in the late 1970s as the West Germans reported a maximum catch rate of krill of 35 tons in eight minutes with an overall catch rate of 8 to 12 tons per hour. Russian catches had been reported ranging between 139 and 292 tons per day. The response to this threat was the CCAMLR.<sup>7</sup> The Convention entered into force on April 7, 1985, after ratification by eight of the fifteen signatories.

The CCAMLR marks a significant departure for the Antarctic Treaty System in terms of environmental protection. The majority of fishery conservation conventions focus on a single species in formulating management standards, and the traditional approach to management has been the maximum sustainable yield concept, "aiming for that level of harvesting which will maximize the catch of the species plotted over a time series of estimated species productivity." It was recognized that it would be impractical to adopt this approach to conservation problems in the Southern Ocean because of the interdependence and low diversification of its native species. Under pressure from the United States, the ATCPs resolved to adopt a multi-species or ecosystem approach to Antarctic marine conservation.

Article 1 of the Convention provides that the CCAMLR applies to all Antarctic marine living resources within the Antarctic Convergence, a boundary defined by fixed coordinates. The definition of "marine living resources" in Article 1(2) is very broad, including within its ambit all "fin fish, mollusks, crustaceans and all other species of living organisms, including birds, found south of the Antarctic Convergence."<sup>8</sup> Article 1(3) defines the Antarctic marine ecosystem as the "complex of relationships of Antarctic marine living resources with each other and with their physical environment." These provisions demonstrate an intention to apply a conservation regime to the entire Antarctic marine ecosystem rather than to a single isolated species.

Article 2 is the centerpiece of the Convention. Article 2(1) proclaims that the objective of the Convention is conservation, a term which is defined to include "rational use." This goal is to be attained through adherence to three principles of conservation. The first is that harvested populations must not be allowed to fall below a level that ensures their stable recruitment, a level "close to that which ensures the greatest net annual increment"; this principle closely resembles that of maximum sustainable yield and the second and third principles were therefore necessary to further develop the ecosystem approach. The second requires the maintenance of the ecological relationships between harvested, dependent, and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in Article 2(3)(a). The third principle requires minimization of the risk of changes to the marine ecosystem that are not potentially reversible over two or three decades.

It has been said that the CCAMLR "can be categorized as a landmark in international law because of its ecosystem conservation standard." It has also been said that "the consideration and resolution of the issue of fishery resource conservation demonstrates the Antarctic system's ability as regards the efficient management of Antarctica." But the CCAMLR has also been the subject of harsh criticism. Both the praise and the criticism appear to be justified because, although the ATCPs have introduced a comprehensive and potentially powerful convention for the preservation of the Antarctic marine environment, they have demonstrated an unwillingness to implement measures to achieve the conservation objective of the CCAMLR. While the framework is in place to protect adequately the Antarctic marine environment, it is not yet being successfully implemented or enforced.

The decisionmaking process of the commission has been the subject of extensive criticism. It has been said that:

The original U.S. proposal was for a straightforward two-thirds vote on all issues. This was countered by a variety of proposals . . . to give special weight to the votes of the Antarctic Treaty Parties so as to avoid any possibility of decisions which might be inimical to their national interests.... The Canberra draft . . . required consensus voting only for the setting of quotas and conservation zones, and adopted a two-thirds requirement for all other measures.... Most countries felt this did not protect their interests sufficiently.

The result of this debate was Article 12 of the Convention which provides that substantive decisions of the commission must be made by consensus and the question of whether a matter is one of substance is itself a substantive matter.

These rules produce the risk of deadlock between harvesting states and conservationist states; the CCAMLR was negotiated prior to heavy commercial pressure on the Southern Ocean fishery and, therefore, the "battle lines" have not been clearly drawn between these states. It has been argued, however, that the significance of the decisionmaking process should not be exaggerated because "the most important effect of a decision of a Commission is that its member States must decide whether or not they are willing to implement the decision in question." Thus, consensus decisionmaking may be beneficial since decisions reached by consensus have the support of all parties and are more likely to be observed. This argument may be correct once a decision has in fact been

reached; the early history of the CCAMLR, however, suggests that fears of a deadlock are well-founded. To date, the commission has been unsuccessful in establishing any significant conservation measures. The explanation for this may simply be that the Convention is still a relatively new phenomenon, but this failure to implement effective protection measures may be indicative of an unwillingness to regulate these well-stocked fisheries. As one writer has said, "The relevance of the debate surrounding decision-making is that it clearly indicates some members' attitudes towards the CCAMLR Regime." Conservation measures that do succeed in achieving consensus become binding on all members of the commission 180 days after notification, but a member of the commission is entitled to register an objection to any measures within ninety days of notification thereof and in that event the measure will not, to the extent stated, be binding on it. Non-acceptance of a conservation measure by one member triggers a right in other commission members to declare that they will no longer be bound by the measure to which an objection has been taken. The consensus voting requirement should have made the objection procedure unnecessary since a state that has an objection to a conservation measure could simply vote against it in the commission. But both mechanisms remain and thus a member of the commission has a double veto on measures essential to the CCAMLR's success.

The objection procedure is a common feature of fishery conservation agreements. It has been argued that such a procedure is necessary to enable governments to review the arrangements which their representatives have negotiated; there is no doubt that similar procedures have been used by governments to escape inconvenient conservation measures. Article 5(3) of the International Whaling Convention (IWC) established a formal objection procedure identical to that contained in the CCAMLR; it was relied on frequently by the whaling nations. In 1982 the IWC adopted a moratorium on the catch of whales to commence in 1985. Of the seven nations voting against the moratorium, four, including Japan, the USSR, Norway, and Peru, filed formal objections within the accepted period, thus maintaining their right to continue whaling after the moratorium entered into force. Should the CCAMLR follow a similar pattern, resources such as krill might prove to be inadequately protected if the pressure to exploit them increases in the future.

A further criticism of the Convention is that the scientific committee cannot unilaterally undertake scientific research in the absence of a commission direction. In order to achieve the CCAMLR's conservation objectives, information on current species population sizes and the manner in which these populations have changed and are changing with time, is essential. This information is not currently available in adequate detail. The fishing nations have vigorously resisted the imposition of information collection responsibilities. The same states have also consistently opposed the establishment of conservation measures on the basis of a lack of data.

A further problem is that while the commission is obliged to formulate its conservation measures "on the basis of the best scientific evidence available," it is not obligated to accept the advice of the scientific committee. Problems have already arisen within the CCAMLR in this respect. Despite warnings from the scientific committee with respect to the need to protect certain species of fin fish, the only conservation measures adopted by the commission to date have been restrictions on mesh size in trawling nets and the closing of certain fisheries. As it has been said:

Conservation measures have been used sparingly by the Commission and they have contributed little to the protection of the Antarctic marine ecosystem. This is because they have been adopted when the stocks they were designed to protect were in such a depleted state so as to discourage exploitation on economic grounds, or they have been adopted with the knowledge that they will not be effective.

A third criticism of the CCAMLR is that in order to achieve the conservation standards set out in Article 2 of the Convention, concerned states must provide the requisite financial, technical, and political commitment. This is especially true in the case of the chief harvesting states such as Japan and the USSR. Despite this, no provision is made for setting either national catch quotas or effort restrictions. This is crucial because once states have invested money in fishing fleets, they will be less likely to support conservation measures that will restrict their ability to achieve a return on their investment.

At present there is little economic pressure to harvest beyond sustainable yields owing to logistical problems and the excessive costs involved in harvesting in the Southern Ocean. However, one writer has concluded that "if there were great pressure for rapid expansion of [harvesting], there must be doubts as to whether the CCAMLR . . . would be successful."

### 3. CRAMRA

There are currently no provisions within the Antarctic Treaty System that deal with protection of the Antarctic's non-living resources. In recent years, various studies have indicated that the Antarctic may contain vast deposits of oil, natural gas, and other mineral resources. Experts suggest that Antarctica's continental shelf may contain up to 45 billion barrels of oil and 115 trillion cubic feet of natural gas. Although actual exploitation is not imminent, a number of oil companies have indicated an interest in searching for Antarctic oil. Recent events in the

Gulf states may serve to intensify the search for alternate sources of oil and, despite the logistical difficulties of oil extraction in the Antarctic, it is likely that more oil companies will shift their attention to the Antarctic in the near future. On the continent itself, there have been discoveries of coal, copper, and iron. Deposits of cobalt, lead, manganese, nickel, silver, titanium, uranium, platinum, and chromium may also exist.

The ATCPs have been cognizant of the need to develop a regulatory scheme prior to the commencement of actual exploitation of Antarctica's non-living resources. In 1980 they entered into an informal moratorium on mining activity in the Antarctic region on the understanding that negotiations for a minerals regime would proceed as expeditiously as possible. In 1982 formal negotiations began. Britain, Brazil, Japan, West Germany, and the United States were, at that time, keen to protect the possibility of opening up the Antarctic to mining operations. Opposed to this view was a conservationist movement led primarily by a group of non-governmental organizations operating collectively as The Antarctic and Southern Ocean Coalition (ASOC). ASOC's anti-mining stance received some support from those states in geographical proximity to the Antarctic.

A draft minerals Convention (CRAMRA) finally emerged on June 2, 1988 in Wellington, New Zealand, and it was opened for signature on November 25, 1988. Within a year, however, the consensus that had produced CRAMRA began to unravel. Early in 1989, three shipping accidents occurred in the Antarctic, the most serious of which occurred in January 1989 when the Argentine resupply vessel, the Bahia Paraiso, ran aground in the Bismarck Strait while carrying 950,000 liters of diesel fuel. Only 40,000 liters of this fuel were recovered. The incident resulted in an oil slick measuring eight to twelve kilometers in length and caused extensive damage to the ecosystem surrounding the United States Palmer Station. This relatively minor disaster was followed in March 1989 by the major oil spill from the Exxon Valdez in Prince William Sound, which further demonstrated the devastating effects of oil spills in environmentally sensitive areas. These accidents strengthened international public opinion against the possibility of any mining in the Antarctic.

In April 1989 the French prime minister expressed reservations about CRAMRA and raised the possibility of its renegotiation. On May 22, 1989, the Australian government announced that it would not sign CRAMRA. In a joint statement issued on August 18, 1989, the Australian and French prime ministers declared that "mining in Antarctica is not compatible with protection of the fragile Antarctic environment." Both France and Australia now advocate the preservation of Antarctica as a world park.

The withdrawal of Australian and French support for CRAMRA effectively ensured its failure as, under its terms, all seven nations with Antarctic territorial claims must sign and ratify it before it can enter into force.<sup>9</sup> There is reason to believe that the Australian and French positions may have been a response to the upsurge of public interest in environmental matters and the consequent increase in importance of the "green" vote. This is particularly true in Australia's case, where its withdrawal of support for CRAMRA came on the eve of an election.

On February 26, 1990, the New Zealand government announced that it would not introduce the necessary legislation to ratify CRAMRA. Once again, concern for the "green" vote in New Zealand's impending election appears to have played a central role in the reversal of the government's position. Italy, India, Belgium, and East Germany, who do not have sovereignty claims in the Antarctic but who are among the Antarctic Treaty contracting parties, have also refused to sign CRAMRA. Finally, in November 1990 both the United States and Britain announced major policy shifts on mining and oil drilling in the Antarctic. The United States signed into law a measure indefinitely banning US mining in the Antarctic and Britain announced that it might consider accepting a similar moratorium. These announcements sounded the final death knell for CRAMRA.

Various statements have been made concerning the potential long-term effects of the collapse of CRAMRA. Supporters of CRAMRA argue that the current unofficial, voluntary ban on mining will not hold indefinitely and that it is preferable to introduce the regulations contained in CRAMRA rather than leaving Antarctica open to uncontrolled exploitation. One commentator contends that environmentalists have left a vacuum in the law governing Antarctic exploitation and that conflict could erupt if a valuable oil or mineral deposit is found.

One inevitable consequence of the collapse of CRAMRA, given the prominent role played by environmental organizations in that collapse and the increasing support for the world park concept, will be intense scrutiny of the current environmental protection mechanisms in the Antarctic.

#### 4. Assessment of Existing Measures

The discussions concerning future protection of the Antarctic environment that will likely result from the demise of CRAMRA will undoubtedly focus in part on the weaknesses of the current measures. Apart from the problems with the individual recommendations and conventions, the system as a whole has a number of fundamental defects that must be corrected if the Antarctic is to withstand the inevitable pressure to develop and expand scientific activity, tourism, and possibly resource exploitation in the region.

One of the most significant of these defects is the lack of formal procedures to consider allegations that

existing regulations are not being complied with and, more importantly, the lack of effective enforcement mechanisms and sanctions. Recommendations made under the Antarctic Treaty do not constitute laws enforceable in any court. Both the agreed measures and the code of conduct are contained in or are annexed to recommendations and are therefore merely voluntary guidelines, for a recommendation has binding legal effect only upon the introduction of implementing domestic legislation by each of the parties to it. In this respect it is interesting to note that Japan, one of the original twelve ATCPs, did not ratify the agreed measures by introducing domestic legislation until 1982, when it passed its Law for the Conservation of Antarctic Fauna and Flora, almost twenty years after the introduction of the agreed measures.

The responsibility for observing and enforcing the provisions of the agreed measures and the code of conduct rests with individual national expeditions, ships, and stations active in the Antarctic. In the past, the ATCPs have not shown a willingness to impose sanctions for environmental infractions. The lack of effective enforcement measures and the consequences of this omission are illustrated by the construction of scientific bases on the Fildes Peninsula by the Soviet Union and Chile despite the designation of the Peninsula as a specially protected area in 1964. During the construction of these bases, extensive areas were damaged by vehicles from the two stations and surrounding lakes were contaminated. Rather than order this activity to be stopped, the other ATCPs responded by cancelling the designation of the Peninsula as a specially protected area.

The French airfield at Dumont d'Urville provides a further illustration of this point. Evidence of the destruction of penguin colonies caused by construction of this airfield was presented to the ATCP Consultative Meeting held in January 1984, but the ATCP refused to take any action against the French.

The CCAMLR is particularly illustrative of this lack of effective enforcement provisions. The commission's enforcement role is extremely limited; it must draw the attention of any state that is not a party to the Convention to any activity undertaken by its nationals or vessels that affects implementation of the Convention. These activities, if undertaken by a contracting party, are to be brought to the attention of all parties. Article 21 provides that "each Contracting Party shall take appropriate measures within its competence to ensure compliance with the provisions of [the] Convention and with conservation measures adopted by the Commission." Article 22 requires members to "exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activities contrary to the objective of [the] Convention." Enforcement thus rests with flag states, a method that has proved less than effective in other similar commissions. It has been argued that the weak and decentralized nature of the enforcement provisions makes the CCAMLR little more than a voluntary code.

Currently, the only sanctions for violations of environmental regulations for which an ATCP refuses to take domestic action are informal enforcement pressures such as international criticism, loss of credibility, and other political sanctions. It has been forcefully argued that, "given the importance of sound environmental practices in Antarctica, these political and international methods of achieving compliance are inadequate."

A related concern is the uncertainty surrounding the binding nature of the existing measures. States that have not acceded to the instruments which comprise the Antarctic Treaty System are not bound by any of the terms of those instruments. Furthermore, the agreed measures and the recommendations that comprise the Antarctic Treaty System are stated to be binding on those ATCPs that have achieved consultative status at the time the measures are introduced and on those contracting parties that agree to be bound by their terms. Thus, existing environmental measures are not necessarily binding on all parties to the Antarctic Treaty. Moreover, some of the agreements within the Antarctic Treaty System contain provisions that purport to impose obligations on non-contracting states. Articles 3, 4, and 5 of the CCAMLR impose an obligation on all CCAMLR contracting parties, whether or not they have acceded to the Antarctic Treaty, to observe the principles and objectives of the Antarctic Treaty. More specifically, contracting parties are required to observe Articles 1, 4, 5, and 6 of the Treaty; to acknowledge the ATCPs' special responsibility for the protection and preservation of the Antarctic environment and to observe as and when appropriate the agreed measures and other measures recommended by the ATCPs for protection of the environment. The legal validity of this attempt to impose treaty obligations on third parties is not certain. It is a well-established rule of international law that a treaty does not create obligations or rights for any third party without that party's consent and it is unlikely that the Antarctic Treaty System as a whole has developed into customary international law.

It therefore appears that there is nothing to prevent states which have not acceded to the Antarctic Treaty from entering into substantial exploration activities in the Antarctic free from all restrictions imposed under the Antarctic Treaty System. This poses a threat to the Antarctic environment. To date, states outside the Treaty System which have demonstrated an interest in Antarctic activities have been brought into the Treaty System. However, a number of non-governmental scientific expeditions and tourist groups have recently been active in the Antarctic; they are not bound by the environmental protection mechanisms that are part of the Antarctic Treaty System.

While third parties are not bound by the Treaty provisions, they are bound by global agreements regarding the protection of the environment, which by their geographical scope are applicable to the Antarctic. Some of these conventions are the 1969 Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties; the 1969 Convention on Civil Liability for Oil Pollution Damage (supplemented by the 1971 Convention on the Establishment of International Fund for Compensation for Oil Pollution Damage); the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (more commonly known as the London Dumping Convention); the 1963 Partial Nuclear Test Ban Treaty; the 1971 Seabed Arms Control Treaty; and the Bacteriological and (biological) Toxic Weapons Treaty of 1972. Also relevant is the 1978 Protocol Relating to the International Convention for the Prevention of Pollution from Ships (the "MARPOL" Protocol), which governs discharges from vessels of any type operating in the marine environment. In addition, the Third UN Convention on the Law of the Sea (1982) contains measures intended to deter pollution of the marine environment. These measures are specifically directed at vessel-source pollution as well as land-based sources, seabed activities, dumping, and atmospheric sources.

One of the most recent international moves to control pollution in the Antarctic is to be found in the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. Article 4(6) of that Convention bans the export of wastes for disposal purposes, whether hazardous or not, within the area south of 60°.

Despite this comprehensive network of international conventions, no international agreement exists to protect Antarctica's land-based flora and fauna from interference by non-Treaty parties. The only restriction on third parties in relation to land-based activities in Antarctica is that articulated in Principle 21 of the Stockholm Declaration, which prohibits polluting the environment of other states or areas outside any national jurisdiction.

A third general problem with the current system of environmental protection under the Antarctic Treaty System is the lack of an overall conservation strategy for the Antarctic. There is little guidance within the Treaty System on the resolution of problems of competing use where, as is often the case, scientific research, the conservation of wildlife, fishery potential, logistic facilities, and shore-based activities come into contact and competition. As one writer stated, "The Treaty System currently provides no guidance on how the values of, for example, scientific research, shore-based mineral development, fishery potential and the conservation of wildlife and aesthetic qualities are to be weighed against one another in circumstances where there is perceived competition between them . . . there needs, therefore, to be machinery for reasoned judgement between alternative uses of the environment."

A further criticism is the failure to enforce the requirements set out in Recommendation VIII-13(i)(b) and Recommendation IX-5(ii)(2) for countries undertaking Antarctic activities to conduct environmental impact assessments in advance of major construction projects. Recommendation XIV-2 formulated at the XIVth Antarctic Treaty Consultative Meeting in October 1987 mandates environmental impact assessments in the case of scientific stations and logistic support facilities. Once again, there is no means of ensuring compliance with this recommendation, and there are few indications that the required environmental impact assessments are being carried out. The French airfield at Dumont d'Urville again provides an example. Also, when China built its scientific station on the Antarctic Peninsula, it did not conduct studies of potential sites or analyze the environmental implications of the construction; nor did China inform scientists who were conducting scientific studies in the area of its proposed site selection. Construction of the Chinese base involved numerous irregularities and environmental abuses, including the disruption of a major West German hydrological research project.

Finally, the Antarctic Treaty System is silent on the issue of dispute resolution. There is currently no forum within the Antarctic Treaty System designed to adjudicate disputes between contracting parties. This probably reflects continuing sensitivity of the ATCPs to the issue of sovereignty claims. Any attempt to establish an effective forum for dispute resolution with the power to impose sanctions will inevitably raise jurisdictional questions and will reopen the sovereignty debate both among the members of the Antarctic Treaty System and in the international community. The creation of such a forum is likely to be strongly opposed by the developing nations as it would remove the Antarctic further from the designation of global commons. Nevertheless, an effective dispute resolution mechanism is essential to future preservation of the Antarctic. Without it, the provision of sanctions against breaches of existing measures, the development of an overall conservation strategy for the Antarctic, and other similar measures will be futile. This in turn indicates that the sovereignty issue must be addressed during the debate over the future of preservation of the Antarctic environment.

##### 5. Current Trends

Despite these well-deserved criticisms of the Antarctic Treaty System, it does serve as an adequate framework for protection of the Antarctic environment. The majority of the criticisms discussed above relate to the lack of

effective implementation and enforcement of existing measures. As suggested in the introduction above, the evidence does not indicate that the ATCPs' failure to enforce existing measures reflects a particular disregard for the Antarctic environment. Many examples of abuse of the domestic environments of both members and non-members of the Antarctic Treaty System during this century may be cited. Construction in the absence of environment impact assessments or the dumping of waste at sea are not phenomena unique to the Antarctic. The failure to enforce existing Antarctic environmental regulations and the emergence of the current environmental problems in the Antarctic are a reflection of the global insensitivity to environmental issues that has persisted until recently.

#### 6. Conclusion

The Antarctic Treaty System has proved itself as an evolving series of agreements and institutions within which effective measures to protect the environment have been developed. The preventative nature of these measures, which have almost all been introduced in advance of the threats that they set out to regulate, is an important characteristic and one that fully accords with the modern philosophy of environmental protection. In this sense, the Antarctic Treaty System has been a true pioneer and the conservation agreements achieved under it provide an adequate foundation for future preservation of the Antarctic.

Abandoning the Antarctic Treaty System in favor of an unproven alternative may leave the Antarctic exposed to unregulated exploitation. In addition, the ATCPs, which include all permanent members of the UN's Security Council, are unlikely to support any proposal that includes the rejection of the Antarctic Treaty System. Such a proposal could prompt the ATCPs either to close ranks and withdraw support for the world park proposal, or to move towards the division of the Antarctic into separate jurisdictions. Both of these possibilities would remove the debate over the preservation of the Antarctic environment from the international forum and might leave that environment inadequately protected.

Thus, in order to guarantee the future protection of the fragile Antarctic environment, there should be a gradual move within the Antarctic Treaty System towards the designation of the Antarctic as a world park. The existing conservation agreements should be built upon and strengthened to achieve this goal. Most importantly, existing measures should be enforced with sanctions that make it clear that desecration of this pristine environment will no longer be tolerated. Continued cooperation among the Antarctic Treaty ATCPs and an increased will among those parties to enforce strict compliance with the existing environmental regulations is essential to the preservation of the world's "last frontier."

#### **B. Mining<sup>10</sup>**

The Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) convened in Wellington, New Zealand during June 1988.<sup>11</sup> If ratified, this Convention would permit limited mineral prospecting, exploration, and development in areas of Antarctica approved by the treaty nations. The CRAMRA would supplement the 1959 Antarctic Treaty which did not address the issue of minerals activities in the Antarctic.

The CRAMRA pact is the product of a series of minerals negotiations that were pursued by the Antarctic Treaty Consultative Parties (ATCPs) beginning in 1982. The agreement is an international regime intended to amplify the scope of the Antarctic Treaty System (ATS) and regulate prospecting, exploration, and development of Antarctic mineral resources.

The signatories and other supporters of the CRAMRA assert that its environmental safeguards will be very protective. Critics, including organizations such as the Antarctic and Southern Ocean Coalition and the activist environmental group Greenpeace, believe that commercial exploitation of minerals will damage the relatively pristine Antarctic ecosystem.

Recently, there has been much debate about foregoing a mineral resources agreement altogether and developing a new accord that would make Antarctica an international wilderness reserve. Before the CRAMRA could be ratified on November 25, 1989, two ATCPs--Australia and France--withdrew their support of the CRAMRA and began advocating a comprehensive Environmental Protection Convention to create an Antarctic Wilderness Park. Australia stated that it did not exclude the option of ultimately acceding to the CRAMRA if it became clear that alternative strategies would be fruitless and Antarctica could not otherwise be protected. New Zealand strongly criticized Australia and France for failing to support the CRAMRA, calling the concept of Antarctica as a world park an "unachievable utopia." Nevertheless, Australia decided to stand by its decision not to support the CRAMRA.

At the Fifteenth Annual Meeting of the ATCPs held in Paris in October 1989, Australia and France again proposed that the Antarctic continent be made a world wilderness park. Great Britain, the Soviet Union, and the United States, however, declared their opposition to the controversial Australian/French proposal. Belgium and Italy have since supported the proposal for a comprehensive Environmental Protection Convention, but have not formally

addressed the question of a ban on minerals activities. In addition, New Zealand has recently decided to postpone further action on ratification of the CRAMRA. This issue is far from being resolved and will be the focus of a special meeting of the Antarctic Treaty nations in November 1990 in Santiago, Chile.

Although nonratification by either Australia or France would defeat the CRAMRA in its present form, it would not ensure that the world wilderness park concept would replace a defeated agreement because some Antarctic Treaty nations--notably Japan and Great Britain--oppose a permanent ban on mineral development. This point raises the possibility that there would be no agreement on the minerals question in Antarctica, not even the informal moratorium on exploration and mining adopted in 1977 to act as an interim measure until a minerals convention could be ratified. This scenario is one the Antarctic Treaty nations cannot, and should not, allow to occur. Although the ultimate fate of the current version of the CRAMRA is uncertain, the concept of a minerals agreement for Antarctica is not "dead" despite reports to the contrary.

#### 1. THE CRAMRA

##### a. Events Leading to the CRAMRA

Two factors provided the impetus for the CRAMRA regime. First, during the late 1960s and early 1970s, the ATCPs received inquiries and requests from various industrial concerns, particularly those interested in Antarctica's petroleum potential, regarding the possibility of exploring and exploiting mineral resources in the Antarctic Treaty area. Second, major issues of global interest focused attention on Antarctic minerals development, particularly the movement toward international control of world resources and the ever-increasing volatility of world energy supplies. Specifically, during participation in the Deep Sea Drilling Project in 1972-73, the Glomar Challenger discovered traces of methane and ethane--gases often linked to the presence of oil resources--in the Ross Sea continental shelf area. In 1973-74 the Arab oil-producing countries established an oil embargo that resulted in a tightening of oil availability and a significant increase in oil prices. These political and economic circumstances made the Antarctic mineral resource issue a central concern of the ATCPs throughout the 1970s.

Negotiations leading up to the recent CRAMRA agreement began in June 1982, in Wellington, New Zealand, following several earlier informal discussions. The negotiations embodied several principles that were set out in ATCP Recommendation XI-1. First, the ATCPs would continue to play an integral role in dealing with the question of Antarctic mineral resources. Second, future negotiations would focus on the protection of the unique Antarctic environment and its dependent ecosystems. Third, the original Antarctic Treaty would be maintained in its entirety. Fourth, the interests of all mankind would not be prejudiced. Finally, the balance of interests embodied in article IV of the Antarctic Treaty would not be endangered. Following six years of negotiations and several drafts and revisions, the ATCPs agreed on the minerals regime that is the subject of the CRAMRA.

Knowledge regarding the existence and exploitability of Antarctica's mineral and hydrocarbon resources, however, is imprecise and incomplete. To date, no commercially valuable mineral resources or offshore oil and gas deposits have been discovered in Antarctica, although drilling evidence indicates the possibility of offshore oil. A good deal of geological research has been undertaken on and around the Antarctic continent. Presently, it is clear that a sufficient number of minerals, including hydrocarbons, are present. Whether such minerals exist in sufficient concentration or quality to justify extraction in the foreseeable future, however, is not known. In fact, mineral extraction may never be feasible. Although the presence of minerals is certain, the presence of mineral resources is not certain. The decision to negotiate a mineral resources regime was primarily motivated by a belief in the importance of having a system for dealing with possible mineral resource activities in Antarctica, and the importance of having a regime in place before knowing of the existence of mineral resources and before the initiation of any significant exploration and development.

##### b. Purpose and Scope of the CRAMRA.

The preamble of the CRAMRA broadly defines the rationale behind the agreement. The preamble notes that the "State Parties" to the Convention (Parties) are convinced that the ATS has been effective in promoting international cooperation in achieving the goals of the 1959 Antarctic Treaty. The CRAMRA also reaffirms that the Antarctic Treaty area shall be utilized only for peaceful purposes. Additionally, the preamble acknowledges the "possibility that exploitable mineral resources may exist in Antarctica." Further, the preamble notes the unique legal and political status of Antarctica and accepts responsibility to ensure that any minerals activities conform to the principles of the Antarctic Treaty. The preamble also recognizes that the Parties must deal with the sovereignty issue and accommodate both claimant and non-claimant nations' interests without prejudicing the rights of either group. The CRAMRA preamble stresses environmental considerations, specifically recognizing the "unique ecological, scientific and wilderness value of Antarctica and the importance of Antarctica to the global environment." The preamble acknowledges that "Antarctic mineral resource activities could adversely affect the Antarctic environment or dependent or associated ecosystems." Thus, the CRAMRA asserts the Parties' belief that "the protection of the

Antarctic environment and dependent and associated ecosystems must be a basic consideration in decisions taken on possible Antarctic mineral resource activities." Finally, the CRAMRA proposes to "ensure that Antarctic mineral resource activities, should they occur, are compatible with scientific investigation in Antarctica and other legitimate uses of Antarctica."

The CRAMRA preamble reflects the Parties' contention that a regime to govern Antarctic mineral resource activities will strengthen the ATS, that participation in these activities should be open to all states with an interest, and that special attention should be devoted to the developing country Parties. Finally, the CRAMRA reflects the Parties' belief that the effective regulation of Antarctic mineral resources and mineral resource activities will further the interests of the entire international community. Overall, the CRAMRA regulates three stages of mineral resource activities: prospecting, exploration, and development. The CRAMRA also establishes a regulatory framework that specifies binding legal obligations mandating compliance during all stages of minerals activities.

c. Relevant Provisions of the CRAMRA

1. *General Provisions.* Articles 1 through 17 of Chapter I provide the general provisions of the CRAMRA. Article 1 defines several key terms referred to throughout the CRAMRA. Article 2 describes the objectives and general principles of the CRAMRA, emphasizing the integration of the CRAMRA with the ATS and the responsibilities of the ATCPs. Article 3 prohibits Antarctic mineral resource activities from being carried on outside the framework of the CRAMRA. Article 9 protects all legal positions established under the Antarctic Treaty and emphasizes that the CRAMRA does not resolve the sovereignty dilemma. Article 5 discusses the CRAMRA's area of application. Article 8 explains response action and liability under the CRAMRA.

2. *Area of Application.* The CRAMRA applies to the Antarctic Treaty area and regulates Antarctic mineral resource activities taking place in Antarctica and on all Antarctic islands south of sixty degrees South Latitude. This area includes all ice shelves, as well as activities in the seabed and subsoil of adjacent off-shore areas extending up to the deep seabed. The CRAMRA does not regulate Antarctic mineral resource activities in the deep seabed beyond the geographic extent of the continental shelf and does not extend to any continental shelf appurtenant to islands north of sixty degrees South Latitude in accordance with international law. The CRAMRA contains no limitations preventing its application to possible impacts outside the Antarctic Treaty area which are the result of activities conducted within the confines of the CRAMRA. The CRAMRA also applies to any impacts on dependent or associated ecosystems outside the Antarctic Treaty area caused by activities within the confines of the CRAMRA.

3. *Prospecting.* Chapter III provides the prospecting provisions of the CRAMRA. Prospecting, unlike exploration and development, may proceed without explicit authorization by the institutions established by the CRAMRA, as long as such prospecting does not violate the CRAMRA. The "Sponsoring State," the State under whose national laws the prospector is governed, must comply with certain advance notification and information requirements. Specifically, a State that sponsors prospecting must notify the Antarctic Mineral Resources Commission (Commission) nine months in advance of the commencement of the planned prospecting. The Sponsoring State must identify the general area in which prospecting will take place, the mineral resources which are the subject of the prospecting, the methods to be used, and the expected duration of the program. Further, the Sponsoring State must provide details on the prospector or Operator, such as certifying that the Operator has "a substantial and genuine link with" the Sponsoring State and that the Operator is qualified financially and technically to execute the proposed prospecting in accordance with the CRAMRA.

The CRAMRA also requires that an environmental impact assessment, as well as monitoring and contingency plans, accompany the notification of planned prospecting. Specifically, the Sponsoring State must provide assessments of environmental or other impacts which could result from prospecting. In addition, the Sponsoring State must describe the measures, including any monitoring program, which will be adopted to avoid potentially harmful environmental consequences "or undue interference with other established uses of Antarctica." The Sponsoring State must also outline emergency evacuation plans and safety measures in case of an accident.

The Sponsoring State is under a continuing duty to provide the Commission with notification of any changes in the prospecting plans, and of the termination of prospecting, including notice of the removal of installations and equipment and of rehabilitation of the site. The Sponsoring State must also provide the Commission with a general annual report on the prospecting. The Commission may require fees to cover any administrative costs to accompany notifications and applications submitted.

Prospecting does not confer any right on an Operator to Antarctic mineral resources. Unlike the requirement of cooperation and sharing of scientific information under the Antarctic Treaty, the prospecting provisions of the CRAMRA do not permit the Operator to withhold basic data and information of commercial value for longer than ten years after the year of collection of the data and information, unless the Sponsoring State certifies to the Commission that the data and information continue to have commercial value. Upon cessation of prospecting, the

CRAMRA requires Operators to remove all installations and equipment and ensure "site rehabilitation."

Although the CRAMRA sets out fairly strict standards for activities occurring upon termination of prospecting, the CRAMRA does not require authorization prior to prospecting. The CRAMRA specifies, however, that the Sponsoring State must ensure compliance by its Operators with a series of prospecting standards and requirements intended to safeguard the Antarctic environment from any potential adverse prospecting effects.

*4. Exploration and Development.* Unlike prospecting, exploration and development must be specifically assessed and approved by the CRAMRA institutions. No exploration or development may take place until a Response Action and Liability Protocol have been established and are in force for any Party desiring an Exploration or Development Permit. Notwithstanding the absence of a Liability Protocol, any manifestation of an interest in exploration and development prompts a series of evaluations and actions. These evaluations and actions may result in the approval of a specific contract to carry out mineral exploration and, possibly, mineral development activities.

The initial step in the application process requires a State to request for identification an area for possible exploration and development. Any State that is a Party to the CRAMRA may submit a notification request to the Commission for possible exploration and development of a particular mineral resource or resources. This notification must contain a precise delineation and physical and environmental description of the requested area, the resources of interest, a characterization of the scale of exploration and development and the methods likely to be employed, and "a detailed assessment of the environmental and other impacts of possible exploration and development for the resource or resources involved." This notification is then submitted to all Parties and observers attending the Commission meetings.

Next, review procedures and actions are instituted by the various CRAMRA institutions, particularly the Commission, and the Scientific, Technical and Environmental Advisory Committee (Advisory Committee). Finally, a Special Meeting of Parties must be held.

The Commission's decision addresses only the minerals and the particular area specified in the request. The Commission has authority, however, to amend the area delineated by the request for the purpose of resource management or to revise the scope of an identified area by incorporating additional mineral resources and geographic areas. In addition, the Commission must consider whether exploration and development should be prohibited or restricted in any areas within the requested area.

Once the Commission identifies an area, an Antarctic Mineral Resources Regulatory Committee (Regulatory Committee) is established to promulgate and implement rules and regulations. Specifically, the Regulatory Committee handles applications to conduct minerals exploration and development, establishes application fees and procedures for handling applications, establishes periods within which applications received will be considered simultaneous, and determines a method for resolving competing applications.

After the Regulatory Committee develops and implements regulations, a Party may submit an application for an Exploration Permit for an Operator sponsored by that Party. The application must contain detailed information concerning the Operator, as well as a detailed description of proposed exploration activities and of later development activities. Additionally, the application must identify the mineral resources applied for, assess the environmental and other impacts of the proposed activities, and describe the capacity of the Operator to respond effectively to accidents, particularly those with possible environmental effects. Similar to the prospecting requirement, the application also requires a certification by the Sponsoring State that the Operator has both technical competence and financial capacity, and that the Operator has a "substantial and genuine link with" the Sponsoring State.

The Regulatory Committee then examines the application and elaborates a Management Scheme. The Management Scheme is a form of contract that prescribes the terms and conditions of the operation. If approved, the Management Scheme would result in the issuance of an Exploration Permit which conveys to an Operator the exclusive right to explore and, subject to re-examination and potential modification, to develop the specified mineral resources. At any time during the consideration of an application, the Regulatory Committee may decline the application if it determines that the proposed activities cannot meet the requirements of the CRAMRA.

The CRAMRA also includes provisions governing application for a Development Permit. If the Operator holds a valid Exploration Permit, the Sponsoring State may file an application with the Regulatory Committee for a Development Permit on behalf of the Operator. The application must be accompanied by fees set by the Regulatory Committee. The application must update the information provided in the application for the Exploration Permit, assess the environmental and other impacts of the proposed development, and contain a re-certification by the Sponsoring State of the technical competence and financial capacity of the Operator as well as a re-certification of a substantial and genuine link with the Operator.

Examination of the applications and the issuance of Development Permits entail various activities by the Regulatory Committee. The Regulatory Committee will examine an application for any modifications to the

development activities envisioned at the time of application for an Exploration Permit, and will check to see whether the planned development would cause previously unforeseen impacts on the Antarctic environment or dependent and associated ecosystems. If the Regulatory Committee members approve the application, a Development Permit will be issued to the Operator. The Regulatory Committee might also require modification of the application before agreeing to issue a permit.

The CRAMRA also contains provisions, applicable to both Exploration Permits and Development Permits, authorizing the Regulatory Committee to suspend, modify, or cancel a Management Scheme, or to impose monetary penalties. Any or all of these sanctions may be imposed when a Regulatory Committee determines that exploration or development authorized by a Management Scheme has resulted, or is about to result, in unacceptable impacts on the Antarctic environment or dependent or associated ecosystems.

The Regulatory Committee must suspend or cancel the Management Scheme and associated permit if the Management Scheme is not modified to avoid unacceptable impacts. If the Regulatory Committee determines that an Operator has failed to comply with the CRAMRA, it may modify, suspend, or cancel the Management Scheme and associated permit, or the Committee may impose a monetary penalty. Additionally, the Management Scheme and associated permit must be cancelled if the Operator ceases to have a substantial and genuine link with its Sponsoring State. Lastly, when appropriate, the Commission may be required to adopt mitigation measures for Operators.

*5. Response Action and Liability.* The CRAMRA obligates any Operator conducting any stage of minerals activities to undertake "necessary and timely response action" if the activity results, or threatens to result, in "damage to the Antarctic environment or dependent or associated ecosystems."

An Operator is strictly liable for any damage to the Antarctic environment or to dependent or associated ecosystems. This liability includes payment in the event that the damage has not been restored to the status quo ante; loss of or impairment to an established use of Antarctica or of dependent or associated ecosystems arising directly out of damage; loss of or damage to property of a third party, or loss of life or personal injury of a third party, arising directly out of the damage; and reimbursement of reasonable costs of necessary response actions taken by others to restore the status quo ante. An Operator may also be liable under other applicable national or international law for loss of life, personal injury, or loss of or damage to property not covered by the CRAMRA.

The CRAMRA provisions restrict Operator liability in two instances. First, an Operator will not be liable if the Operator proves that the damage was caused directly by a natural disaster of an exceptional character within the circumstances of Antarctica and which could not reasonably have been foreseen. Second, an Operator will not be liable if the damage was caused by armed conflict or an act of terrorism aimed against the Operator, against which no reasonable precautionary measures could have been effective. In addition, an Operator may be relieved totally or in part from its obligation to pay compensation for damage, if the Operator proves that the damage was caused totally or in part by an intentional or grossly negligent act or omission of the Party seeking redress.

The Sponsoring State will be liable for damages which would not have occurred or continued if it had carried out its obligations under the CRAMRA, such as ensuring the technical competence and financial capacity of its Operators and their compliance with the other portions of the CRAMRA. Additionally, the Sponsoring State may incur liability not specifically assigned to the Operator by the CRAMRA under other applicable rules of international law if it fails to carry out its obligations with respect to its Operator under the CRAMRA.

The CRAMRA provides that no exploration or development may take place in Antarctica until a Liability Protocol specifying the response action and liability system is formulated. This Protocol must be adopted by consensus and entered into force in the same manner as the rest of the CRAMRA. The rules and procedures arising out of the Protocol may include limits on liability and may contain means to assist with immediate response action. In addition, the Protocol may specify how to satisfy liability that an Operator is incapable of meeting. Further, unless other means are established to meet these objectives, the Protocol shall establish a Fund or Funds to pay for any damages.

*6. Compliance and Enforcement.* The CRAMRA sections dealing with the exploration and development stages and the conditions of a Management Scheme primarily provide the specifics of compliance and enforcement. A few additional comments, however, are warranted. Most critically, no Antarctic mineral resource activity can take place except in accordance with the CRAMRA. Inspection of Antarctic mineral resource activities may be carried out under the Antarctic Treaty for the purposes of that Treaty and in accordance with the CRAMRA provisions. In addition, each Regulatory Committee will monitor the compliance of Operators with management schemes within its area of competence. Although the CRAMRA requires a Sponsoring State to produce and forward an annual report on prospecting to the Commission, there is no specific requirement for similar reports on exploration and development.

7. *Dispute Settlement.* The CRAMRA contains settlement procedures applicable to disputes between two or more Parties. Each Party to the CRAMRA may choose at any time either the International Court of Justice or the Arbitral Tribunal for the settlement of disputes concerning the interpretation or application of the CRAMRA.

The CRAMRA provides additional dispute settlement procedures authorizing both Parties and Operators under their sponsorship to initiate proceedings against the Regulatory Committee for alleged violations of the CRAMRA. The alleged violations may include a decision to decline a Management Scheme, a decision to decline to issue a Development Permit, or a decision to suspend, modify, or cancel a Management Scheme or to impose monetary penalties.

8. *Additional Financial Provisions.* In addition to the various application and permit fees, the terms of a Management Scheme generally require two other types of Operator payments. First, Operators engaged in exploration and development to support the institutions of the regime may be required to pay levies. Second, payments in the nature of taxes or royalties may be required.

## 2. Analysis

The CRAMRA represents the latest step in the evolution of the ATS. The ATCPs have attempted to address the problems associated with mineral exploitation in Antarctica by progressing toward a minerals agreement that will supplement and support the original Parties' goals in Antarctica.

The CRAMRA, however, is not and does not purport to be a complete resolution of all the potential problems encompassing mineral resource activities in Antarctica. Several of the provisions are incomplete or indefinite. For example, the CRAMRA fails to define what constitutes site rehabilitation or to interpret the Operator defenses to liability. Similarly, the CRAMRA avoids some topics, such as the sovereignty issue, and reserves others for future consideration. The CRAMRA does, however, provide an "on-site regulatory regime" developed to consider minerals activities in Antarctica and to implement, to the extent possible, a management and regulatory mineral resources regime.

Disagreement over the Antarctic minerals question remains primarily in the means to protect the environment, and not in the end itself. Clearly, an international objective is to ensure that no permanent damage is done to the Antarctic ecosystems. The major question emanating from the CRAMRA is whether this new minerals agreement will be an incentive or a disincentive to commercial enterprises considering the development of known Antarctic resources. Because of the CRAMRA's ad hoc character, its strength can only be completely assessed when precise regulations have been established.

The argument against constructing a minerals regulatory regime is that Antarctica's status should remain as defined under the Antarctic Treaty of 1959, a peaceful demilitarized continent open to scientific research only. Opponents of the CRAMRA, particularly activist environmental groups such as Greenpeace, argue that an in-place regulatory regime will provide commercial enterprises with access to Antarctica and its minerals. These opponents maintain that this access presents severe environmental threats that currently do not exist under the Antarctic Treaty.

Numerous problems, however, may arise without an in-place minerals regime such as the CRAMRA. First, problems with existing prospecting operations may arise. Some commentators argue that minerals prospecting already has occurred, even though prospecting currently is not permitted under the 1959 Antarctic Treaty and will not be permitted until the CRAMRA enters into effect. For example, prospecting activities such as seismic surveys and drilling already may have been conducted under the guise of scientific research permitted by the Antarctic Treaty. Absent any uniformly accepted distinction between prospecting and scientific research, such activities cannot be prohibited under existing legal agreements. The Antarctic Treaty requires the data and results of all scientific research to be available to all Parties. The current ATS, on the other hand, does not clearly answer the extent of disclosure and level of detail required to be disclosed. This area is presently the subject of much debate.

The CRAMRA's definition of prospecting as activities "aimed at identifying areas of mineral resource potential for possible exploration and development," clearly precludes activities included in this definition prior to its entry into force. This preclusion applies whether or not these activities were previously carried out as scientific research. This preclusion is only one example of how an in-place minerals regime such as the CRAMRA, with clear and comprehensive definitions and provisions concerning prospecting and other minerals activities, could minimize problem areas and protect the Antarctic environment.

Another problem of the CRAMRA is the conspicuous absence of a Liability Protocol. The CRAMRA provides, however, that no application shall be made for an Exploration or Development Permit until a Liability Protocol is in force. The Liability Protocol is a priority issue which should be carefully and critically undertaken and not entered into with undue haste.

The CRAMRA leaves other questions concerning the liability provisions unanswered. One concern is that Antarctic minerals activities are likely to be carried out by private or public Operators as distinct from the State

Party to the regime. This concern led to the establishment of the State-Operator link to ensure compliance with the regime and the obligations arising from its implementation. The origins of this link stem from the Law of the Sea Convention of 1982. The establishment of a State-Operator link presents several problems. For example, there is no current agreement that a State will take on complete liability for an Operator. Even if States ultimately agree to assume liability for multinational Operators, the status of multinational Operators, groups of companies, consortia, and joint ventures remains unclear. In such instances, effective enforcement of regulatory measures may be hampered because the multinational group is beyond the reach of any individual State's jurisdiction.

One approach to this problem that has been suggested is to select as a Sponsoring State the State in whose territory the actual control, management, and use of the resources is located. If this approach would lead to more than one State as a Sponsoring State, the interested Parties could then agree to appoint the Sponsoring State. Such an approach would assist in the development of a more efficient system to deal with liability and remedial issues, and should be more thoroughly addressed by the CRAMRA.

The effect of minerals activities on the Antarctic environment will be critical in appraising the strength of the CRAMRA provisions. Pollution is inevitable in Antarctica if minerals activities occur; the amount permitted will be that amount permitted by the ATCPs. Problems may arise when minerals activities infringe on aspects of the environment that are governed under other portions of the ATS. Such problems need to be anticipated and specifically addressed by the minerals regime prior to their manifestation.

While many of the environmental provisions of the CRAMRA are sound, several apparent loopholes and weaknesses exist. The CRAMRA requires that an Operator conduct minerals activities pursuant to the regulations and laws of the Sponsoring State. Operators based in a State with stringent environmental requirements, however, might be able to circumvent the CRAMRA requirements by establishing a subsidiary corporation in a country with weak, or no, environmental laws. One weakness of the CRAMRA is that it may be impossible to differentiate and assess liability for environmental degradation when two or more Operators are working in the same geographical area or in proximal areas on the same resource.

A possible solution to some of these environmentally related problems which has been strongly advocated by environmentalists is the establishment of an independent Antarctic Environmental Protection Agency (AEPA). The AEPA ostensibly would function as an equivalent to national agencies by setting standards and requirements, conducting comprehensive environmental impact assessments, and monitoring compliance. The AEPA would maintain political neutrality, however, and devote its attention solely to the Antarctic environment. The CRAMRA would have to ensure that this agency is adequately funded. While adding another layer of complexity to the ATS, the AEPA would be a viable and timely resolution to the problems which are not solved by the CRAMRA. The AEPA could eliminate the problems inherent in the minerals regime that result from the disparities in domestic environmental regulations among the Sponsoring States.

An overriding problem with the enforcement of environmental obligations of states under international law is the inability to obligate states to compensate for transboundary environmental damage. This may be a major barrier to the success of an agreement such as the CRAMRA, and could render enforcement of liabilities impossible. Further, the delay associated with international adjudication, as well as the costs, could prove to be enormous. Cases involving such costs point out the necessity of less expensive and less time-consuming procedures for settling international environmental damage claims. The Parties to the CRAMRA should consider, in all cases, whether the remedies specified for dispute settlement are realistic and will be satisfactory. This is a problem of international environmental law generally, and not merely a problem with the CRAMRA. In fact, the CRAMRA has been characterized as an "attempt[] to give substance to the concept of liability through [a] more explicit international agreement []," particularly in its imposition of strict liability on an Operator for remediation and compensation for environmental damage stemming from mineral resource activities, and for imposing oversight liability on the Sponsoring State. Such a recognition of the inherent flaws in international environmental law would not eliminate the need for an in-place agreement; the CRAMRA might not stop oil spills, but it could act as a deterrent to the commencement of drilling activities.

One of the significant strengths of the CRAMRA in-place minerals regulatory regime is the requirement of consensus decision making for all Exploration and Development Permits and attendant activities. This consensus requirement presents a strong indication that only environmentally sound proposals, if any, would be permitted. Further, this requirement could propel the CRAMRA into the status of a surrogate environmental guardian against all mineral resource activities, especially if consensus is never reached on any permit. In such cases, the CRAMRA clearly would serve as a means of dissuading, and in effect prohibiting, rather than encouraging, commercial exploitation of mineral resources. In addition, those nations, such as Australia and France, that do not want to see minerals activities in Antarctica could prevent consensus decisions if they supported the CRAMRA but voted

against any activities. This ability to block consensus decisions would enable the CRAMRA to serve as a means of preventing mineral resource activities in the Antarctic region, yet would allow for an organized response to, and an ability to deal with, any global mineral resource crisis necessitating the use of the Antarctic that might arise.

In addition, the CRAMRA's stringent regulations applicable to commercial Operators would likely dissuade exploitation. United States' industries in both the petroleum and hard minerals areas are not enthusiastic about initiating work in Antarctica for two major reasons. First, working in the harsh environment of Antarctica, with its relatively unknown geology and mineral potential, is expensive as well as demanding of both labor and time. Second, several alternative and more accessible supplies of petroleum in other regions of the world currently exist. Historical precedent, such as the Arab oil embargo in the 1970s, however, indicates that this situation could change in a short time frame.

Several successful components of the ATS demonstrate the need for the establishment of a minerals agreement regulating commercial minerals activities in Antarctica. Paralleling the CRAMRA situation with mineral resources, the Convention for the Conservation of Antarctic Seals was promulgated at a time when there was no significant contemporary commercial harvesting of seals. Today, scientific research indicates that the Antarctic seal species have not been directly affected by human activities in the Southern Ocean. The relatively untouched status of the seals and other living marine resources can be attributed, at least in part, to the forethought in promulgating a convention prior to the commencement of commercial activities that could severely affect those resources. In addition, the Agreed Measures for the Conservation of Antarctic Flora and Fauna has been acclaimed as "one of the most comprehensive and successful international instruments for wildlife conservation on land ever negotiated." Moreover, the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) is considered a model agreement in its approach to conservation and management of marine resources. Thus, the CCAMLR served as an appropriate model for the CRAMRA because of the manner with which it rationally deals with competing national interests.

A major question for future consideration is the distribution of revenues from minerals activities. The CRAMRA does not specify whether the profits from any successful minerals activities will go to the private Operators, the Sponsoring States, the CRAMRA itself, or elsewhere. While this issue was important during the negotiations which led to the CRAMRA, the decision was delayed and left to the Commission to answer based on consensus agreement among the Parties.

One proposal to maintain the integrity of the Antarctic environment and the principles of the ATS is that a common pool of revenue should be open to all as the "common heritage of mankind." Obviously, developing nations and those nations not Parties to the Antarctic Treaty favor this approach because it would afford them the opportunity to share in the benefits of exploiting Antarctica's resources. Such a scenario, however, could lead to overexploitation of resources as developing nations have an incentive to industrialize that supersedes their desire to protect the environment. The CRAMRA should establish a clear policy balancing these two sides without violating the goals of the ATS.

### 3. Conclusion

Although the CRAMRA is not perfect, it is not a license to exploit and should, therefore, be ratified. Subsequent conventions should remove the apparent CRAMRA loopholes and weaknesses, and specify more stringent protections so that the CRAMRA will more likely dissuade, rather than encourage, commercial mineral exploitation. If no exploration and development occur under a strong CRAMRA, the Antarctic region will not be any worse off than if no agreement was ever reached. In addition, an in-place minerals agreement, such as the CRAMRA, would provide some sense of security in the event of an important mineral resource discovery or a change in world events that creates pressure for the exploitation of Antarctic mineral resources.

## **C. DEBATE: The Antarctic Minerals Agreement: License for Exploitation or Proactive Environmental Protection?<sup>12</sup>**

### REMARKS BY SUDHIR CHOPRA

As we all know, on June 2, 1988, amidst opposition from a large number of nation-states, the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) was adopted by consensus by 33 states participating in the Special Antarctic Consultative Meeting in Wellington, New Zealand. The Convention was opened for signature on November 25, 1988.

For many reasons this new Convention has extraordinary significance for the world community. Among those reasons are the following: first, we have a Convention whose sole purpose is to explore and exploit the nonliving resources of the Antarctic region; second, this is the first Convention that has been structured to regulate the exploitation of mineral resources hitherto considered to be out of the reach of sovereignty claims or to fall under the

domain of the common heritage of mankind regime of the new Law of the Sea Convention; third, this Convention has been adopted despite the demands of a moratorium on Antarctic minerals negotiations as expressed in U.N. Resolutions 41/88 and 42/46B of 1988; those demands were further reaffirmed in U.N. Resolution 43/83 of 1988, based on the concerns relating to the ecological fragility of the Antarctic environment and the global implications of its exploitation, and the curiosity aroused by not-so-free access to the resources in question, especially among the technologically disadvantaged states. Even after 28 years of the Antarctic Treaty's successful operation we are nowhere close to resolving the thorny issue of sovereignty claims. Perhaps the only way out, as some Antarctic scholars might suggest, is to gradually dilute the effectiveness of claims under the provisions of an objective or functional regime like the Antarctic Minerals Agreement. Which means that while we are slowly resolving one issue--the claims--we are creating another problem--the planetary environmental hazards.

REMARKS BY TUCKER R. SCULLY

I will try to provide an overview of the Convention and the background to its negotiation. I should start by saying that I disagree with the moderator's characterization of the Convention as an "exploitation" agreement. It does not call for exploitation. The Convention provides a system for making decisions about possible mineral resource activities. It sets forth an agreed process for determining whether or not commercial mineral resource activities should ever take place in Antarctica, if it were determined that such activities could take place in accordance with the principles and purposes of the Convention. The negotiation of the Convention did not proceed from the fact that there are commercially valuable mineral resources in the area of the Antarctic Treaty. It is not known whether any such resources exist. It was negotiated in the light of perceptions that there might be such resources and, if so, commercial interest in them could emerge. In the absence of an agreed system to deal with that possibility, questions relating to mineral resources could become a source of conflict inconsistent with the provisions and purposes of the Antarctic Treaty. Thus, the parties to the Antarctic Treaty committed themselves to an agreement which would provide an agreed-upon mechanism to deal with possible mineral activities in the area if and when interest in them developed.

The Convention, as a framework agreement, does not incorporate a detailed code of regulations. Rather, it sets forth basic standards to which all decisions, including decisions about possible activities, must conform, whether made individually by parties, or made collectively by the parties through institutions. At the heart of these standards is the environmental standard, which includes four elements. The first is that all decisions about mineral resource activities must be based upon information sufficient to assess the impact and judge the effect of those activities, and no activity will be permitted unless such information exists. The second element is a requirement that an environmental impact assessment process be applied to all significant decisions. Third, there are qualitative environmental criteria, which require that no activity take place that risks significant adverse impact on the Antarctic environment, on dependent or associated ecosystems, or on regional or global climate. Fourth, no activity may take place unless the technology and procedures exist to permit the above environmental criteria and safe operations to be achieved, unless the capacity to monitor the environmental effects of such activity exists, taking into account the impacts upon other activities and their cumulative impacts.

REMARKS BY ROBERT HAYTON

It would be impossible, in my view, to find another document that makes better provision for the environmental aspects of the problem, while allowing for eventual mineral development. There is one exception: mineral prospecting would require no special permit. And double-hulling of tankers is not expressly required, though that could be a condition imposed upon operators, assuming petroleum were the resource being exploited. The Convention requires a consensus, a no-objection vote, even to declare, determine, or define any area in Antarctica wherein mineral development may take place. In the absence of such consensus, no exploration is permitted.

As yet the world does not know of any economically exploitable or developable resource in the region. It is likely that many years will go by before the machinery of the Convention would be called into play. Absent the Convention, exploration and exploitation would not be precluded. Accidents may occur under either scenario, but would be much less likely or dire with the Minerals Convention in place. If and when the time comes, the Convention's commission, non-governmental organizations, and the larger international community (for example, the U.N. Environment Programme) will certainly influence the guidelines or protective measures that are to be incorporated into a management scheme by the designated regulatory committee under the Convention.

REMARKS BY CHRISTOPHER C. JOYNER

My remarks this morning have three aims. First, I want to touch on certain political and legal implications arising from the adoption of the Wellington Convention. Second, I would like to point out some lingering questions about the regime's operation, its purposes, and its portents for Antarctica's environmental situation. The recent

impalement of the Exxon Valdez on the rocks offshore Alaska, spilling 10 million gallons of crude oil into Prince William Sound, tragically illustrates the magnitude of ecocatastrophe in frigid waters. That a similar incident might happen in the Antarctic is no longer in doubt, even in the absence of mineral development activities. One only needs to recall that in January 1989, the Argentine transport vessel, Bahia Paraiso, ran aground near Palmer Station, leaking more than 250,000 gallons of oil along Antarctica's coast, threatening the local ecosystem. The environmental impact of a minerals regime must, therefore, remain a serious and real concern.

In appraising the CRAMRA's environmental implications, one must be mindful that impetus for greater environmental concern and caution came from several sources. Among these were the southern states closest to Antarctica: Argentina, Chile, Australia, and New Zealand. These states remain concerned about pollution threats to their regional environments and associated ecosystems. The scientific community was also genuinely concerned about preserving the Antarctic environment. Scientists generally are not eager to have their pristine laboratory transformed into open pit mining operations, nor to have opportunities for research constrained or delayed because of mineral development activities. Most vehement in promoting wilderness values were international environment groups, led by Greenpeace and the Antarctic and Southern Ocean Coalition. These organizations lobbied long and hard during the minerals negotiations to persuade national delegates that Antarctica should be left as a world park. Failing that, and given that a minerals regime was becoming inevitable, they then pressed for the strongest possible standards and environmentally sensitive provisions to protect Antarctica's flora and fauna, and natural habitat from the certain environmental degradation that would result from mining operations.

The Antarctic Minerals Convention does take a strong position on protecting the environment from damage caused by mineral activities. Article 4 sets forth principles for judging the acceptability of minerals activities, albeit in a general way that may be subject to future interpretation. Decisions taken are to be based on "sufficient information." That is, before proceeding with mineral development, sufficient information must be available for decisionmakers to ascertain whether unacceptable damage might occur to the environment.

Article 4(2), requires that environmental impact statements be made to ascertain what effects certain exploration and development decisions might produce for Antarctica's air and water quality, as well as for changes in the region's atmospheric, terrestrial, or marine environments. These assessments are also intended to determine whether mineral activities might constitute "further jeopardy to endangered species in the region," or result in degradation or "substantial risk" to areas of special historical, biological, scientific, and wilderness significance.

Article 4(3), directs that possible "significant adverse impacts" on global climate and weather patterns must be considered in the calculus. Further stipulations are provided to ensure that findings and technology are available to assure safe operations and compliance with environmental protection standards.

Provisions in article 8 contribute to strengthening the environmental regulations in the regime. These provisions would make an operator strictly liable for damage to the Antarctic environment and associated ecosystems caused by its mineral activities. The operator would be liable to pay for damage if restoration is not satisfactory, and the operator would be liable for the cleanup costs incurred by another agent.

Article 12 provides for the inspection of mineral resource activities. Such inspections may be performed at all "stations, installations, and equipment relating to Antarctic mineral resource activities in the area in which these activities are regulated by this Convention, as well as ships and aircrafts supporting such activities at points of discharging or embarking cargoes or personnel" (article 12(1)). These inspections, including aerial inspections, may be conducted by observers appointed by any member of the commission, as well as by observers designated by the commission, or regulatory committees. Presumably, violations of environmental standards would be reported back to the commission and the relevant regulatory committee.

Although the CRAMRA mandates serious attention to environmental considerations before decisions on mining activities are discharged, certain criticisms made by environmental groups should be noted.

First, the conservation lobby has voiced sharp concern over the lack of specificity and definition for subjective terms used in environmentally related provisions in the Convention. For example, what are the nonnegligible impacts used to define "damage" in article 1(15)? What standards constitute "significant damage" or "substantial risk" in article 4(1)? By what scientific measures can these be accurately set and determined? How much information is "adequate" or "sufficient" for gauging environmental impacts? The Convention does not answer these queries.

Second, conservation groups question whether enough accurate information about the Antarctic environment will be available to both the commission and regulatory committees for them to make informed, balanced decisions on mineral resource activities. Conservation organizations also contend that insufficient opportunities exist for outside, more impartial nongovernmental observers to contribute to the environmental assessment process. This situation, they argue, exacerbates the accountability problem between the regime and the general public, and also

may lead to decisionmakers being shortchanged of relevant information about the environment which might be helpful in their deliberations.

Third, conservation groups are quick to criticize the weak role of the Scientific, Technical and Environmental Advisory Committee in the decisionmaking process. The Advisory Committee is without binding power. Hence, there is concern that decisions might be taken by the commission or by regulatory committees irrespective, or in spite of, its recommendations.

#### DISCUSSION

BERNARD OXMAN: The liability regime in the Minerals Convention is rather elaborate. One of the difficulties in a civil liability regime is determining general liability in environmental cases. My questions to Ambassador Beeby are, how can one determine and assess damages for general environmental degradation in situations where no specific costs can be determined above cleanup costs and where no private property has been damaged? Who is the plaintiff in such a situation? Could a state make a general environmental degradation claim if it is a claimant state in that area?

Ambassador BEEBY: If a situation arises prior to the Protocol, the commission envisaged by the Convention shall be the plaintiff in national courts. After the Protocol comes into force, the Protocol itself will answer the problem.

BEATE WEBER: I cannot share in the optimism about the Convention as we know that everyday activities in Antarctica are endangering the environment. It is not just the fear of destruction by accidents. Thus, why is not the impact of existing activities assessed? Further, taking heed of the Exxon accident why should any activity be allowed to take place in Antarctica at all? I press for redrafting the Convention or for not ratifying it altogether.

Mr. SCULLY: It has been clearly recognized that scientific activities pose threats to the Antarctic environment. The issue has been recognized and continues to be reviewed and regulated. The UNEP seeks to apply impact assessment procedures.

The Exxon incident occurred due to serious errors of judgment and I am not sure that human error can be erased. The reality is that there is no agreement on making Antarctica a world park even though the EEC supports it. The issue is whether the parties have the will to enforce the agreement and the same can be said of the world park issue. It is also not clear what is meant by a world park. Does it mean that there would be no activity or no mineral resource activity in Antarctica? If, in the future, perceptions change about mineral resource activities, the world park concept would evaporate and problems would arise. There are differences in a situation like the Valdez vessel and a hypothetical situation in which a supply vessel is doing exploration in a hypothetical future under a mineral resource regime which is in place. This vessel, unlike the Valdez, would be subject to a series of obligations and decisions that would have to satisfy collectively all those involved in the regulatory process before such activity could go forward. And the operator would be held strictly liable, as would the state permitting the operator's activities.

#### FOOTNOTES CHAPTER 15

<sup>1</sup> Deborah H. Overholt, *"Common Heritage" v. "Freedom of the High Seas" Environmental Protection in the Antarctic: Past, Present, and Future*, 1992 CAN. Y.B. INT'L L. 227, 227-55, 260-61. Copyright 1992. Reprinted by permission.

<sup>2</sup> FRANCISCO ORREGO VICUMA (ED.), *ANTARCTIC RESOURCES POLICY: SCIENTIFIC, LEGAL AND POLITICAL ISSUES* (Cambridge, Eng.: Cambridge University Press, 1983).

<sup>3</sup> "The Antarctic Treaty: Recommendations of the Eighth Consultative Meeting" held at Oslo, Norway, June 9-20, 1975, D.M. Bush (ed.), *ANTARCTICA AND INTERNATIONAL LAW: A COLLECTION OF INTERSTATE AND NATIONAL DOCUMENTS*, Vol. 1, at 292 (New York: Oceana Publications, Inc., 1982).

<sup>4</sup> "Report and Recommendations of the Ninth Antarctic Treaty Consultative Meeting." London, Sept. 19-Oct. 7, 1977, *ibid.*, 337.

<sup>5</sup> During the negotiation of this agreement much time was spent on the question of whether the final result would be a code of regulations under the Antarctic Treaty, or a separate Convention. The United States suggested the form of "Agreed Measure" (something less than a convention in the strict sense) in order to accommodate the constitutional difficulties of some consultative parties which would have arisen if the convention approach had been adopted. JEFFREY D. MYHRE, *THE ANTARCTIC TREATY SYSTEM: POLITICS, LAW AND DIPLOMACY* 51 (London: Westview Press, 1986).

<sup>6</sup> The overwhelming majority of Antarctic seals live on pack ice. It has been forcefully argued that pack ice falls within the high seas legal regime (J.P.A. Bernhardt, "Sovereignty in Antarctica" 5 *California Western Int'l L.J.* 309 (1975); F.C. Alexander, Jr., "A Recommended Approach to the Antarctic Resource Problem." 33 *Univ. Miami*

L. Rev. 371, 384 (1978). This also determined the form of the agreement regulating the harvesting of the seals. Because the agreement would limit freedom of the high seas, a freestanding international convention was a necessity. The convention did not enter into force until Mar. 11, 1978, 30 days after the deposit of the instrument of ratification by Belgium: Bush, op. cit. supra note 2 at 255.

<sup>7</sup> Once again it was necessary to adopt the form of a freestanding convention because the measures contained in the convention would significantly affect the traditional freedoms of the high seas.

<sup>8</sup> Seals and whales are protected under separate conventions and some writers feel that they are therefore excluded from the CCAMLR regime. However, seals and whales are nowhere expressly excluded from the Convention and the definition of marine living resources extends to "all other species of living organisms" not expressly referred to in Art. 1(2). It would thus appear that the Convention is broad enough to include seals and whales--an interpretation which is essential to the viability of the ecosystem approach as whales are by far the largest consumers of krill.

<sup>9</sup> Convention on the Regulation of Antarctic Mineral Resource Activities, Art. 61, *reprinted in* 27 Int'l Leg. Mat. 859 (1988).

<sup>10</sup> Andrew N. Davis, *Protecting Antarctica: Will a Minerals Agreement Guard the Door or Open the Door to Commercial Exploitation?*, 23 GEO. WASH. J. INT'L L. & ECON. 733 (1990). Copyright 1990. Reprinted by permission.

<sup>11</sup> Convention on the Regulation of Antarctic Mineral Resource Activities, opened for signature Nov. 25, 1988, 27 I.L.M. 859. The CRAMRA is also referred to in the literature as "The Wellington Convention" and the "Antarctic Minerals Convention."

<sup>12</sup> *The Antarctic Minerals Agreement*, 83 AM. SOC'Y INT'L L. PROC. 204, 204-05, 208-09, 214-16, 219-20, 222-23 (1990) (remarks of Sudhir K. Chopra, Tucker R. Scully, Robert Hayton, and Christopher C. Joyner). Copyright 1990. Reprinted by permission.