ABHANDLUNGEN

Antarctica's Mineral Resources in International Law

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1. Introduction

Ever since its discovery, the vast continent of Antarctica which is about 14 Million square kilometers in size and more than 98 % of which is permanently covered with ice has been mainly the object of scientific research. Hence it generally has remained outside the attention of the general public, except for a few occasions when this silent and peaceful continent has made the news. One of these occasions was in 1959 when 12 States signed the Antarctic Treaty at Washington on 1 December 1959[1]), after the possible strategic value of Antarctica had become obvious and some discord over territorial claims of several States over certain parts of this continent had emerged. The parties laid down the principles of their common policy towards Antarctica in the Preamble of the Treaty in order to preserve the state of affairs in this continent. These principles are: (1) the recognition "that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become

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[1]) UNTS vol. 402, p. 71.

the scene or object of international discord"[2]); (2) the preservation and development of the freedom and co-operation of scientific investigation in Antarctica[3]); (3) the conviction that "a treaty ensuring the use of Antarctica for peaceful purposes only and the continuance of international harmony in Antarctica will further the purposes and principles embodied in the Charter of the United Nations"[4]). As the original signatories and those States which later acceded to the Antarctic Treaty maintained this policy, they managed to preserve Antarctica mainly for scientific purposes for nearly another two decades since the conclusion of the Treaty.

However, this continent has been making the news again for several months, as reports of minerals, especially of petroleum and natural gas in Antarctica's continental shelf (and of enormous amounts of krill[5]), a little shrimp which is high in protein), spurred a world wide interest in Antarctica's natural resources. The question of who owns Antarctica's mineral resources, and who has the legal power to regulate the conditions of their exploration and exploitation, is naturally of special concern for the parties to the Antarctic Treaty, but it has also attracted some attention outside that group, for example in the Federal Republic of Germany, which is intending to accede to the Treaty[6]), and within the developing countries where some voices demand to declare Antarctica as the common heritage of mankind[7]) similar to the sea-bed and ocean floor outside the limits of national jurisdiction.

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2) Antarctic Treaty, Preamble sec. 2.

3) *Id.* secs. 3 and 4.

4) *Id.* sec. 5.

5) Antarctica's living resources (whales, seals, fish, krill) are not to be dealt with in this context, because they invoke mainly questions of special agreements and of the law of the sea. Since their eighth consultative meeting (Oslo 1975) the Consultative Parties are trying to establish a special régime for Antarctica's living resources. For this purpose they held special meetings in 1978 at Canberra, Buenos Aires and Washington. This could well lead to a special conference which, with the participation of non-member States of the Antarctic Treaty, would have to deal with the special problems of these resources.

6) See Gesetzentwurf der Bundesregierung zum Antarktis-Vertrag vom 1. 12. 1959, Bundestags-Drucksache 8/1824 (24. Mai 1978). The ratification law has been adopted on 16 November 1978, *id.* 8/2252.

7) See *e.g.* Ambassador Pinto of Sri Lanka, Frankfurter Allgemeine Zeitung, 19. August 1977; concerning Guinea, see International Herald Tribune, 21 September 1977; Note: Thaw in International Law? Rights in Antarctica under the Law of Common Spaces, The Yale Law Journal, vol. 87 (1977/78), pp. 804–859.

However, dissimilar as the interests of the States may be with regard to Antarctica's mineral resources, they all face the problem that until now there has been no sufficiently developed and generally recognized body of law concerning these resources, (the term "mineral resources" referring to all non-living resources present in Antarctica, with the exception of potable water[8]). Hence the purpose of this article is to analyse the conditions for the development of a legal régime for these resources, which could provide an equitable solution for the issues involved in this matter. Apart from the basic questions of title to and jurisdiction over the minerals, these issues are the licensing of exploration and exploitation, the protection of asserted rights to a mineral deposit, the preservation of Antarctica's sensitive environment, and, last but not least, the equitable adjustment of conflicting interests in the preservation of the principles and achievements of the Antarctic Treaty, and the development of the mineral resources of this continent to meet the world's growing need for energy and minerals.

To provide this analysis with the necessary factual basis — incomplete as that inevitably must remain — the article will first give a short survey of Antarctica's resource potential (2). Next it will deal generally with the bearing of the Antarctic Treaty itself on the issue (3), and will then turn to the special questions of title and jurisdiction (4). Special problems of another kind are created by the legal status of submarine areas around Antarctica, and by the actions of third States in the treaty area (5). Finally, the preceding chapters shall serve as a background for the re-examination of various proposals made for the development of a legal régime of Antarctica's mineral resources (6).

2. Antarctica's resource potential

A geological survey published in 1974 by the United States Department of the Interior, introduces its mineral resource estimation for Antarctica with the statement that "substantial resources of minerals are almost

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[8]) Plans to make use of Antarctica's tremendous water resources mainly refer to the huge icebergs drifting around the continent. This would again invoke questions of the law of the sea. See, in general, Neal Potter, Natural Resource Potentials of the Antarctic (New York 1969), p. 53; J.L. Hult/N.C. Ostrander, Antarctic Icebergs as a Global Fresh Water Resource (Santa Monica 1973); Thomas R. Lundquist, The Iceberg Cometh?: The International Law Relating to Antarctic Iceberg Exploitation, Natural Resources Journal 17 (1977), pp. 1–41.

certainly present in Antarctica because no other continental areas of similar size are devoid of them"[9]). Antarctica was a part of the ancient Gondwanaland, a continent which existed 200 million years ago, containing also South America, Africa, the Indian sub-continent and parts of Australia. On the Antarctic continent there are thus several regions of geological structure similar to those found on the other continents. The mountainous Antarctic Peninsula, for example, is regarded as a geological continuation of the Andes, which contain extensive deposits of copper and tin. The Dufek Intrusion in the Pensacola Mountains is associated with similar geological structures, like the Bushveld in South Africa, where important mineral deposits include platinum, nickel, copper, chromium, lead, zinc, vanadium, iron, cobalt, tin and gold[10]). In fact, nearly all of these minerals and others such as uranium, silver, manganese and molybdenum are found as mineral occurrences in Antarctica, although without having been examined qualitatively or quantitatively. The better known mineral resources of the Antarctic continent are non-metallic minerals such as coal, marble, sand and gravel[11]). Deposits which are large enough for industrial exploitation include coal (partly as anthracite) and iron ore. The most recent discovery of a "mountain of iron" by Soviet scientists in the Prince Charles Mountains between 60° and 70° East latitude was reported in December 1976[12]). Of special interest are the indications of uranium found by members of a geological survey conducted by the Federal Republic of Germany in December 1976 in Victoria Land, near the Ross Sea. The radiation was discovered in exposed sandstone layers, which are similar to those of the uranium-rich formations in the South African Karoo area[13]). Traces of ethane and methane, which indicate the presence of oil and natural gas, were found by the U.S. ship "Glomar Challenger" in the continental shelf of the Ross Sea in 1973[14]), and an estimate made in 1974 by the United States Geological Survey refers to approximately 15 million barrels of recoverable

[9]) Mineral Resources of Antarctica. Compiled and ed. by N.A. Wright/P.L. Williams, Geological Survey Circular 705 (Reston 1974), p. 18.

[10]) Wright/Williams (note 9), p. 17.

[11]) Wright/Williams (note 9), pp. 3–11; Potter (note 8), pp. 16–30.

[12]) Walter Sullivan, Soviet Team Finds a "Mountain of Iron" in Antarctica, The New York Times, 19 December 1976.

[13]) Walter Sullivan, Copters Hunt Antarctic Uranium, The New York Times, 29 December 1976.

[14]) Deborah Shapley, Antarctica: World Hunger for Oil Spurs Security Council Review, Science, vol. 184 (1974), p. 777. For the geographical situation of the shelf

oil under the continental shelf off Marie Byrd Land[15]). Manganese nodules have been dredged from the ocean-floor around the continent by the U.S. ship "Eltanin", however these nodules contain a smaller percentage of copper, nickel and cobalt than those found closer to the equator[16]).

In spite of these promising discoveries, the geological survey of 1974 concluded the analysis by stating that Antarctica's mineral resource potential "is very small because of the tremendous amount of ice cover on the continent. The potential is further reduced because the results of past exploration indicate that only a very small fraction of the mineral occurrences studied have any significant resource potential"[17]). Referring to the technological and economic problems of an exploitation of Antarctica's mineral resources, the editors stated, "the costs and problems of exploration and development will further diminish the number of occurrences that have resource potential". This statement recalls a remark made by a geologist of the National Academy of Sciences in 1960 before the Senate Committee on Foreign Relations, that he "would not give a nickel" for all the mineral resources he knew of in Antarctica[18]). The technological problems of exploring and exploiting mineral resources under the slowly but permanently flowing inland-ice-cover, which would displace and deform every drill-shaft sunk into the underlying rock, are still unresolved. In addition, the development of resources in the small exposed areas of this remote continent is hampered by extremely harsh climatic conditions, by the inaccessibility of most of the coasts, which are blocked during most of the year by pack-ice, and by extreme long distances to the next populated areas[19]).

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areas see Wright/Williams (note 9), pp. 15–17, especially in relation to the Weddell and Bellinghausen Seas.

[15]) Charles D. Masters, US Geological Survey, Statement in the Washington Post, 12 March 1975; Antarctic Oil is Estimated as Enormous, Washington Post, 3 March 1975; Shapley (note 14), p. 777.

[16]) Wright/Williams (note 9), p. 12.

[17]) Wright/Williams, p. 25.

[18]) Statement of Laurence M. Gould, Chairman, Committee on Polar Research, National Academy of Sciences, in: The Antarctic Treaty, Hearings before the Committee on Foreign Relations, United States Senate, 86th Congress, 2nd session, 14 June 1960 (Washington 1960), p. 75.

[19]) Antarctica is by far the coldest continent, with mean annual temperatures of 10 to 15 degrees Celsius below zero on the coast, and 40 to 50 degrees Celsius below zero in the hinterland, with frequent blizzards. Below 2 % is free of ice; the icecover is up to 2,700 m thick.

Even offshore-activities on the Antarctic continental shelf are faced with technical problems, which were unknown to the offshore-industry off the Canadian and Alaskan coast. The most dangerous threat to the drilling operations on the continental shelf off the Antarctic are the drifting and grounding ice-bergs, which can destroy installations and open closed well caps. Finally, assuming that the technological questions could be resolved in the next decade, there still remains the problem of tremendously high costs for exploration, development, transportation and labour which may render a development of most minerals uneconomical, even if large deposits of valuable minerals were discovered [20]).

However, the economic problems of development of Antarctica's mineral resources (in the first place oil and natural gas from the continental shelf[21]), as well as uranium and other high value metals from the exposed regions of the continent), depend on several factors which may radically change in the future. Most of the estimates of Antarctica's economic potential were made before the oil crisis, which made for example the offshore-exploitation in the Arctic economically feasible. Relevant factors may be the discovery of new mineral deposits in Antarctica, the gradual solution of technological problems, the intention of States to achieve autarky in their supply of energy and minerals, the tendency of multinational enterprises to secure their position on the international markets by reserving areas for future exploitation, an unexpected price increase caused by sudden demand or by political circumstances such as embargos, and even the intention of governments to have a "foot in the door" of the unexplored continent. Although the industrial exploitation of the mineral resources on Antarctica's continental shelf has not yet even begun, and while on the continent it is obviously even further away, the point where international lawyers still could turn away and regard the emerging legal problems of Antarctica's mineral resources as irrelevant has undoubtedly passed. The necessity of providing answers to the unresolved legal questions of exploration and exploitation of Antarctica's mineral resources, became

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20) An analysis of the costs in relation to certain high value minerals was made in 1969 by Potter (note 8), pp. 16–30. See also Potter, Economic Potentials of the Antarctic, Antarctic Journal of the United States, vol. 4 (1969), pp. 61–72; Philippe van der Essen, L'économie des régions polaires, relations et perspectives, Chronique de Politique Etrangère, vol. 25 (1972), pp. 391, 440–446.

21) For details see F.M. Auburn, Offshore Oil and Gas in Antarctica, German Yearbook of International Law 20 (1977), pp. 139–173.

obvious at the end of the last decade, and it will probably become urgent at the end of this decade.

3. The Antarctic Treaty and mineral resources

3.1. The signatory States or "Contracting Parties" to the Antarctic Treaty[22]), which entered into force on June 23, 1961, are Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Soviet Union, the United Kingdom, and the United States. These 12 States became the original "Consultative Parties" to the Treaty after they demonstrated their "interest in Antarctica by conducting

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22) The Treaty has been analysed by various scholars, and there exists an extensive literature on this topic, see the Antarctic Bibliography, prepared by the Library of Congress (Washington 1965 ff.), vol. 7 (1974); for the earlier literature see René-Jean Dupuy, Traité sur l'Antarctique, Annuaire Français de Droit International 6 (1960), pp. 111–132; John Hanessian, The Antarctic Treaty, The International and Comparative Law Quarterly 9 (1960), pp. 436–480; *id.*, Der Antarktis-Vertrag vom Dezember 1959, Europa Archiv, vol. 15 (1960), pp. 371–384; Robert D. Hayton, The Antarctic Settlement of 1959, AJIL, vol. 54 (1960), pp. 349–371; K.R. Simmonds, The Antarctic Treaty, 1959, Journal du Droit International 87 (1960), pp. 668–701; Alfred van der Essen, Le problème politico-juridique de l'Antarctique et le Traité de Washington du 1er décembre 1959, Annuaire de droit et des sciences politiques, vol. 20 (1960), No. 3; K. Ahluwalia, The Antarctic Treaty: Should India become a Party to It?, The Indian Journal of International Law, vol. 1 (1960/61), pp. 473–483; M.W. Mouton, The International Régime of the Polar Regions, Recueil des Cours, vol. 107 (1962 III), pp. 175–285; Adolfo Scilingo, El Tratado Antártico (Buenos Aires 1963); Marjorie M. Whiteman, Digest of International Law, vol. 2 (1963), pp. 1232–1263; since about 1970 the Treaty attracted again the attention of legal scholars, see Giovanni Battaglini, La condizione dell'Antartide nel diritto internazionale (Padova 1971); Christopher Beeby, The Antarctic Treaty (Wellington 1972); Roberto E. Guyer, The Antarctic System, Recueil des Cours, vol. 139 (1973 II), pp. 149–226; Finn Sollie et. al., The Challenge of New Territories (Oslo 1974); Gundolf Fahl, Der Antarktisvertrag vom 1. Dezember 1959, in: Fahl (ed.), Internationales Recht der Rüstungsbeschränkungen, Loseblattkommentar (Berlin 1975 ff.); G.N. Barrie, The Antarctic Treaty: Example of Law and Sociological Infrastructure, The Comparative and International Law Journal of Southern Africa, vol. 8 (1975), pp. 212–224; Eric W. Johnson, Quick, Before it Melts: Toward a Resolution of the Jurisdictional Morass in Antarctica, Cornell International Law Journal, vol. 10 (1976), pp. 173–198; José Enrique Greno Velasco, La adhesión de Brasil al Tratado Antártico, Revista de Política Internacional 146 (1976), pp. 71–89; Edvard Hambro, The Antarctic Treaty after Fifteen Years, in: Um Recht und Freiheit, Festschrift für Friedrich August Freiherr von der Heydte (Berlin 1977), pp. 243–251; Ursula Wassermann, The Antarctic Treaty and Natural Resources, Journal of World Trade Law, vol. 12 (1978), pp. 174–179; see also Auburn (note 21), *ibidem.*

substantial scientific research activity there, such as the establishment of a scientific station or the dispatch of a scientific expedition" (Art. IX sec. 2). In fulfilling the requirements of this provision, Poland[23]) became the 13th Consultative Party in September 1977, after being a simple party since its accession to the Treaty in 1961. The Consultative Parties are entitled to participate in the consultative meetings[24]) which are organized approximately biannually in the capital of a Consultative Party "for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering, and recommending to their Governments, measures in furtherance of the principles and objectives of the Treaty" (Art. IX sec. 1). The following countries acceded as simple parties which do not have the privilege to participate in the confidential consultative meetings and hence have little possibility to influence the decision-making process in that important policy making body: Czechoslovakia (1962), Denmark (1965), the Netherlands (1967), Rumania (1971), the German Democratic Republic (1974) and Brazil (1975). The Federal Republic of Germany intends to become a Consultative Party very soon. For this purpose it reserved 23.5 Million German Marks of its national budget 1979 to build a special research vessel, a scientific station in Antarctica and a polar research institute in Germany[25]).

The Antarctic Treaty itself does not mention mineral resources. There are two approaches, however, to find a solution to the legal problems of Antarctica's mineral resources, apart from an amendment of the Antarctic Treaty or the conclusion of any special treaty regarding this matter. On the one hand, one could think of developing the Treaty by interpretation so that it would also be applicable to mineral resources. On the other hand, the Consultative Parties could develop a legal régime for the mineral resources by way of recommendations, which, however, are not part of the Treaty, but nonetheless become binding if they are adopted by the governments of the Consultative Parties (Art. IX secs. 1 and 4 of the Treaty).

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[23]) In spring 1977 Poland established a scientific station in Antarctica and applied for admission as a Consultative Party. It was admitted after the rules and procedures for the admission were layed down on a special consultative meeting in July 1977, see Gesetzentwurf der Bundesregierung (note 6), p. 15.

[24]) See Truls Hanevoldt, The Antarctic Treaty Consultative Meetings — Form and Procedure, Cooperation and Conflict, vol. 6 (1971), pp. 184–199.

[25]) Haushaltsplan 1979 des Ministeriums für Forschung und Technologie, Bundestags-Drucksache 8/2150, Einzelplan 30.

The first solution has been attempted in order to prevent any economic exploitation of the treaty area at all by several experts on a semi-official meeting of experts from the countries of the Consultative Parties which was convened by the Fridtjof Nansen Foundation in Oslo in 1973 [26]). This meeting revealed two attempts of this kind [27]). According to one view, even economic exploration of Antarctica's mineral resources is prohibited by the Treaty, because it would contaminate the area which should be preserved uncontaminated for scientific investigation. Scientific investigation is one of the prime objects and purposes of the Treaty (Preamble, Art. II). There are two major objections to this opinion: First, the basic assumption that economic exploration would inevitably render all scientific investigation impossible in that area is not necessarily true. Although the Antarctic environment is extremely sensitive to contamination, there may be techniques of exploration and exploitation which take the special vulnerability of this environment into account, and there may also be regions of that vast continent which are of less interest for science. Secondly, scientific investigation is but one use of this continent for the benefit of all mankind. Mineral exploitation could be another one in a time of growing shortage of raw materials and energy in the world. Instead of excluding any economic exploration *a priori,* one must balance the common interests of all parties in uncontaminated regions for scientific investigation against the specific interests of one or more parties in the exploration of a certain area for economic purposes. This weighing of interests would have to take into account all relevant circumstances, such as the special scientific importance of the area, the expected environmental impact of the exploration, the availability of less-contaminating techniques, the value of the recoverable minerals, etc.

Another group of experts at the Nansen Foundation meeting took a stand similar to the first view. However, in contrast to the view mentioned above, they agreed that the Treaty does not directly regulate the question of the exploration and exploitation of Antarctica's mineral resources. Nevertheless, they assumed that these activities would violate

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[26]) Antarctic Resources. Report from the meetings of experts at the Fridtjof Nansen Foundation at Pohögda, May 30 – June 10, 1973. Published in U.S. Antarctic Policy. Hearing before the Subcommittee on Oceans and International Environment of the Committee on Foreign Relations, United States Senate, 94th Congress, 1st session on U.S. Policy with Respect to Mineral Exploration and Exploitation in the Antarctic, 15 May 1975, Washington 1975, pp. 68–85.

[27]) *Id.,* p. 76 f.

the principles and purposes of the Treaty. The Preamble provides that "Antarctica ... shall not become the scene or object of international discord" and that the "treaty ensuring . . . the continuance of international harmony in Antarctica will further the purposes and principles embodied in the Charter of the United Nations". In addition, under Art. X, each party "undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica" contrary to the mentioned principles. On the one hand, there is no doubt that one can regard the exploration and exploitation of Antarctica's mineral resources as a "peaceful" use in the sense of the Preamble. Only the use of the treaty area for military purposes is prohibited by the Treaty (Art. I), but this provision does not deal with the exploitation of minerals in Antarctica, which could be used for military purposes outside the treaty area. On the other hand, the peaceful exploration and exploitation of minerals could cause international discord, if it were to violate the régime which has been established by the parties under the treaty to protect Antarctica's environment. However, to infer on the basis of the hypothetical possibility that a violation of the provisions to protect the environment could take place and that this in turn could cause discord, seems too far-fetched. A more obvious cause for discord may exist however, if a party like the United States or the Soviet Union, which does not recognize any territorial claim in Antarctica, would begin exploration and exploitation of mineral resources in an area of Antarctica which is claimed by another Consultative Party. It is not unlikely that this type of discord would arise, because some of the geologically most promising structures (like the Dufek Intrusion) are located in areas which are claimed by one or more States. Thus, the question is whether Art. X prohibits all economic exploration and exploitation on grounds that this may incite a dispute over the sovereignty issue in Antarctica, which is "shelved" by Art. IV of the Treaty. A somewhat legalistic answer may be given by reference to Art. IV sec. 2. Under this provision no "activities taking place while the Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica". Consequently, since exploring and exploiting the mineral resources would be neutral towards the question of sovereignty it might not be regarded as a cause for discord. However, to take a more realistic approach, one has to assume that several claimant States would regard any exploration and exploitation within their sector as a violation of their sovereignty. Thus one can say that the real issue at stake here

appears to be the question of sovereignty. An interpretation of Art. X which would or would not deny a country the right to explore and exploit mineral resources in an Antarctic region over which another country claims sovereignty, would simultaneously decide the whole sovereignty issue. This would contravene the main purpose of Art. IV, which is to leave the question of sovereignty unresolved. Any interpretation which would determine this question must be regarded as not in accordance with the Treaty. Hence, as a result of Art. IV, the Antarctic Treaty has no bearing upon the substantive problems which arise when a party starts exploring and exploiting the mineral resources in a region over which another party claims territorial sovereignty.

The alternative solution of the problem by way of recommendations has gradually been attempted by the Consultative Parties in the past few years. At least after an economic interest in Antarctica's mineral resources was shown by private mining corporations[28]) and increasing discussion about these resources emerged in agencies[29]) of the United Nations, the Consultative Parties could no longer hesitate to deal with the issue. After informal contacts at their sixth consultative meeting in Tokyo in 1970, the Consultative Parties adopted Recommendation VII–6[30]) at their seventh consultative meeting in Wellington in 1972. The Recommendation formally recognized the possibility of there being exploitable minerals in the Antarctic Treaty Area, *i.e.* south of 60° South latitude (Art. VI of the Treaty), noting the need for further studies, and recognizing that mineral exploitation is likely to raise problems of an environmental nature.

In summer 1973, the subject of Antarctica's mineral resources was studied in its scientific, technical and legal aspects by a group of experts at the Nansen Foundation meeting mentioned above, but the experts could not find solutions for the legal and political problems connected with this topic. Their report reveals basically different attitudes towards

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[28]) U.S. Antarctic Policy (note 26), p. 18. It was communicated that a Texan firm (Texas Geophysical Instruments) had inquired at the Legal Advisor's Office in order to acquire the exclusive rights to explore the Ross and Weddell Seas for 10 years. See also Auburn (note 21), p. 141 ff.

[29]) See UN-Doc. E/C. 7/5, ECOSOC, Committee on Natural Resources, Information on Natural Resources in Antarctica, 25 January 1971.

[30]) The Recommendations of the I. through VII. consultative meetings are published in Gerald Schatz (ed.), Science, Technology and Sovereignty in the Polar Regions (1974), p. 114 ff. The Recommendations of meetings I through IX are published in German in: Gesetzentwurf der Bundesregierung (note 6), p. 20 ff.

this subject. Consequently, the Consultative Parties adopted Recommendation VIII-14 at their eighth consultative meeting in Oslo in 1975[31]) which provides that the subject "Antarctic Resources – the Question of Mineral Exploration and Exploitation" be fully studied at a special preparatory meeting during 1976. Furthermore the Consultative Parties invited the Scientific Committee on Antarctic Research (SCAR)[32]) to make an assessment of the environmental impact of possible mineral exploration and/or exploitation in Antarctica. In its interim report prepared for the special preparatory meeting held in Paris in July 1976, SCAR still regarded the exploitation of hydrocarbons on Antarctica's continental shelf as the most likely form of mineral exploitation and consequently as the greatest actual risk for the environment of that continent. At the special preparatory meeting the Consultative Parties set forth the following principles[33]): (i) The Consultative Parties will continue to play an active and leading role regarding the treatment of the question of Antarctica's mineral resources; (ii) the Antarctic Treaty must be preserved in its entirety; (iii) the protection of the unique Antarctic environment and of its dependent ecosystems must be of a fundamental concern; and (iv) in dealing with the question of mineral resources in Antarctica the Consultative Parties shall not fail to consider the interests of all mankind in Antarctica.

On the other hand, however, the Consultative Parties could not agree on a common policy concerning the exploration and exploitation of the resources. Although they adhere strictly to the principle of non-publicity, and the records of the meetings are generally confidential, it was reported that the opinions of the Parties at the special preparatory meeting scanned from the right to unilateral exploitation subject to strict environmental control (USA), to a renewable temporary moratorium of ten to fifteen years (USSR, Japan)[34]).

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[31]) Published in James E. Heg, Antarctic Treaty: eighth consultative meeting, Antarctic Journal of the United States, vol. 11 (1976), pp. 1–8, at 7.

[32]) SCAR was established in 1958 as a scientific committee of the International Council of Scientific Unions (ICSU). It consists of one scientific delegate from each country which is actively engaged in scientific investigation in Antarctica, see its Constitution in SCAR Manual (2nd. ed. 1972). The report of SCAR "Antarctic Resources – Effects of Mineral Exploration" is a preliminary assessment study. It is published in SCAR Bulletin No. 57 of September 1977, pp. 209–214.

[33]) See Gesetzentwurf der Bundesregierung (note 6), p. 113. Regarding further activities of SCAR, see SCAR Bulletin No. 54 of September 1977.

[34]) See Barbara Mitchell, Resources in Antarctica. Potential for Conflict, Marine Policy, vol. 1 (1977), pp. 91–101, at 96 ff. At present the Soviet Union is obviously

An important step in the direction of a reconciliation of the different opinions was made by the Consultative Parties at their ninth consultative meeting held in London in the autumn of 1977. In para. 8 of their unanimously adopted Recommendation IX–1[35]), the Parties urgently recommended to their governments to require its nationals and other States to refrain from exploration and exploitation of antarctic mineral resources while the Consultative Parties endeavour to find a regulation for any activities concerning mineral resources in Antarctica on a consensual basis. However, as the Recommendation is addressing itself only to the operations of nationals and third States, it does not call upon the Consultative Parties for a moratorium, *i.e.* an agreement to abstain from any economic exploration and exploitation of those resources. Nevertheless, one could assume that the Consultative Parties are themselves bound by the principles of good faith, as laid down *e.g.* in Arts. 18, 26 and 31 of the Vienna Convention on the Law of Treaties, to refrain at least from those actions which would be prejudicial or defeatarious to the object and purpose of the pending negotiations concerning a legal régime for Antarctica's mineral resources.

At any rate, Rec. IX–1 para. 8 expresses a common policy of the Consultative Parties to prevent mining operations by their nationals and third States in the treaty area. This reflects an important development in the American attitude towards this issue, because the present Carter Administration is apparently prepared to restrain the petroleum companies under its jurisdiction from unwarrantedly commencing mining operations on the Antarctic continental shelf[36]).

In addition, Rec. IX–1 calls in its operative part, *inter alia*, for another meeting of experts for environmental questions, technology and related fields (para. 3), which also shall be concerned with questions of oil pollution in Antarctica[37]); reaffirms the principles adopted at the special preparatory meeting of 1976 which are mentioned above (para. 4); recognizes that no regulation may violate the principles of Art. IV

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more interested in krill than in petroleum from Antarctica, see Bernhard Nossiter, Antarctica's Rich Resources Threaten 13-Nation Treaty, International Herald Tribune, 21 September 1977. Apparently it is afraid of the deleterious effects of possible oil spills on Antarctica's marine living resources, see also Wassermann (note 22), p. 117.

35) For the German text see Gesetzentwurf der Bundesregierung (note 6), p. 113.

36) See Nossiter (note 34).

37) Rec. IX–6 is especially concerned with the pollution of Antarctica's marine environment by oil.

of the Treaty, *i.e.* the "shelving" of the territorial claims (para. 5); and requires the host country of the next consultative meeting, which is scheduled for 1979 in Washington[38]), to convene another special preparatory meeting on legal and political questions of the mineral resources issue (para. 7).

3.2. Although the Treaty and the Recommendations leave the question of the permissibility of mineral exploration and exploitation in Antarctica open, and subject to the development of a legal régime for the mineral resources, these instruments would even today have an important bearing upon the modalities of any mining activity conducted under the jurisdiction of any party to the Treaty in that area[39]).

3.2.1. Under Art. III the parties agreed to exchange information regarding plans for scientific programs in Antarctica, scientific personnel between expeditions and stations, scientific observations and results from Antarctica, and to make these results freely available to anyone. In practice, this obligation would require any party to open the plans for an exploration in advance, to let personnel of other parties participate in the course of the exploration and to transmit the results to the other parties and even to publish them. These requirements seem difficult to reconcile with the interests of parties and private enterprises which are prepared to invest huge amounts of money in exploration. They run the risk that others will participate in the fruits of the exploration as long as there is no generally recognized régime to assert rights over discovered minerals in Antarctica. Any juridical attempt to circumvent this problem by applying the obligations of Art. III only to scientific investigation and not to economic exploration would certainly spread mistrust between the parties and could finally lead to discord in Antarctica. Thus, in the absence of special regulations for economic exploration, the plans, procedures and results of these activities are to be exchanged between the parties "to the greatest extent feasible and practicable". Whether the economic interest of individuals and corporations could make any exchange "unpracticable"

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[38]) Final report of the ninth consultative meeting, para. 17 (note 6), p. 118.

[39]) See the Nansen Foundation report (note 26), p. 76; Guyer (note 22), p. 219. In a Note (note 7) it has been argued in the Yale Law Journal recently "that exclusive sovereign rights and beneficial activities in Antarctica are barred by contemporary principles of international law", *id.* p. 806. However, interesting as this opinion may be, it apparently is not compatible with the opinion of those countries, which are most active and most interested in Antarctica, and it has no basis in the State practice until today.

in any given case cannot be answered in advance, without reference to the specific circumstances of the situation. It seems at least unlikely that such an interpretation could find general recognition.

3.2.2. To safeguard the principles of exchange of information and co-operation laid down by the Treaty, Art. VII grants a right of inspection to the Consultative Parties [39a]). This right refers to "all stations, installations and equipment and ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica", but not to offshore-installations (Art. VII sec. 3, Art. VI). It also includes devices used by non-governmental organizations and individuals. Designated observers of another Consultative Party enjoy a kind of immunity when they are present on a station (Art. VIII). Tourists and non-governmental expeditions have access to stations in Antarctica only with the permission of the Government which runs the station (Rec. IV–27 of Santiago 1966 and Rec. VIII–9 of Oslo 1976). This would mean, *inter alia*, that non-governmental corporations under the jurisdiction of any party to the Treaty which would intend to explore and exploit Antarctica's mineral resources would have to provide their own stations and logistic facilities, if they wished to avoid the permission requirement. Their own stations and expeditions would in turn be subject to the inspection rights based on Art. VII.

In addition, Art. VII created a duty for the parties to report on all stations in Antarctica occupied by its nationals and all expeditions proceeding from its territory. That also includes non-governmental expeditions of nationals of a non-party State which set out or proceed from the territory of a party for touristic purposes [40]).

3.2.3. Very important are the Recommendations for the protection of Antarctica's environment, particularly the Agreed Measures for the Conservation of Antarctic Fauna and Flora adopted as Recommendation III–VIII in Brussels, 1964 [41]). The Agreed Measures established "specially

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[39a]) As regards the inspection, see generally Michel Voelckel, L'inspection en Antarctique, pp. 223–246, in: Georges Fischer/Daniel Vignes, L'inspection internationale (Bruxelles 1976).

[40]) See Rec. I–VI (Canberra 1961); Rec. IV-27 (Santiago 1966); Rec. VI–7 (Tokyo 1970), all in force. Not in force are Rec. VII–4 (Wellington 1972) under which the parties have to "keep under review . . . the effects in the Treaty Area of tourists and other visitors who are not sponsored by the Consultative Parties", and Rec. VIII–9 (Oslo 1975), which contains further obligations to report about tourists and non-governmental expeditions.

[41]) See the discussion by Guyer (note 22), pp. 193–197.

protected areas"[42]) where any exploration is subject to permission from the Government of the Consultative Party[43]), with the purpose of protecting areas of special scientific interest against any disturbance or contamination[44]). Several of these specially protected areas are in the few regions where the ground is not covered with ice. Exploration and exploitation of the mineral resources in these areas are excluded, because they would undoubtedly disturb the area. However, as neither the Agreed Measures nor any Recommendation establishing specially protected areas have been approved by all governments they are legally not yet binding.

3.3. What practical consequences follow from this situation for the parties to the Antarctic Treaty? Any party which goes ahead on its own and commences commercial exploration and exploitation of Antarctica's mineral resources will have to face the objection of other Consultative Parties that it acts against the provisions or, at least, the object and purpose of the Treaty and that it would violate the provision of Rec. IX–1 para. 8. The opposition of the other parties will certainly be even stronger if the party does not comply with the existing regulations for the protection of Antarctica's environment. If any party should decide to proceed unilaterally in order to explore and exploit the mineral resources, this would probably cause discord, which could disturb the basis for a further development of the law on a multilateral, consensual basis. This, in turn, could endanger other achievements such as scientific co-operation, environmental protection and peace in the area.

4. The problems of title and jurisdiction in regard to mineral resources

4.1. The questions of who owns Antarctica's mineral resources and who has the legal power to regulate their exploration and exploitation

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42) Agreed Measures Art. VIII; Rec. IV–1 through IV–15 (Santiago 1966); Rec. V–5 (Paris 1968); Rec. VIII–1 (Oslo 1975). Review of specially protected areas: Rec. VII–2 (Wellington 1972) and Rec. VIII–2 (Oslo 1975).

43) See Rec. VI–8 and Rec. VIII–5: Permits for entry to specially protected areas (not in force).

44) At the eighth consultative meeting in Oslo 1975, the parties recommended in addition the *ad interim* establishment of a limited number of "sites of special scientific interest", to provide long-term protection from harmful interferences, see Rec. VIII–3 and 4.

goes to the centre of the conflict about the legal status of the Antarctic continent. On the one hand Argentina, Australia, Chile, France, Norway, New Zealand and the United Kingdom claim territorial sovereignty to certain sectoral areas of Antarctica, whereas on the other hand, the other parties to the Treaty (Belgium, Brazil, Czechoslovakia, Denmark, German Democratic Republic, Japan, Netherlands, Poland, Rumania, South Africa, the Soviet Union [45]), and the United States [46])) do not recognize territorial claims to that continent. To find a compromise in this conflict of mutually exclusive opinions, the whole sovereignty issue has been "shelved" in Art. IV, which subsequently has been considered to be the most important and most successful provision of the whole treaty [47]). Art. IV neither recognizes nor denies any basis for any claim to territorial sovereignty in Antarctica or any such right or claim previously asserted by any party, nor does it prejudice the position of any party as regards its recognition or non-recognition of such a basis for a claim to territorial sovereignty in Antarctica. Prospectively, the provision precludes an activity like mineral exploration and exploitation from serving as a basis for future claims. In addition, it excludes the assertion of new claims by a party while the Treaty is in force until 1991 (Art. XII). Certainly this kind of compromise cannot hold any longer when the questions of title and jurisdiction over the mineral resources of this continent are at stake.

4.2. Theoretically there exists no problem for those States which claim territorial sovereignty over certain areas of Antarctica when it comes to the question of who owns the minerals located in their sector and which law governs any exploration and exploitation. From their point of view, the resources are subject to their sovereignty, and any exploitation would be governed by their domestic law. Consequently mining corporations could acquire an exclusive right to explore

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[45]) See Anatol P. Mowtschan, Kodifizierung und Weiterentwicklung des Völkerrechts (Ost-Berlin 1974), p. 161.

[46]) The United States, like the Soviet Union, does principally not deny the possibility of its acquiring sovereignty over Antarctica, see the U.S. Note in Department of State Bulletin, vol. 38 (1958), No. 988, p. 911. Hence, preserving their rights to assert claims on the basis of their discoveries and activities on that continent, the two Antarctic "super powers" gain considerable flexibility in pursuing their own interests without snubbing any claimant State. The Latin American countries are especially sensitive on the sovereignty issue, regarding Chile see Rober Lindley, Trade, but no Friendship, The Financial Times, 2 February 1977.

[47]) Guyer (note 22), p. 181; Hambro (note 22), p. 243.

and exploit certain mining fields in Antarctica from the State which regards the sector as part of its own territory, similar to acquiring mining rights in any other part of the territory or continental shelf of that State.

The claimant States, however, face the fundamental problem of the validity of their claims[48]). They base their claims mainly on discovery and occupation of unpopulated territory *(terra nullius)*[49]). It is doubtful, however, whether discovery alone is a sufficient basis for a claim of territorial sovereignty in international law[50]). An occupation of the territory has to be effective in order to be valid in international law[51]). In earlier times the extremely harsh climate allowed only the temporary presence of whalers, sealers and scientists on that continent and the occasional display of some symbolic acts of occupation. But one cannot overlook the fact that since the International Geophysical Year in 1957/58, as a result of an accelerating scientific and technological development (for instance the installation of a nuclear reactor at the American McMurdo Station), the continent has been gradually transformed into a habitable area. This development, which will probably accelerate if and when mineral exploration commences, could make Antarctica subject to effective occupation in the near future. Then, of course, Art. IV of the Antarctic Treaty would gain additional importance.

In the case of Argentina and Chile[52]) the claims are also based

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[48]) For a comprehensive discussion see Ingo von Münch, Völkerrechtsfragen der Antarktis, Archiv des Völkerrechts, vol. 7 (1958/59), pp. 225–252, at 235 ff.; Guyer (note 22), p. 157 ff.; Thaw in International Law? (note 7), p. 814 ff.

[49]) There are, however occasionally, opinions which regard the status of Antarctica as *terra communis, i.e.* as common territory which would not be subject to acquisition, see *e.g.* J. S. Reeves, AJIL, vol. 28 (1934), pp. 117–119, and recently John Kish, The Law of International Spaces (Leiden 1973), p. 80. As not even those States, which do not recognize territorial claims in Antarctica in practice, do deny in theory the possibility of a nationalization of the Antarctic land territory, it appears to be sufficiently clear that there is no rule of international law making Antarctica *terra communis.*

[50]) See von Münch (note 48), p. 241 ff.; Guyer (note 22), p. 160.

[51]) See R.Y. Jennings, The Acquisition of Territory in International Law (1961), p. 4, and Judge Huber in the *Island of Palmas* Case, UNRIAA vol. 2, pp. 829, 839.

[52]) See *e.g.* Felipe Barreda Laos, La Antártida Sudamericana ante el derecho internacional (Buenos Aires 1948), p. 11; Oscar Pinochet de la Barra, Chilean Sovereignty in Antarctica (Santiago), p. 43 ff.; Juan Carlos Puig, La Antártida Argentina ante el derecho (Buenos Aires 1960), p. 67 ff.; recently Dieter Schenk, Kontiguität als Erwerbstitel im Völkerrecht (Ebelsbach 1978), pp. 8–61.

on geographic contiguity of the South American continent to the Antarctic Peninsula. Any claim based on geographic contiguity can point to the fact that the Antarctic Peninsula is a geographical continuation of the Andes, that there is still a bridge of continental shelf between the Antarctic Peninsula and the South American continent, and that the closest distance to any other continent is at the Drake Passage between Antarctica and South America. However, this distance extends over 600 miles of stormy water, so that one hardly could speak of contiguity[53]). In addition, the notion of geographical contiguity refers to the whole South American continent; it cannot explain why it should be only the basis for an Argentinian and a Chilean and not also for a Brasilian or an Uruguayan sector[54]).

The claim of territorial sovereignty is the assertion of an exclusive right over an area. It must be effective *erga omnes,* if it is to fulfill its purpose of excluding every other State's claim to that area. In case of Antarctica, none of the claims are recognized by the non-claimant States. This is of special importance in relation to the United States and the Soviet Union, which carry out by far most of the activities on this continent. Although recognition is not in any case a legal precondition for the existence of territorial sovereignty, the explicit non-recognition of a claim by States which effectively pursue their practical interests in the claimed area, renders the claim, at least in relation to those States, ineffective. In addition, the overlapping of mutually exclusive claims, as in case of the Argentinian, Chilean and British claims between 53° West and 74° West latitude, also renders these claims ineffective.

To sum up, the prospects for nationalization of this continent are still dim because the possibilities of living in Antarctica are still very limited, the territorial claims are rejected by important Consultative Parties, and several claims are clouded by competing claims of other States. On the other hand, with the growing possibility of exploiting Antarctica's mineral resources, the threat of nationalization of parts of this continent is increasing because commencement of mineral exploitation would rapidly change living conditions in this continent. Antarctica would become habitable and subject to effective occupation.

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[53]) Judge Huber (note 51), p. 869, rejected the concept of contiguity as a basis for claims for territorial sovereignty at all.

[54]) See the map of the "Antarctica Americana" in Gesetzentwurf der Bundesregierung (note 6), p. 121; Greno Velasco (note 22), p. 71 ff.

4.3. From the point of view of the non-claimant States, the whole territory is in principle open to peaceful mineral exploration and exploitation, regardless of whether these activities take place in a sector claimed by any State, or in the unclaimed sector between 90° and 150° West latitude. This opinion can easily by reconciled with Rec. IX–1 para. 8, because that is a transitory measure which does not alter the principle *per se.* However, more fundamental difficulties could arise from this approach, as well as from the approach of the claimant States, by the growing demand to declare Antarctica's wealth a "common heritage of mankind"[55], because this would unavoidably exclude *inter alia* any exercise of sovereignty or sovereign rights over Antarctica, and it would prevent the acquisition of any right by any State or person, natural or juridical, with respect to that continent or its resources[56]. The threat is, nonetheless, more of a political than of a legal nature, because these demands are nothing but political objectives as yet. Even if a majority in the General Assembly of the United Nations were to declare Antarctica's natural resources a "common heritage", at any rate, the law-creating effect of this resolution would essentially depend upon the subsequent behaviour of the members of the Antarctic Treaty, because these are the States most interested and actually most concerned in this matter[57].

As regards the view of the non-claimant States in relation to title to minerals and jurisdiction over eventual mining operations in Antarctica, these are governed principally by international law. Hence, in the absence of any territorial sovereignty, the minerals are *res nullius, i.e.* they belong to no one. However, the question is, who can acquire title to the minerals and which are the legal rules to acquisition of title? Under the general principles of international law, title can be acquired by appropriation through effective possession, which would take place

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[55]) *Supra* note 7.

[56]) See United Nations General Assembly Res. 2749 (XXV), Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil thereof, beyond the Limits of National Jurisdiction, 17 December 1970. See also the articles of Jaenicke, ZaöRV vol. 38, p. 438 ff., and Graf Vitzthum, *ibid.*, p. 745 ff., concerning this concept.

[57]) The problem of law-creating declarations of the UN General Assembly remains, of course, outside the scope of this article. For a recent appraisal see Bruno Simma, Methodik und Bedeutung der Arbeit der Vereinten Nationen für die Fortentwicklung des Völkerrechts, in: Kewenig (ed.), Die Vereinten Nationen im Wandel (Berlin 1975), pp. 79–100; Oscar Schachter, The Evolving International Law of Development, Columbia Journal of Transnational Law 1976, pp. 1–16.

by exploitation of the mineral deposit. The first individual or corporation to take effective possession over the substance acquires title.

This leads to another more complicated question: is there a legal possibility of asserting rights over a certain mineral deposit on the basis of discovery only? Discovery alone, which cannot be a sufficient basis for the more comprehensive claim of sovereignty, could possibly be sufficient for an exclusive right to exploit a mineral deposit: this could be the case when the discovery was a result of high financial investments, after the exploring party started to exploit the deposit and when it assumed the obligation to remove the installations and restore the site after finishing the exploration and exploitation. However, any claim must be made public to become recognizable, and international law does not provide a procedure for individuals and non-governmental bodies to publish their claims to discovered resources in a way which would prevent others from exploiting them. The claim could be unilaterally declared by a Consultative Party on behalf of individuals or corporations under their jurisdiction, if it is prepared to grant diplomatic protection in this situation. In any case, one has to keep in mind that international law is still very little developed regarding the protection of asserted rights to exclusive exploitation of mineral deposits on the basis of their discovery.

The related question of whether a corporation can assert claims over whole areas in order to assure an exclusive right to explore and exploit the mineral resources in these areas is posing fewer problems. The answer must be no, because there is no factual basis for the assertion of any claim of this kind, which could justify the protection of any interest of the claimant under international law.

Regarding the question of legislative jurisdiction[58]), one has to ask: who has the legal power to regulate the conditions of a commercial exploration and exploitation of Antarctica's mineral resources, and, furthermore, if such a power exists, is it sufficiently developed to cope effectively with the matters which arise in connection with any mining activity in Antarctica? There are three different bases for jurisdiction which could be relevant here[59]):

— Jurisdiction based on nationality, which rests on the principle that every State can apply its own laws to its citizens or corporations

[58]) Regarding problems of judicial jurisdiction, which are of minor relevance in the context of this paper, see Justin W. Williams, Legal Implications: Jurisdiction, in Schatz (ed.) (note 30), p. 49.

[59]) See the Nansen Foundation report (note 26), p. 77.

acting outside its territory. This is, for example, the way the Agreed Measures for the protection of Antarctica's environment could become binding upon the nationals of the parties acting in Antarctica; but this jurisdiction is only effective when the State in fact enacts laws which regulate and limit the operations of its nationals abroad. In case of the high seas, for example, one can observe a long-standing reluctance of many States to restrict the actions of their nationals in international spaces.

— The flag-State jurisdiction, a special case of jurisdiction over ships and aircraft and also over mobile and semi-mobile offshore-installations such as oil drilling rigs (or, more precisely: one can at least observe a growing practice of States to treat these devices in regard to jurisdiction similar to ships). The flag-State jurisdiction follows the flag. It gives the flag-State legislative and judicial power over all persons (including foreigners) on board the vessel. In addition, it traditionally supplies the master of the vessel with special regulatory powers over crew and passengers for purposes of the administration of the vessel.

— The jurisdiction based on the origin of an operation. Resting in customary law, it is a special case of jurisdiction over expeditions which start out from a State to go to uninhabited regions, resembling the flag-State jurisdiction insofar as it gives the State of origin general jurisdiction over all members of the expedition. In practice, it applies also to permanent stations in Antarctica, wherever they are located. Similar to the master of a ship, the leader of an expedition or the commander of a station has special regulatory power over every person in the expedition or station, including foreigners, except those who enjoy the special immunity granted by Art. VIII (observers and exchanged scientists from other parties and their staff).

Thus, also in the absence of territorial jurisdiction, it is possible to acquire title over minerals in Antarctica. States have sufficient legal power to regulate the mining activities of individuals or corporations on that continent. However, as distinct from domestic law, international law would not provide any possibility to exclude others from exploiting the same mineral deposit, because there is no possibility of creating exclusive mining rights in an area which belongs to nobody. In addition, if a non-claimant State or any corporation were to start mining in the sector of any claimant State without this State's authorization, it probably would have to face strong opposition from this State based on the charges of violation of its territorial integrity and of the Antarctic Treaty. On the whole, the different approaches of claimant and non-

claimant States regarding sovereignty in Antarctica do not create a favorable economic climate for exploration and exploitation of its mineral resources.

5. Special problems

5.1. Several special questions arise when any exploration or exploitation of the mineral resources takes place in submarine areas [60]) within the treaty area south of 60° South latitude. Considering that commercial exploration and exploitation of Antarctica's mineral resources will probably begin with offshore petroleum and natural gas deposits, the legal status of the Antarctic continental shelf areas is gradually becoming an important issue. In general, the continental shelf is a natural prolongation of a continent into the sea, whereas the legal concept refers to the submarine areas adjacent to the coast outside the area of the territorial sea "to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources" [61]). Although the average depth of the superjacent waters is much greater on the Antarctic continental shelf [62]) than on any other continental shelf this would not exclude an application of the continental shelf principle to Antarctica's shelf, because its geological structure and the fact of its being a natural prolongation of the Antarctic land mass renders it subject to the same legal principles as any continental shelf areas elsewhere.

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[60]) Submarine areas in this sense do not include the "subglacial basins", which are territorial areas of Antarctica pressed by the tremendous ice-cover of the continent under sea level. Some authors, however, tend to regard these subglacial basins, which can be found also in Greenland, as frozen seas and would like to submit them to the law of the sea. The largest are the Byrd Subglacial Basin, the Wilkes Subglacial Basin and the Polar Subglacial Basin, see Renate Platzöder, Politische Konzeptionen zur Neuordnung des Meeresvölkerrechts (Ebenhausen/Isar 1976), p. 174. Concerning the applicability of the law of the sea to the subglacial basins, see J. Peter Bernhardt, Sovereignty in Antarctica, California Western International Law Journal, vol. 5 (1974), pp. 299, 307.

[61]) Art. 1 of the 1958 Geneva Convention on the Continental Shelf. See also the recent study on the problem of the outer limit by Ulf-Dieter Klemm, Die seewärtige Grenze des Festlandsockels (Beiträge zum ausländischen öffentlichen Recht und Völkerrecht, vol. 68) (Berlin, Heidelberg, New York 1976).

[62]) The average depth of the upper edge of the continental margin is about 500 meters as against 200 meters in the case of any other continental shelf. It is generally assumed that this is caused by the weight of the immense ice-cover which presses heavily upon the Antarctic continent.

However, the legal problem of its status is another one. Under customary international law, coastal States have *ipso facto* and *ab initio,* and independent of any express proclamation, sovereign rights over the mineral resources of their continental shelf[63]). Consequently the claimant States regard the mineral resources of the continental shelf areas adjacent to their Antarctic territories as under their exclusive jurisdiction, neither renunciated nor diminished by the conclusion of the Antarctic Treaty (Art. IV para. 1). The non-claimant States, on the other hand, do not recognize this, because in their view there are no "coastal States" to exercise sovereign rights in that area[64]). Hence, only few years ago the U.S. Department of State considered the legal status on Antarctica's continental shelf as "unclear"[65]), proceeding that "it remains to be determined whether exploitation of the resources of the continental shelf would be subject to the same legal régime as that applicable to the resources of the Antarctic land mass"[66]), which, one may add, would certainly be the case if and when Antarctica were to gain a generally recognized territorial status (such as *e.g.* a condominium). As an alternative, the Department of State mentioned the status of a régime which "is in general based upon the freedom of the high seas, subject, of course, to the environmental and other measures applicable in Antarctica pursuant to the Treaty"[67]). As Art. VI of the Antarctic Treaty reserves the rights of States under international law with regard to the high seas within the treaty area, this appears to be an adequate description of the legal status of Antarctica's continental shelf under current international law, if one does not recognize territorial claims to that continent.

In the absence of any national jurisdiction over Antarctica's continental shelf, it could theoretically fall into the competence of an International Sea-Bed Authority[68]) which will possibly be established as a result of the Third United Nations Conference on the Law of the Sea[69]). However, as the claimant States will probably not fail to notify the

63) International Court of Justice, *Continental Shelf* Cases, Reports of Judgments 1969, pp. 22, 31.

64) Statement supplied by the Department of State, see U.S. Antarctic Policy (note 26), p. 19.

65) *Id.*

66) *Id.*, p. 20.

67) *Id.*

68) See Platzöder (note 60), p. 175.

69) See the contributions of Jaenicke and Graf Vitzthum, ZaöRV vol. 38, pp. 438 ff., 745 ff.

Authority[70]) of the outer limits of their national jurisdiction, this would in practice be most unlikely.

Similar to the legal status of the Antarctic continental shelf, the status of the deep-sea and ocean floor in the treaty area beyond the limits of Antarctica's continental shelf[71]) is also unclear, however on different grounds. When in 1975 the U.S. Department of State came to the conclusion "that the natural resources of the seabed and subsoil of the high seas seaward of these limits (*i.e.* the limits of the continental shelf) and south of 60° South latitude are subject to the same legal régime as other seabed resources beyond the limits of National jurisdiction, as well as applicable provisions of the Antarctic Treaty"[72]), it was unclear (and it still has remained unclear until today), whether the régime meant was the freedom of the high seas or the common heritage principle. If the common heritage principle were to be a well established principle of international law of the sea[73]), it would certainly also apply to the resources in the mentioned area, thus excluding any mining operations of manganese nodules by any State or person. However, whether the member-States of the Antarctic Treaty would then claim a kind of common jurisdiction over the sea-bed and ocean floor in the treaty area[74]) with the purpose of excluding the competence of the International Sea-Bed Authority, or whether they prefer other means and ways, within or outside the current Law of the Sea Conference, is presently an undecided question.

5.2. Another question of considerable relevance would be posed by activities of a State not a party to the Antarctic Treaty within the treaty area. Since, under general international law, a treaty does not create obligations or rights for a third party without its consent[75]), third States would not violate the Treaty, if they for instance did not require individuals or corporations under their jurisdiction to comply with the provisions about the exchange of scientific personnel, the status

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[70]) In general, States unilaterally determine the outer limits of their national jurisdiction. This practice found its way into Art. 134 para. 2 of the Informal Composite Negotiating Text (ICNT) of the Third United Nations Conference on the Law of the Sea (UNCLOS), see UN-Doc. A/CONF. 62/WP. 10. Official Records, vol. VIII.

[71]) See Platzöder (note 60), p. 175 ff.

[72]) *Supra* note 26, p. 20.

[73]) See Graf Vitzthum, ZaöRV vol. 38, p. 745 ff.

[74]) Similar Platzöder (note 60), p. 175.

[75]) See the codification of this principle in Art. 34 of the Vienna Convention on the Law of Treaties, 1969.

of foreign observers sent by the Consultative Parties, or the protection of Antarctica's environment. However, as the Consultative Parties effectively control the access to Antarctica by way of entertaining the bases and providing the means of transportation to that continent, this problem is presently of little practical relevance. Yet, it could soon become very urgent if for example a petroleum company of any third party were to establish an oil-drilling platform on Antarctica's continental shelf, using its own ships and aircraft to keep the platform supplied. To avoid problems with third States the Treaty provides in Art. X that each party is obliged to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity contrary to the principles and purposes of the Treaty. Specifying this in Rec. IX–1 para. 8 with regard to exploration and exploitation of Antarctic mineral resources[76]), the Consultative Parties gave an authoritative interpretation of this provision. This again denoted the urgency of the issue. Apart from an invitation to accede to the Treaty[77]), which is open for accession by virtually any State (Art. XIII), appropriate efforts could, of course, also include substantive political pressure.

There are, nonetheless, proposals to resolve the issues on a legal basis. According to one author, joint actions of self-defence by the treaty parties are permissible if they are taken to protect the real interests established by the Treaty against activities of non-signatories in the treaty area[78]). On the one hand, however, it is disputable whether international law gives the parties to any regional agreement the right of self-defence against third States if the interests which are to be protected are conventional in their nature and in no respect fundamental to the very existence of the parties themselves. There is *e.g.* no right of self-defence for the members of a regional fisheries-agreement on the high seas against third States fishing in that area. On the other hand, since the Treaty left the question of the permissibility of mineral exploration or exploitation unresolved, mining operations *per se* could not violate the legal status of Antarctica because this status is undetermined in that respect. Hence, there could hardly be a right of self-defence against an action which would not violate the Treaty.

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[76]) See *supra* p. 13.

[77]) Rec. VIII–8 (Oslo 1975) requires the acceding State to adopt also the previous recommendations.

[78]) Guyer (note 22), p. 224.

A different approach is taken by those authors who regard the Antarctic Treaty as establishing an objective régime over that continent, which would also bind third parties [79]). However, independent of whether or not this assumption is right, this régime could in no way oblige third parties to abstain from exploring or exploiting Antarctica's mineral resources, for, as mentioned above, the Treaty itself leaves the question of the permissibility of this kind of operations unresolved. Thus, in summary, third parties are legally not prevented from commencing mining operations in the treaty area, but they can certainly expect political resistance from the parties of the Antarctic Treaty and, in addition, they probably will have to face forceful defensive action by the State concerned, if they operate in an area claimed by one of the claimant States.

6. Possible solutions reexamined

The current legal discussion about a legal régime for Antarctica's mineral resources [80]) reveals three different strands of proposals containing different solutions, which would create several legal and political problems.

These are proposals which intend to preserve, or (at least) not to alter the present legal status of Antarctica (6.1.–2.), one proposal to establish territorial sovereignty over Antarctica (6.3.), and proposals for internationalization of this continent or its mineral resources (6.4.–6.).

6.1. Since the present legal status of Antarctica remains unresolved in regard to mineral resources, States could unilaterally proceed to explore and exploit the resources. In fact, several claimant States have unilaterally extended the application of their domestic mining-

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[79]) See Nansen Foundation report (note 26), p. 81, secs. 33, 34.

[80]) Nansen Foundation report, p. 81; Gunnar Skagestadt/Kim Traavik, New Problems – Old Solutions, in: Sollie (note 22), pp. 39–51; Mitchell (note 34), p. 96 ff.; Finn Sollie, The New Development in the Polar Regions, Cooperation and Conflict, vol. 9 (1974), pp. 23–37; Edvard Hambro, Some Notes on the Future of the Antarctic Treaty Collaboration, AJIL 68 (1974), pp. 217–226; U.S. Antarctic Policy (note 26), p. 1–26; Platzöder (note 60), pp. 164–178; Hambro (note 22), p. 250 ff. Thaw in International Law? (note 7), p. 828 ff.; Frank Pallone, Resource Exploitation: The Threat to the Legal Regime of Antarctica, The International Lawyer, vol. 12 (1978), pp. 547–561. Regarding earlier proposals see Philip C. Jessup/Howard J. Taubenfeld, Controls for Outer Space and the Antarctic Analogy (1959), pp. 176–190; C. Wilfried Jenks, The Common Law of Mankind (1958), pp. 366–371.

laws to their Antarctic sectors claiming territorial jurisdiction as the legal basis for this extension. Since these claims to territorial jurisdiction are not recognized, non-claimant States could also assert mining rights in Antarctica for individuals or corporations under their jurisdiction by way of extraterritorial application of their domestic mining-laws. However, any State's extraterritorial application of its domestic laws to Antarctica would not bind individuals or corporations which are not subject to its own jurisdiction. Thus, rights over mineral resources situated beyond the limits of any State's national jurisdiction which are asserted exclusively by its domestic laws, would provide only a very limited protection, because they are ineffective in relation to foreign States and individuals.

This situation could be improved by agreements of States to recognize mutually the rights over certain mining sites in Antarctica. However, agreements of this kind are not likely to function smoothly, because the scope of these rights would in practice be very difficult to define. In other words: could any State reserve the whole Dufek Intrusion by its domestic law exclusively for its mining corporations, and if so, under which terms?

To proceed unilaterally in Antarctica would call to mind certain proposals made by the American offshore-industry with regard to the unresolved problems of the mineral resources of the deep-sea bed and ocean floor[81]). The conception behind these proposals appears to be that the still undeveloped law of spaces outside the territorial jurisdiction of any State (high seas, polar regions, outer space and celestial bodies) must primarily be developed by unilateral claims of those States which at present have real interests in these spaces and which possess the necessary technology to satisfy and protect their interests regarding these spaces. However, in Antarctica, as in the case of any other extraterritorial space, any unilateral solution which does not take into consideration the interests of all mankind in that area would nowadays be very likely to serve only short term purposes, sacrificing at the same time other important purposes. Especially in Antarctica, any unilateral solution certainly would both strain the political relations between the Consultative Parties, and, without doubt, would create a threat to the peace in that

[81]) Senator Lee Metcalf (D-Montana) repeatedly proposed in Congress legislation enabling the U.S. mining industry to proceed with nodule-mining in the deep-sea; see D. Shapley, Ocean Technology: Race to Sea-bed Wealth Disturbes more than Fish, Science, vol. 180 (1973), p. 849; Arlen J. Large, Congress and Mining the Oceans, The Wall Street Journal, 25 April 1977.

continent (and possibly elsewhere) and to the further existence of the Antarctic Treaty system.

6.2. In order to preserve the present status permanently, the Consultative Parties could agree on an unlimited moratorium, but in the light of a worldwide growing need for raw materials and energy this appears to be a quite unrealistic possibility in the forseeable future. Considering in contrast that an agreement of the Consultative Parties not to begin economic exploration and exploitation for a certain limited time would be only a small step from the present situation created by Rec. IX–1 para. 8, a temporary moratorium would at least be a realistic approach. However, the solution of the problem of Antarctica's mineral resources itself would this way be only postponed to a later date, when, due to political and technological developments, more appropriate solutions could be at hand. Yet as one hardly can make reliable predictions about these developments, it is essential to link any moratorium to an obligation to negotiate about an equitable régime for Antarctica's mineral resources in order to serve the interests of all parties concerned. Without this linkage, a moratorium would only give certain States time to develop the necessary technology which would enable them to proceed unilaterally in Antarctica. In addition, as a moratorium would not bind third States it could possibly induce technologically advanced States, which are interested in exploiting Antarctica's resources, not to accede to the Antarctic Treaty. Finally, because of the lengthy treaty-making procedures of certain States, it would take a considerable time to bring a moratorium into effect. Hence, on the whole, a moratorium would bring little progress compared with the flexible solution achieved by the Consultative Parties in Rec. IX–1 para. 8.

6.3. Nothing in the Antarctic Treaty would prevent the recognition of any claim of territorial sovereignty which was made before the treaty entered into force. Recognition of any such claim is an act which is left by international law to the discretion of any State. Consequently, the non-claimant States could, through recognition of the existing claims, go far down the road towards nationalization of Antarctica. To be effective and achieve general recognition, however, a nationalization would have to solve the problem of the overlapping claims of Argentina, Chile and the United Kingdom to the mineral-rich Antarctic Peninsula. Moreover, as no new claim can be made and no existing claim can be enlarged while the Antarctic Treaty is in force (Art. IV sec. 2), the status of the unclaimed area could not be altered before 1991 without a modification of the Treaty.

A State which recognizes the territorial claim of another State could possibly get (as a kind of political trade-off for its recognition) a privileged access right for its nationals to the mineral resources of the area. This right could be asserted in a bilateral agreement. But this again could not exclude problems with other States which do not recognize the claims and which are not bound by the agreement. Thus, on the whole, a system of recognition and agreements which could be displayed by non-claimant States in relation to the claimant States on a bilateral basis could not achieve all objectives of the non-claimant States. Moreover, any territorial distribution of the Antarctic continent between some States could probably not satisfy the interests and expectations of all Consultative Parties and consequently is likely to create discord. Apart from that, it is an open question how the community of nations would react to any nationalization of Antarctica. At any rate, this kind of territorialization would cause the factual basis of the Antarctic Treaty to deteriorate and it would disturb the sensitive balance on which its efficacy rests.

6.4. Territorial sovereignty could also be extended over Antarctica, if the parties of the Antarctic Treaty establish a c o n d o m i n i u m *sui generis* over the continent[82]). The parties would have to modify Art. IV, whereafter the national claims would merge into the common supreme power, held by the member-States of the condominium. Title to the mineral resources and the power to regulate their exploration and exploitation would rest with the condominium. This solution would form a compromise between the adverse positions of the parties concerning title and jurisdiction over the mineral resources, and it would preserve the principles and objectives of the Antarctic Treaty. In contrast to all solutions mentioned above, it would necessarily promote the common interests of the parties in uniform regulations for the protection of the environment, in regulation of the conduct of exploration and exploitation (preparation of mining sites, removal of abandoned installations), registration of claims, exchange of information, administrative control, and sharing of fees and royalties; and it also could protect asserted rights over mineral deposits.

However, the States establishing a condominium would have to face several problems, primarily of a political nature. First of all, it seems doubtful that the idea of a condominium could be politically accepted in some claimant States, especially in Latin America. Even more crucial

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[82]) See H a m b r o (note 80), p. 223.

appears to be the fact that the efficacy of a condominium largely depends on the smooth functioning of the political relations between its member-States. In a politically mobile and technologically fast-developing world, political tensions between the member-States could make the condominium inviable or render it inoperative.

In contrast to examples of condominial co-operation between colonial powers over African or Asian territories in the last century which operated very effectively, because the member-States had a very similar political culture and an equal state of socio-economic development and they followed similar policies towards the territories, a modern condominium over Antarctica would combine member-States of quite different political structure. Their policies towards peace and scientific investigation in Antarctica had been similar when they established the Antarctic Treaty system, but in the case of mineral resources their policies might be totally divergent. Factors such as the state of the development of the technology in a country, the protection of its national mining industry, the strategic value of minerals like uranium or petroleum, or different priorities regarding living and non-living resources[83]) could influence the policy of any member-State of the condominium towards mining in Antarctica. As the decisions of the condominium would necessarily be made unanimously by its member-States, the progress of mineral exploration and exploitation in Antarctica could be dictated by the interests of the technologically least advanced, the economically more protective or the politically more unstable of the member-States of the condominium.

As a condominium would totally change the presently unsettled status of Antarctica, the political reactions of those States not participating in the condominium, would additionally have to be taken into account. Of minor importance, however, seems to be that the term "condominium" has a bad reputation in many new States, which still relate it to the period of colonialism. Antarctica is still a continent without a permanent population, so that the historical connotation might seem farfetched in this context. Of greater significance, however, appears to be the fact that it seems to be politically impossible today to treat a continent, which ever since its discovery was open for actions from all States, as the exclusive domain of a few States. Consequently, a condominium must necessarily be open for access to all States which are capable and prepared to share benefits and obligations with the member-States. The access to an

[83]) See above note 34.

institution which would be based on the principle of commonly shared sovereignty would create difficult legal and political problems.

6.5. Another possibility for resolving the problem of Antarctica's mineral resources would by a complete internationalization of this continent. The supreme authority over Antarctica including the exclusive power to dispose of its mineral resources could theoretically be vested either in an "International Antarctic Organization" established by the parties of the Antarctic Treaty, or Antarctica could become a trust territory within the international trusteeship system of the United Nations[84]). The establishment of the mentioned international organization would require only an amendment and modification of the Antarctic Treaty, whereas in case of any trusteeship-solution the Treaty would have to be terminated and Antarctica would have to be administered either by certain administering countries (*e.g.* the members of the Antarctic Treaty), or by the United Nations Organization itself[85]). In fact, in 1956 India proposed in the United Nations to include the item "the peaceful utilization of Antarctica" into the agenda of the eleventh session of the General Assembly[86]), however, it never pressed its motion to vote.

In practice the possibility of realizing any kind of complete internationalization appears to be very limited at the political level. Any attempt to establish an "International Antarctic Organization" would certainly meet the resistance of those States which would have to renounce their territorial claims to Antarctica, and the United Nations could hardly acquire the supreme authority over this continent against the combined opposition of the parties to the Antarctic Treaty.

6.6. Internationalization could also be limited to Antarctica's mineral resources, thus leaving the question of the legal status of the continent itself virtually unresolved. At first sight this seems to be a more realistic solution than any of those examined above[87]). However, one has to take a closer look at the basic philosophy behind any kind of internationalization, because even a limited internationalization is a legally undetermined concept which in this context could stand for at least three different solutions.

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84) Art. 75 ff. UN-Charter.

85) Art. 81 sec. 2 UN-Charter. See Hambro (note 80), p. 218.

86) UN Doc. A/3118 and Add. 1 and 2, see also the explanatory memorandum "The peaceful utilization of Antarctica", *id.* Add. 2, p. 2 (17 October 1956).

87) A functionally limited internationalization has been proposed even before the conclusion of the Antarctic Treaty by Jessup/Taubenfeld (note 80), p. 183.

6.6.1. From the point of view of the claimant States, any internationalization of Antarctica's mineral resources could only mean an agreement on rules and common standards for the exploration and exploitation of those minerals[88]). However, in their view it would have no bearing upon the question of the supreme authority over the mineral resources located within a claimed area. Being an essential part of its sovereignty over the claimed area, this authority would remain with the claimant State. As this solution would presuppose the recognition of the territorial claims, it would scarcely be approved by the non-claimant parties to the Antarctic Treaty or by third States. In addition, this solution would be in no way reconcilable with the idea that Antarctica's mineral resources should serve — at least to a certain extent — the common interest of mankind[89]).

6.6.2. Another solution would emphasize exactly this idea by declaring Antarctica's mineral resources a common heritage of mankind[90]), which is to be explored and exploited exclusively for the benefit of mankind as a whole. This conception could well gain some support from the group of developing countries in the United Nations, because the proceeds from these resources could primarily be used to improve the economic situation of these countries (many of which gained their independence after the Antarctic Treaty was concluded), thus, in turn, helping to establish a new international economic order.

However, it is difficult to make predictions about the political outlook for this conception in the United Nations. On the one hand, there are certainly the combined efforts of the parties to the Antarctic Treaty (most of which are industrialized countries) to keep Antarctica outside the scope of the work of the United Nations. In fact, Antarctica's mineral resources remained outside the considerations of the United Nations Committee on Natural Resources[91]) and the United Nations Environ-

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[88]) It should be mentioned here as a *caveat* that the real attitudes of the parties to the Treaty are often unknown and hence open to speculation, because not only the records of the consultative meetings are confidential, but the States themselves scarcely reveal their policies towards the sensitive issues of the Antarctic Treaty, see Platzöder (note 60), p. 169; U.S. Antarctic Policy (note 26), pp. 1–26, where several statements are deleted.

[89]) See Rec. IX–1 para. 4 (iv), *supra* pp. 13 f., 12.

[90]) See especially Thaw in International Law? (note 7). This issue is deleted in the protocol of the U.S. Senate hearing about the U.S. antarctic policy in the interest of American national security, see note 26, p. 1 and p. 16.

[91]) See *supra* note 29.

ment Programme[92]), as well as the agenda of the Third United Nations Conference on the Law of the Sea[93]) or the United Nations Water Conference[94]). On the other hand, the idea of applying the common heritage principle to Antarctica's wealth is certainly not in the least inspired by the success of this principle regarding the mineral resources of the sea-bed and ocean floor in the current Law of the Sea Conference[95]). Thus it is not unlikely that the attention of those adhering to this principle could turn to Antarctica while the Law of the Sea Conference is entering its final stages.

Independent from these political questions, there are certain objections of a more fundamental nature against any application of the common heritage principle to Antarctica's mineral resources. First of all, there are substantial differences between the situation presently found in Antarctica and that of the sea-bed and ocean floor. In the case of the sea-bed and ocean floor, it was doubtful whether the area could be subjected to sovereign rights of States at all, whereas in the case of Antarctica there was never any serious doubt that the territory could principally be subjected to the sovereignty of States; only the validity of the existing claims are in dispute. In addition, there is in Antarctica a working treaty system in existence between those States which are practically the most concerned with this continent. Nothing similar has ever existed in relation to the sea-bed and ocean floor. Hence, from a legal point of view, it would be inappropriate to regard both situations as analogous.

Additionally, any application of the common heritage principle to Antarctica would require the establishment of an international authority for the exploration and exploitation of its mineral resources[96]). The existence of a separate and independent international body, which would not be subject to the requirements of the Antarctic Treaty and the subsequent Recommendations, would certainly create difficult problems for the co-ordination of the operations and an assessment of the competences. It could even endanger the further existence of the Antarctic Treaty system as the legal basis for non-militarization, scientific co-operation,

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92) See Platzöder (note 60), p. 172.

93) *Id.* p. 171.

94) See UN-Doc. E/CONF. 70/29. Report of the United Nations Water Conference, Mar del Plata, 14–25 March 1977, p. 98 ff. This is remarkable, because more than 90 % of the world's fresh water resources are situated in Antarctica.

95) See generally Graf Vitzthum (note 56).

96) See Thaw in International Law? (note 7), p. 853 ff.

and environmental protection in Antarctica. Especially the achievements in the field of the protection of Antarctica's unique and extremely vulnerable environment (which is the basis of by far the most scientific investigation in that continent) are at stake, because an international authority could not be subject to the environmental standards set up by the Antarctic Treaty system. Being mainly concerned with the exploitation of the mineral resources, the international authority could not necessarily be expected to set up similar strict standards for mining operations in Antarctica. Hence, on the whole, an application of the common heritage principle to Antarctica's mineral wealth appears to be only the second best solution.

6.6.3. Finally, the parties to the Antarctic Treaty could agree to establish an international régime for the exploration and exploitation of Antarctica's mineral resources. However, the crucial point of this kind of limited internationalization would again be the attitude of the claimant States[97]) which regard any mining operations in their sectors as matters exclusively within their national domain, whereas a basic condition for this solution would be to treat these operations as subject to international regulation only.

As the protracted discussions about the establishment of a legal régime for the mineral resources of the sea-bed and ocean floor have revealed during the last years[98]), there are certain options regarding the structure of any such régime. It could either guarantee the freedom of mineral exploration and exploitation in the whole treaty area for all parties to the Antarctic Treaty, subject, however, to the environmental regulations. Or the parties could establish an international authority with the capacity either to conduct the mining operations in the treaty area itself, or to function merely as a license-granting and supervisory body. Of course, one could also think of a parallel system providing the authority itself with the capacity to explore and exploit the mineral resources, besides its functions of a mere administrative and regulatory body.

The Consultative Parties are apparently trying to find a solution along these lines[99]). This would confirm their active and responsible

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[97]) At the London meeting especially Argentina and Chile were obviously not yet prepared to separate the question of the mineral resources from the issue of sovereignty, see Umweltschutzforschung in der Antarktis, Frankfurter Allgemeine Zeitung, 26 October 1977.

[98]) See generally Graf Vitzthum (note 56).

[99]) See Rec. IX–1 para. 8, *supra* p. 13 f.

role in Antarctica in the future. In addition, it would have the advantage of preserving the Antarctic Treaty in its entirety and it would guarantee the application of the environmental rules and standards (developed under the treaty system) to the mining operations. Thus, it would meet three of the policy requirements set up by the Consultative Parties at their London meeting in 1977 [100]).

However, there is another important requirement for a fair and equitable solution of the problem of Antarctica's mineral resources which was also mentioned in London. Any international régime should reflect also the interests of mankind as a whole in Antarctica's resources. This should be more than a mere gesture to the *Zeitgeist* in order to protect the international régime for Antarctica's mineral resources against the political criticism from the majority of States in the United Nations. Thus, the possibility of a non-discriminatory access for all States to the Antarctic Treaty and the international régime would be necessary but not sufficient, because this would virtually be of interest for industrialized countries with the technological and economical capacity to participate actively in the exploration and exploitation of the resources. In order to take the interests of mankind as a whole into consideration, the international régime for Antarctica's mineral resources should provide that the developing countries (especially the least developed countries) receive a share from the proceeds of the exploitation. Here again, the intermediate results of the Third United Nations Conference on the Law of the Sea could provide a model: the conception that the coastal States shall make annual payments and contributions in kind for the benefit of developing countries in respect of the exploitation of non-living resources of the continental shelf beyond 200 nautical miles from the baselines [101]).

On the whole, a solution of this kind would not diminish the fact that the legal and factual control over this continent remains with the parties to a treaty system which has achieved to preserve this continent exclusively for peaceful purposes and which has kept it non-militarized and protected against environmental hazards for nearly two decades. However, to sum up: whichever kind of solution the Consultative Parties are going to choose, to be legally sound and politically feasible, a régime for Antarctica's mineral resources should fulfill the following requirements:

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[100]) Rec. IX–1 para. 4, secs. i–iii, *supra* pp. 13 f., 12.

[101]) See ICNT (note 70), Art. 82, and Klemm (note 61), p. 243.

– It must be stable enough to secure permanent peace in Antarctica and flexible enough to cope with the technological and political developments of the future.

– It must incorporate the principles and objectives of the Antarctic Treaty and preserve the practical achievements of this instrument.

– It must solve the questions of title and jurisdiction in a peaceful and equitable manner, acceptable to all parties directly concerned.

– It must protect the special interests of any party taking upon itself the high economic risk of developing Antarctica's mineral resources against unfair competition.

– It must provide a basis for solving questions of common interest of all States active in Antarctica. These are questions of environmental protection and the regulation of conduct at any mining site before, during and after the exploration and exploitation.

– Last but not least, it must take account of the interests of mankind as a whole in Antarctica's mineral resources, *i.e.* especially the interests of the least developed countries in sharing in the benefits deriving from any exploitation.