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THE ROLE OF THE SEABED AUTHORITY

IN THE '80S AND '90S

by

Elisabeth Mann Borgese

The mines of Neptune are a challenge to humankind in more than one sense. Their wealth is, for all practical purposes, boundless. The technological challenge of ocean mining is enormous, comparable only, and related to, that of the conquest of outer space. While we are just beginning to understand life around us: our kind of life, and the minds of our fellow creatures, we know nothing as yet about the mind of the deep, and life in the oceanic abysses is as alien to us as that of another planet. But we do know that the ocean environment is fragile, that we may alter it as we conquer it, and that changes in the ocean environment may affect our own lives in ways we cannot predict. The ecological challenge inherent in assessing, and preventing, the consequences of applying the new technologies to the exploitation of the mines of Neptune is equally enormous.

Add to this that the rules of law, the standards and concepts developed for mining on land do not fit and cannot work: for, as we have seen, the wealth of the ocean illudes the terrestrial concepts of boundaries and ownership and requires new systems of management and law. The legal and philosophical challenge inherent in the penetration of ocean space by the industrial revolution is as enormous as the technological and ecological challenges.

All this was brought to the attention of the world community in a historic three-hour address, delivered by Dr. Arvid Pardo, Ambassador for Malta, before the General Assembly of the United Nations on November 1, 1967.

He proposed that the mineral wealth of the oceans be declared by the United Nations to be

the Common Heritage of Mankind, that it could not be appropriated by any nation, individual, or company; that it was to be managed on behalf of all countries for the benefit of mankind as a whole, that it could be used for peaceful purposes only, and that resources and ocean environment were to be used with caution, to be preserved for future generations.

This was a totally revolutionary concept. Coming at a time, when the old law of the sea had been eroded by expanding national claims and the intensification and transformation of ocean uses, the Maltese proposal set off a chain reaction of events in the United Nations and other international fora, leading eventually to the calling of the Third United Nations Conference on the Law of the Sea (1973-1982), the biggest, longest, and most comprehensive international conference ever held.

As negotiations went on, it became clear that "the problems of ocean space are closely interrelated and need to be considered as a whole," that the new order established for the oceans implied a new international order for the world community in general, that the Convention on the Law of the Sea, probably the most ambitious document ever attempted, was really a "Constitution for the Oceans," and potentially, a model for, or nucleus of, a Constitution for the World. Neptune's Trident is the Sceptre of the world, an old saying goes.

The International Seabed Authority, charged with the responsibility for the management of the Common Heritage of Mankind, was the heart of this Constitution.

The Seabed Authority -- in the tradition of other international organizations -- was to consist of an Assembly for general policy setting,

an Executive Council with its specialized Commissions and a Secretariat; but, in addition, it was to have an operational arm, the "Enterprise," through which it should engage directly in mining activities on behalf of the world community as a whole. This should have generated revenue which could have been utilized for research, for the conservation of the ocean environment, and for development purposes. The whole institution, finally, was linked to a general system for the peaceful settlement of disputes regarding ocean activities.

Here was the prototype of a first, public, international resource management institution. Here was a first agreement establishing a structured relationship between multinational companies and a public international institution. Here was a first acceptance of the principle of international taxation. Here was the framework for an international environmental law, for international surveillance and enforcement, for law that was binding on States and persons. Here was a new, dynamic concept of ownership and sovereignty, embodied in the principle of the Common Heritage: more functional, more in harmony with the environmental and technological conditions of our age than the static concepts of the past.

All this was enshrined in a Draft Convention on the Law of the Sea consisting of 320 Articles plus eight technical Annexes, which emerged in the summer of 1980, after five years of preparatory work and eight years of tenacious negotiations. A Unique achievement.

Needless to say, perspectives and perceptions kept changing over those long thirteen years; compromises were struck; "package deals" were closed, and the final product is not what the dreams and hopes of 1967 forebode. This was unavoidable.

The difficulties of establishing in the real world an institution as visionary as the Seabed Authority can easily be imagined. Fundamental interest conflicts arose between industrialized countries and developing countries, overlaid by, and overlapping with, conflicts between mineral producing and mineral consuming States, with either one of these latter groups consisting of both developing and developed countries.

In the context of the dichotomy between developed and developing countries, the developing countries wanted to maximize benefits from the newly created wealth of the oceans. They wanted to make sure of their full participation in the exploitation of the common heritage of mankind and, for that purpose, they wanted a strong and operative Seabed Authority, in whose decision making they would have a voice proportionate to their numerical strength -- considering that about 110 of the roundly 150 member states are developing countries. The developed countries, on the other hand, insisted on free access to the resources which were the common heritage of mankind; they preferred business as usual, based on advantages which their superior technological and financial infrastructures guaranteed to them. They insisted on minimizing the powers and functions of the Seabed Authority, so as to prevent it from interfering in this freedom and curtailing these advantages. They kept stressing that no discretionary power whatsoever be given to the Authority: that every administrative and financial detail be fixed in advance, for 25 years, unalterably inscribed in the Convention: and this for an industry which, they admitted, was new, untried, experimental; whose success, whose impact; whose needs and developments nobody really could predict. The paradox is obvious. It vitiated negotiations, generating a text that grew more complex, more abstruse, more remote from reality with every year that passed.

In the context of the dichotomy between consumer

and producer countries, consumer countries were interested in increasing supplies and decreasing prices while producer countries wanted to make sure that seabed resources should not be allowed to compete with traditional land-based resources. They insisted on production limitation, again, to be fixed in advance, in accordance with mathematical formulae which were only accepted when they had become so complicated that no one really understood them any more, and, in the end, it turned out that they would protect, if anybody, only the industrialized among the producer countries since production limitation was based on the demand for nickel only while permitting a wild overproduction, and consequent drop in prices, of cobalt and manganese, produced mostly by poor developing countries. The whole argument, furthermore, was based on the illusory assumption that the Authority had a monopoly on the production of nodules, which were found only in the oceanic abysses, in zones which lay, according to any criterion, beyond the limits of national jurisdiction. Therefore, so the reasoning went, the Authority, once established, could enforce its conditions on management and financial arrangements as well as on production limitation on reluctant companies or States.

The reality of the 1980s, however, is different from the imaginations of the '70s.

Pressures for internationalization created counterpressures for the assertion of wider national claims. In 1980, unilateral legislation was enacted by the United States and West Germany -- to be followed by other states -- authorizing their companies to mine the ocean floor underlying the high seas, under domestic law. By 1980 it was also clear that manganese nodules could and would be mined in areas under national jurisdiction, under bilateral agreements between mining companies or states and coastal states such as Mexico, Chile, probably Ecuador, Polynesia, and others. This meant that the monopoly of the Authority was broken. The Authority now had to compete for contracts with states, and if the general

THE ROLE OF THE INTERNATIONAL SEABED AUTHORITY
IN THE 1980S

by

Elisabeth Mann Borgese

I. Introduction

From the very outset, the concept of the Common Heritage of Mankind integrated, in an exemplary way, the goals of disarmament and development. As originally proposed by the Delegation of Malta in 1967 and subsequently developed through the various negotiating texts, the Common Heritage ("The Area") is reserved exclusively for peaceful purposes, and its "resources" are to be utilized for the benefit of mankind as a whole, and taking into particular consideration the interests and needs of developing countries.

Even though it was always obvious that development could take place only in conditions of peace and that, on the other hand, the preparation for war detracted heavily from the means that, in the absence of the arms race, could have been spent on development, nobody had thought, in the late sixties, about joining development and disarmament ends and means. This did not happen until about ten years later. And thus it was natural that the United Nations quickly put asunder what Ambassador Pardo of Malta had joined. The disarmament aspect of the concept, derived from the reservation exclusively for peaceful purposes, was assigned to the Disarmament Committee, while the development aspect of the concept, derived from the exploitation of the resources for the benefit of mankind as a whole, was assigned to the Third United Nations Conference on the Law of the Sea. Both have completed their assignments. The Disarmament Committee produced, in 1971, the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed and Ocean Floor and in the Subsoil Thereof. The Third United Nations Conference on the Law of the Sea produced, in 1980, a Draft Treaty on the Law of the Sea which, in all likelihood, will be signed in 1981.

Significant developments have taken place in these last ten years, at the conceptual as well as at the technical level. The purpose of these pages is to show that the time has come to integrate disarmament and development goals in the New International Order in the oceans, and to indicate some ways and means that might be adopted.

II. The Law of the Sea and the Seabed Disarmament Treaty

The Seabed Disarmament Treaty has been criticized on many counts. Its scope (limited to nuclear weapons and weapons of mass destruction) was found inadequate; the area to which it was to apply was considered insufficient, both horizontally (since it excludes a 12-mile zone seaward of the baseline from which the territorial sea is measured) and vertically (since it permits atomic weapons on "crawlers" a few inches above the seafloor, as well as on submarines).

The most heated debates, however, focused on the problem of verification of compliance with the Treaty prohibitions. The provisions of Art. III, assigning to "each State Party of the Treaty the right to verify through observation the activities of other States parties to the Treaty on the seabed and the ocean floor and in the subsoil thereof beyond the zones referred to in Art. I," were difficult to accept for States that did not possess the requisite technologies for such inspections. The subsequent (paragraphs 2 to 4 of Art. III) long-drawn-out procedures of consultation and cooperation among States Parties, and the eventual recourse to the Security Council appeared inadequate to secure the purposes of the Treaty. The majority of States, already during the negotiations preceding the adoption of the Treaty, pressed for the internationalization of controls. A number of proposals were put forward: Some wanted a special body responsible for surveilling seabed installation and monitoring compliance with the prohibitions of the Treaty. Others suggested that existing international organizations could be entrusted with that task. Canada proposed that the Secretary-General of the United Nations be given a major role in controlling verification procedures.

Both the U.S. and the U.S.S.R. objected to the internationalization of verification procedures. They considered it unnecessary, premature, and costly to establish a special body and equip it with the necessary technology.^{1/}

The Seabed Authority did not exist at that time, and nobody could predict what form it eventually was to take.

In 1981 the situation is entirely different.

The International Seabed Authority is being established by the Convention ^{2/} on the Law of the Sea. Its responsibilities are wide-ranging, ^{2/} its structure is elaborate. Among other things it is endowed with specific organs and powers for monitoring, surveillance and verification.

Thus Article 165 provides that the Legal and Technical Commission shall "Make recommendations to the Council regarding the establishment of a monitoring programme which shall observe, measure, evaluate and analyse by recognized scientific methods on a regular basis the risks and effects of activities in the Area with respect to pollution of the marine environment, ensure that existing regulations are adequate and complied with and co-ordinate the implementation of the monitoring programme approved by the Council;" ^{3/} it shall also "Make recommendations to the Council regarding the direction and supervision of a staff of inspectors who shall inspect activities in the Area to determine whether the provisions of this Part, the rules, regulations and procedures prescribed thereunder, and the terms and conditions ^{4/} of any contract with the Authority are being complied with;" ^{4/} and, finally, that "the members of the Commission shall, upon request by any State party or other party concerned, be accompanied by a representative of such State Party or other party concerned, when carrying out their function of supervision and inspection." ^{5/}

True, these functions of monitoring, surveillance and verification are restricted to "activities in the Area," which, in turn, are defined as "all activities of exploration for, and exploitation, of the resources of the Area." ^{6/} But since the Convention itself provides among the basic "Principles Governing the Area" ^{7/} for the "Use of the Area exclusively for peaceful purposes" ^{7/} would it not be logical to extend verification powers to make sure that this Principle Governing the Area is in fact complied with?

At Pacem in Maribus X ^{8/} proposals were put forward to utilize the elaborate machinery of the Seabed Authority and the technologies which, under the Convention on the Law of the Sea, will have to be transferred to it, for the purpose of monitoring, surveillance, and verification of compliance with the prohibitions of the Seabed Disarmament Treaty. Multi-purpose systems of monitoring and surveillance, it was pointed out, are far more economical and far more effective than specialized systems, and this applies to the Economic Zone as it does to the international area.

Luigi Migliorino of Italy, who introduced these proposals, wrote:

...it is certainly desirable that the International Seabed Authority, which is supposed to be impartial, assume verifying powers according to the Seabed [Disarmament] Treaty. This new power could come either through an amendment to the 1971 Seabed Disarmament Treaty, as its present formulation does not permit it, or through the recognition of the International Seabed Authority as a subsidiary organ of the General Assembly of the United Nations, in accordance with Art. III, para.4, of the Seabed [Disarmament] Treaty.^{9/}

Migliorino also indicated a second point of entry for integrating the development and the disarmament aspects of the functions of the Seabed Authority:

Military activities conducted in the seas can produce pollution. Theoretically at least, it is not excluded that nuclear weapons or weapons of mass destruction, or other military installations considered in the Seabed [Disarmament] Treaty, could cause accidents resulting in the contamination of the marine environment. In this case, there would be the problem of seeing whether the mechanism for the prevention, control, and intervention foreseen by international law, particularly by the new international law of the sea (art. 199 and 221 of the ICNT/Rev.1) affects, and to what extent, the provisions of the Seabed [Disarmament] Treaty, especially those concerning the verification powers of the States Parties. In other words, in the case of an imminent danger of pollution caused by a weapon or nuclear installation placed on the seabed, will the States threatened be able, as foreseen in art. 199 and 221 of the ICNT/Rev.1, to take the necessary measures for coming to grips with the danger, or will they have to follow the long and complicated procedure foreseen in Art. III of the Seabed [Disarmament] Treaty? The answer certainly lies in recognizing the pre-eminence of the provisions of the ICNT/Rev.1. The purpose of the Seabed [Disarmament] Treaty is to prohibit nuclear weapons and weapons of mass destruction on the seabed and not to provide a juridical regulation of the complex subject of pollution caused by radioactive substance. In fact, the Treaty does not refer to this problem at all. The subject is, instead, regulated by the provisions of the ICNT/Rev.1 which are general and can also apply to the problem of military pollution.^{10/}

The procedure to achieve this integration between the two Treaties, between disarmament and development goals and to build a cost-effective multi-purpose system of monitoring and surveillance in the international area, is easily imaginable.

As a first step, at the national level, it would be necessary for the Law of the Sea teams and the Disarmament teams within Ministries of Foreign Affairs, to get together and, perhaps, form a common working group. This group should elaborate, on the one hand, a Draft Amendment to be submitted to the 1982 Review Conference of the Seabed Disarmament Treaty. At the same time, it should prepare proposals for the preparatory Commission of the Convention on the Law of the Sea.^{11/} This Preparatory Commission has in any case a mandate to prepare the institutional aspects of the Seabed Authority, i.e., inter alia, the Council and its subsidiary organs, including the Legal and Technical Commission with its monitoring and surveillance functions described above. The Preparatory Commission should be instructed to prepare these functions in such a way that they include verification of compliance with the terms of the Seabed Disarmament Treaty.

It is obvious that such a course of action would correct one of the major weaknesses of the Seabed Disarmament Treaty, i.e., the lack of proper verification procedures. It would also set an important precedent for the establishment of international verification procedures in other sectors of disarmament and arms control.

At the same time it would serve to strengthen the International Seabed Authority, assigning to it a concrete task in the 1980s, at a time when the purposes and functions of the International Seabed Authority may have to be re-examined in any case, in view of recent developments in prospecting and exploration, which had not been anticipated.

III. Research and Development and the International Seabed Authority

Chile now has concrete plans to extract manganese nodules from the seabed in the Economic Zone of the Juan Fernandez archipelago, which belongs to its South Pacific territories. These plans were announced recently ^{12/} by the Chilean Minister of Mines. The Minister indicated that the field was one of the largest undersea mineral reserves in the world. The nodules are of a commercial grade and contain cobalt, copper, nickel, and manganese. The Chilean Government, according to the Minister's statement, will probably call world-wide tenders for involvement in the project. The Government would be looking for partners with a high level of technical expertise in mineral extraction.

In the meantime, the National Science Foundation of the United States is planning an expedition in 1981, in which two Chilean experts will participate.

The news came as a surprise to many who, through years of painstaking work, had based the entire structure of their reasoning on the assumption that commercially exploitable manganese nodules were to be found only in the Area beyond any possible claim to national jurisdiction, and that, therefore, the Authority was in a monopoly position in negotiating the terms of agreement with companies and States.

Yet, Chile is not the only country that will mine nodules in areas under its own national jurisdiction. Mexico finds itself in an equally fortunate position: The Exclusive Economic Zone of Clarion Island, a possession of Mexico, contains nodules of a prime quality. The Clarion-Clipperton zone, thought, until recently, to belong to "the Area" under the jurisdiction of the International Authority, is the zone that has been most thoroughly explored and offers the best possibilities for commercial exploitation.

It is more than likely that Ecuador has nodules in its offshore; and that France has manganese nodules in the Economic Zones of its Polynesian offshore possessions; the U.S., already involved in Chile, may have nodules in the Hawaiian zone.

Mining companies have made it amply clear that they prefer to mine in areas under national jurisdiction, where mining contracts or licenses can be obtained from individual Governments along traditional and well established lines, rather than having to deal with the International Seabed Authority which, to them, is an unknown quantity of cumbersome international bureaucracy.^{13/}

Due to the world economic situation, with its oversupply of land-based resources, the depression of prices, and the instability of metal markets, seabed mining will get off to a slow start. There will not be a rush of contracts before the end of the century. If the few contracts that will be made will be made with coastal States, there may be very little left for the International Seabed Authority, at least until the end of the century, and a unique opportunity to create new forms of international economic cooperation between North and South and new instruments for technology transfer would be lost.

All this could and should have been predicted. This writer has in fact predicted it ever since 1974.^{14/} It was also clear

that structural measures had to be taken to prevent that the Authority should become in fact a paper tiger. Such measures would have to consist in the designing of a flexible joint venture system of exploitation, capable of operating in areas both under international and national jurisdiction, with the controlling shares held by the Authority in the international area, and by the coastal State in areas under its national jurisdiction.^{15/} This would be a true parallel system, not polarized between the interests of the North and those of the South, but based on a functional rather than a territorial interpretation of the "limits of national jurisdiction," and safeguarding the principle that the resources of the seabed are the common heritage of mankind and must be exploited for the benefit of mankind as a whole, with special consideration for the needs and interests of developing countries.

It is not too late. Mining contracts will not be made before the late 'eighties. Apart from the market constraints, companies are still struggling with technological constraints; extensive R&D is still required before the nodule mining industry can be fully commercialized. Companies in West Germany, the United States, Canada, are hesitant to make the necessary investments, without Government subsidies. Consortia are being dissolved; seabed mining capacity is being dismantled and placed "on the back-burner." When the world picture changes and the resources will be needed, the whole machinery will have to^{16/} be re-assembled, at a considerable loss in time and money. Only Japan is far-sighted enough to subsidize its deep-sea mining industry and keep it in readiness.^{17/}

What we should like to propose, in this situation, is a joint venture on research and development, exploration and the establishment of a pilot-processing plant, to be entered between the International Seabed Authority on the one hand, and any companies and States who wished to participate. Only half of the investment cost (which, obviously, is only a fraction of that of a fully integrated mining project) should be borne by industry; the other half could be divided between the home States of the participating companies, who thus would subsidize their industries, not individually but collectively through the Authority, at considerably reduced cost, and could be supplemented by public international funding (World Bank, etc.). The advantages for the industrialized mining States would be considerable: they would be supporting their ailing mining industries, with likely spin-offs for other industries; they would maintain continuity in preparing for commercial production when needed; they would utilize and develop their technologies and enhance international trade in these technologies. What is more, smaller industrial States, which otherwise would have no chance to participate in the development of seabed mining, could become partners

in such a joint venture, while developing countries would be represented on the Authority's side of the venture and benefit from technology transfers to the Authority and participation in the management of a scientific/technological enterprise with likely spin-offs for their internal development. Countries like Chile, Ecuador, or Mexico, who intend to exploit nodules in areas under their national jurisdiction, would probably be the first ones to want to join such a venture.

The preparation of a joint venture on research, development, and exploration would be ^{18/}justified on the basis of Article 143 of the Draft Convention. The Preparatory Commission should be instructed to initiate preparations for cooperative arrangements for this kind of ^{19/}applied scientific research and development under Article 143.

A joint venture on research and development, at this stage, would in no way prejudice the organization of commercial exploitation at a later stage, whether under national or international jurisdiction. If the venture is successful, however, the chances for continuing the joint ^{20/}venture system, as already provided for in the Draft Convention, will increase considerably, and thus the problem of exploitation of nodules in areas under national jurisdiction will be obviated.

Exploration of mineral resources under the sovereignty of developing countries through public international rather than through private multinational companies appears to be in line with current developments in the building of a New International Economic Order. In many instances, private industry shows little inclination to bear the costs for mineral exploration in the least developed countries. Profits are not high enough. For such contingencies, the Government of Canada has recently established a new State-controlled company, Petrocanada International, with the specific task of exploring for petroleum in joint venture with some of the least developed countries. Canada has already initiated discussions with Mexico and Venezuela ^{21/}to join in this new form of international development cooperation.

If this is possible in the case of oil exploration, it should be all the more so in the case of nodule exploration. To link, in this case, such ventures to the Authority would seem to be the most logical and the most efficient way to proceed.

The Preparatory Commission could be instructed to proceed along these lines. In this context, it might be advisable to amend subparagraph (e) of paragraph 4 of the "Resolution to be Adopted by the Conference Providing Interim Arrangements

for the International Sea Bed Authority and the Law of the Sea Tribunal"^{22/} to the effect that the Commission shall "prepare recommendations concerning the relationship" not only "between the United Nations, its specialized organizations and agencies, and the Authority," but also between States and mining companies and the Authority. Unless the Commission can deal, albeit in a provisional and recommendatory manner, with States and mining companies, its preparatory work will remain very incomplete.

IV. Conclusions

Recent developments give rise to the possibility or, more than that, the probability, that the International Seabed Authority will not be able to perform the main function for which it is being established, i.e., seabed mining, since seabed mining, most likely, will be carried out in areas under national jurisdiction, in accordance with the preferences of coastal States and private companies. A unique opportunity for creating new forms of North-South economic cooperation would thus be lost. To obviate this danger it is suggested that the Preparatory Commission be instructed to examine, and, in as far as possible, strengthen, the other functions of the Authority, as provided for in the Draft Convention, in particular with regard to monitoring and surveillance and to scientific research and development.

With regard to monitoring and surveillance, it is suggested that the scope of these activities be expanded so as to include verification of compliance with the terms of the Seabed Disarmament Treaty and enforcement of the principle of the Reservation of the Area for Exclusively Peaceful Purposes, and that the Seabed Disarmament Treaty be amended accordingly at the forthcoming Review Conference in 1982. The preparatory Commission should be instructed to prepare the necessary institutional arrangements within the Authority.

With regard to scientific research, it is suggested that a joint venture for research and development, exploration and the construction of a processing pilot plant should be established as quickly as possible between the Authority and States and mining companies that wish to participate. The preparatory Commission should be instructed to make the necessary preparations, in accordance with Article 143 of the Draft Convention.

To facilitate the work of the Preparatory Commission in these fields, it is suggested that subparagraph (e) of Paragraph 4 of the Resolution Establishing the Preparatory Commission be amended so as to cover also the relations between the Authority

and States and mining companies.

Such a course of action would ensure that the Authority has concrete tasks and functions in the 1980s. It would enhance new forms of economic cooperation between North and South, and it would strengthen, simultaneously, the cause of development, of disarmament, and environment.

Notes

1. For all the foregoing, see Jozef Goldblat, "The Seabed Treaty," in Borgese & Ginsburg (ed.s), Ocean Yearbook, Vol. I, Chicago: University of Chicago Press, 1979.
2. See Section 3 of Part XI of the Draft Convention on the Law of the Sea (A/Conf.62/WP.10/Rev.3), entitled "Conduct of Activities in the Area." These activities include: Marine scientific research (Art. 143); Transfer of technology (Art. 144); Protection of the marine environment (Art. 145); Protection of human life (Art. 146); Accomodation of activities in the Area and in the marine environment (Art. 147); Participation of developing States in the activities in the Area (Art. 148); and Archaeological and historical objects (Art. 149).
3. Draft Convention, Part XI, Article 165 (h).
4. Loc.cit., subparagraph (m).
5. Loc.cit., paragraph (3).
6. Draft Convention, Part I, Article 1, Use of terms. Note, however, the contradiction between this definition, and the heading of Section 3 of Part XI, which covers a wide range of other activities (see above, note (2)).
7. Draft Convention, Part XI, Article 141, Use of the Area exclusively for peaceful purposes.
8. Proceedings of Pacem in Maribus X. Malta: International Ocean Institute, 1981.
9. Luigi Migliorino, Fondi marini e armi di distruzione di massa. Milano: Giuffr , 1980.

10. Migliorino, ibid.
 11. See A/Conf.62/L.55, Report of the President on the Work of the Informal Plenary on the Preparatory Commission; PC/1, Note by the President on the Proposed Preparatory Commission; and PC/2, Informal Proposal of the President of the Conference (14 March 1980).
 12. Pacific Islands Monthly, August, 1980, "Chile Plans Seabed Mine."
 13. See, e.g., Udo Boin, Protokoll des Meeressymposium Kiel 1980: "...The possibilities of bilateral collaboration with coastal States are becoming increasingly important in view of the continuing legal uncertainties with regard to the High Seas...The 200-mile EEZ opens the possibility of bilateral cooperation in the exploration and exploitation of all mineral resources in offshore areas...As far as manganese nodules are concerned, the 200-mile limit is somewhat narrow; only in insignificant exceptional cases are deep-sea nodules likely to be found within the 200-mile EEZ."
- "An extension of the 200-mile limit, no matter how problematic it might be under other aspects, would transfer large portions of manganese nodule resources from the realm of legal uncertainties into areas of individual State jurisdiction. In view of the vague provisions of the ICNT, we cannot help noting that, as far as deep-sea mining is concerned, the farther the EEZ is extended into the deep oceans, the better it will"be. (emphasis added)
14. See, e.g., "Statement (second part) by Elisabeth Mann Borgese, International Ocean Institute, before the Third U.N. Conference on the Law of the Sea, First Committee, Caracas, August 6, 1974": "However, it has not been clearly pointed out that, as a result of present trends in delimiting national jurisdiction, it may be anticipated that a substantial part of the manganese nodules of the abyss would either pass immediately under national jurisdiction or could be claimed by a coastal State through appropriate adjustments within baseline and other delimitation provisions likely to be included in any treaty adopted by this Conference. Hence prospective exploiters of manganese nodules would, in many cases, have the choice of exploitation either in the international seabed area or within national jurisdiction. Thus the proposed international seabed authority, in the event of a licensing or service contract system of exploitation being adopted, would not be able freely

I am happy to report that I had a most fruitful, detailed discussion with Dr. P. J. Taylor, ~~of the~~ ~~Regional~~ ~~Adult~~ ~~Learn~~ ~~Society~~, on Extension Affairs, India, concerning the Training Programme in Goa, India, - 1982 and its preparation, during 1981-82. The result of our discussion can be summarized as follows:

1. Geographic Scope of Programme

The regions to be covered by the Project is South Asia and South-East Asia. The following countries will be invited to send participants.

South Asia

Bangladesh

Burma

India

South-East Asia

to determine royalty provisions within the international area nor would it be able to adopt effective arrangements to ensure that mineral output from the seabed will not result in prices which are not equitable to landbased producers, since attempts to impose conditions not acceptable to the limited number of consortia interested in deep seabed exploitation would merely result in most cases in such exploitation taking place within national jurisdiction."

See also Pardo & Borgese, The New International Economic Order and the Law of the Sea, IOI Occasional Paper No.4, Malta, 1977. "The basic assumptions underlying the establishment of an international authority with the functions proposed are that the authority would enjoy a virtual monopoly, at least in the exploration of the manganese nodules of the abyss....These assumptions, however, are now incorrect. Straight baselines of unlimited length and acceptance of the archipelagic principles permit States to enclose extensive areas some of which contain manganese nodules....the proposed international Authority will not have anything approaching a monopoly of manganese nodule exploration: manganese nodules can, and will, be exploited within national jurisdiction. From this basic fact flow a number of conclusions, inter alia:

- (a) Whatever the norms contained in the proposed convention, the Authority will not have the power to determine, at its discretion, the conditions of manganese nodule exploration. The Authority will have to offer conditions of exploration and exploitation no less favorable than those offered by national authorities....
- (c) Exploitation of significant quantities of manganese nodules will inevitably seriously affect the price of cobalt and of manganese and may have some effect on the price of other minerals. But, since manganese nodules may be exploited both within and outside national jurisdiction, the Authority will not be able to sustain prices merely by curtailing exploitation in the international area. Curtailment of exploitation in the international area, while reducing the revenue of the Authority, could easily be compensated by increased production from areas under national jurisdiction....

Resource management in a distributed way
dec. to be prepared in 101, with input
funds - UPEH

Duration : 10 - 12 weeks
~~Spring~~ Fall Sept - Dec.

Faculty half time
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Ajanta Ellora

present slips.

15. Such a system was proposed in Borgese, The Enterprises, Occasional Paper No. 6, Malta, 1978. One of the purposes of the system would be, to "cope with the eventuality, or certainly, that nodules will be exploited, not only in the international area but also in areas under national jurisdiction (emphasis in text).

Article 5 (bis) of the proposed enterprise system reads: "For Enterprises operating in areas under national jurisdiction, the coastal State shall provide 52 percent while the International Seabed Authority shall provide at least 24 percent and the remaining 24 percent or less may be provided by other Signatories." the comment to this proposed article points out that this article has been "added for the case, very likely to arise, that a substantial portion of manganese nodules will, in fact, be mined in areas under national jurisdiction. If this contingency is not considered, it might, in time, leave the Authority without any business. Cooperation between the coastal State having jurisdiction over nodule sites and the Authority's enterprises must of course be voluntary. For developing countries it certainly would be more beneficial to cooperate with the Authority's Enterprises than to deal with individual industrial States or private consortia. Developing States might, through their appropriate fora, resolve to adopt such a policy. It would of course be preferable if enough public pressure could be built to make of this policy international good practice. In other words, the manganese nodules of the deep ocean floor should be considered common heritage of mankind, no matter on which side of the limit of national jurisdiction they happen to lie. this could be achieved through a non-binding recommendation by the Council or the Assembly."

Article 8 bis provides that "For enterprises operating in areas under national jurisdiction, the Board shall be composed of (a) 13 representatives of Signatories [board members] designated by the coastal State having jurisdiction in the area; (b) up to and not more than 6 representatives representing the largest investment shares in the Enterprise, which shall amount to up to and not more than 24 percent of the total investment capital of the Enterprise; (c) at least 6 Signatories elected by the Assembly of the International Seabed Authority, on nomination by the Council, in order to ensure that the principle of just geographical representation is taken into account, with due regard to the interests of developing countries, of labor, and of consumers."

Science, we would like to understand, and were the economic importance of the better quality of the pattern of international exchange and cooperation, for development and of world peace.

1. The declaration of Principles, adopted at GA Resol 4728 in 1968 by the General Assembly, states that the spirit behind the work of the United Nations is the Charter of the United Nations, and that international working...

There are 11 central concepts: the heart of the matter is dealt with by the UNCTAD. All other matters were addressed subsequently and it became clear that all other agencies and international organizations are to be considered in their interaction. But the ^{key} centre is the management of the Charter, and the establishment of international machinery for this purpose. This was done in 1968 and established UNCTAD. A treaty codifying all matters, has failed to establish the better Authority, in the empty shell.

2. For more or at least the short-range financial progress, the League, or the present work, that is at least a new form of economic cooperation between North and South. ~~currently beneficial to both of them~~ based on a new concept of ownership.

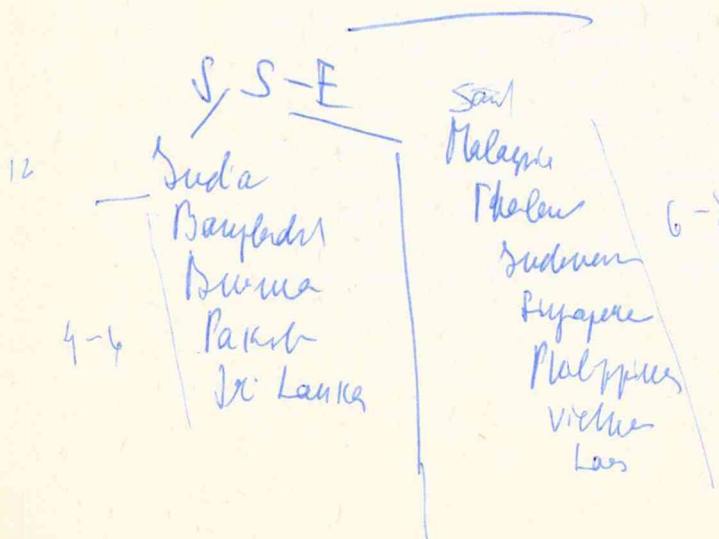
10-12 September

3 Amrithank, SE, India.

Dr. Gasim, Director -
Nat. Inst. Oceanography
Academic
Project Director.

(Jamb)

6-8



16. Similar was the fate of the coal mines in Western Germany: Only about a decade ago, these rich mines were abandoned, and coal gasification and similar coal/energy technologies were put "on the back-burner," as the petroleum-based world economy was reaching its peak. Now these mines, and technologies, have to be restored, at a considerable loss of time and money.
17. Seabed mining is not the only sector in which the Japanese industry and government show an almost unique sense of foresight. The computer industry, especially the robot industry, is another sector where Japan has an incredible lead (Japan, presently, has about 10,000 robots in action as against the United States 3,000, trailed by West Germany's 850). See Time Magazine, December 8, 1980, "The Robot Revolution."
18. According to Article 143 of the Draft Convention, "The Authority may carry out marine scientific research concerning the Area and its resources, and may enter into contracts for that purpose. The Authority shall promote and encourage the conduct of marine scientific research in the Area, and shall coordinate and disseminate the results of such research and analysis when available."
19. The Resolution to be Adopted by the conference Providing Interim Arrangements for the International Sea Bed Authority and the Law of the Sea Tribunal (PC/2, 14 March 1980) provides in para. 5 that "The Commission shall make studies, and prepare such draft rules, regulations and procedures relating to Article 16 of Annex II to the Convention, as it deems necessary to enable the Authority to initiate activities in the International Sea-Bed Area." Article 16 refers to the "Exclusive right to explore and exploit," and guarantees security of tenure to contractors. There is nothing that would prevent the preparations for a joint venture as here proposed.
20. Article 11 of Annex III.
21. "Because of this sense of interdependence in the face of the world energy problem, the government's National Energy Program, which I tabled with my recent Budget, contained an important initiative to help oil importing developing countries. A new firm, Petro-Canada International, will be created to explore for oil solely in developing areas, where multinational companies are often reluctant to invest. Preliminary discussions have already taken place with the state oil companies of Mexico and Venezuela, in connection with a major joint effort to assist petroleum development in Latin America and the Caribbean. Some \$250 million has been allocated to this program. The

program will reflect our development assistance objectives. It will be aimed at finding oil in countries which now must import it." Address by the Hon. Allan J. MacEachen, Deputy Prime Minister and Minister of Finance, Government of Canada, at the Third Annual Session of the North South Round Table (NSRT), Ottawa, November 16, 1980.

22. Subparagraph (e) of paragraph 4 of the proposed Resolution provides that the Commission shall "prepare recommendations concerning the establishment of the relationship between the United Nations, its specialized organizations and agencies, and the Authority."

The adoption of the Draft Convention on the Law of the Sea by the
Plenary U.N. Conference on the Law of the Sea is very much in doubt.

In any case, the "package" of agreements, elaborated by the
Large Conference during 13 years of negotiation, will be undertaken by
the "comprehensive review" of the new U.S. Administration.

A number of "scenarios" become plausible.

It is no secret that the "comprehensive review" on the part of
the U.S. Government has been in hand with extensive bilateral con-
sultation, the contents of which are easily imaginable. "You develop
country really get everything out of the Convention that you can come hope to
get. You get an Economic Zone of 200 miles to what you practically
can do & you please. We promise to assist you in every way we can to
in the efficient and rational management of the zone what will make
you rich. Our policy and great problems ~~to~~ ^{to} ~~benefit~~ ^{benefit} ~~without~~ ^{without} ~~anyone~~ ^{anyone}
will make just venture agreement with you for technology transfer:
technology, know-how, what are of real and immediate interest to you.

Not real but money technology which are of no use to you. What happens then to
the point: we give you all you want a zone EEZ, but you should
forget about the United States, to be from place there will be
the money of all what it gets; it to be from place, ~~to~~ ^{to} ~~provide~~ ^{provide}
resources for ~~to~~ ^{to} ~~the~~ ^{the} ~~United~~ ^{United} ~~States~~ ^{States} ~~and~~ ^{and} ~~be~~ ^{be} ~~minimal~~ ^{minimal} -- as you know
understand that you all of resources provided at the U.N. Conference;
really, not hard looking; but it looks sophisticated, highly
capital intensive technology involved it is hard money and of no interest
to the Americans: ~~to~~ ^{to} ~~in~~ ⁱⁿ ~~the~~ ^{the} ~~end~~ ^{end} ~~of~~ ^{of} ~~conscience~~ ^{conscience} ~~to~~ ^{to} ~~development~~ ^{development}, really, don't
but ~~understand~~ ^{understand} ~~of~~ ^{of} ~~basic~~ ^{basic} ~~need~~ ^{need} - technology, what is, what you expect to be ^{understand}
in. Learn to be boys to be the boys.

THE ROLE OF THE INTERNATIONAL SEABED AUTHORITY

IN THE 1980S

by

Elisabeth Mann Borgese

1. Introduction

From the very outset, the concept of the Common Heritage of Mankind integrated, in an exemplary way, the goals of disarmament and development. As originally proposed by the Delegation of Malta in 1967 and subsequently developed through the various negotiating texts, the Common Heritage ("The Area") is reserved exclusively for peaceful purposes, and its "resources" are to be utilized for the benefit of mankind as a whole, and taking into particular consideration the interests and needs of developing countries.

Even though it was always obvious that development could take place only in conditions of peace and that, on the other hand, the preparation for war detracted heavily from the means that, in the absence of the arms race, could have been spent on development, nobody had thought, in the late sixties, about joining development and disarmament ends and means. This did not happen until about ten years later. And thus it was natural that the United Nations quickly put asunder what Ambassador Pardo of Malta had joined. The disarmament aspect of the concept, derived from the reservation exclusively for peaceful purposes, was assigned to the Disarmament Committee, while the development aspect of the concept, derived from the exploitation of the resources for the benefit of mankind as a whole, was assigned to the Third United Nations Conference on the Law of the Sea. Both have completed their assignments. The Disarmament Committee produced, in 1971, the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on, the Seabed and Ocean Floor and in the Subsoil Thereof. The Third United Nations Conference on the Law of the Sea produced, in 1980, a Draft Treaty on the Law of the Sea which, in all likelihood, will be signed in 1981.

This would be to assist developing countries to explore the offshore mineral resources on their continental shelves and in the economic zones under their jurisdiction.

300 Most underdeveloped countries are under-explored. No one knows how much oil there is. There may not be the kind of giant fields that would be profitable to the big oil companies, but there might be enough to alleviate oil import bills for poor countries. Inasmuch as the big oil companies do not feel attracted, however, there is nobody around to do the job. The Report of the Brandt Commission points out that in the last few years as much as 80 to 90 percent of the spending on exploration has been concentrated in a very few of the developed or newly industrialized countries whereas it has almost entirely ceased over large areas of the Third World. "Here, therefore," the report continues, "is an area where new initiatives, involving imaginative new arrangements, can clearly be in the interest of North and South alike. Measures are needed to speed up exploration and exploitation of deposits in developing countries, while assuring a full share of the benefits of mining, processing and exportation to the host country government."

The Brandt Commission Report recommends international action to assist development in the exploration of these mineral resources.

The Government of Canada responded to this recommendation by establishing Petrocanada International to perform this service. Petrocanada is a subsidiary of the commercially operating crown corporation Petrocanada, whose technology and know-how it shares. It is financed independently, however, through allocations from Parliament. About half a billion dollars have been allocated for the first four years of operation. These funds are not to be recovered. Petrocanada International is an instrument of Canada's policy of development cooperation.

While this is a splendid beginning, it is obvious that one country alone could not, and

to the Authority and participation in the management of a scientific/technological enterprise with likely spin-offs for their internal development. Countries like Chile, Ecuador, or Mexico, who intend to exploit nodules in areas under their national jurisdiction, would probably be the first ones to want to join such a venture. But seabed technology holds promises for other developing countries as well. Far from being esoteric and of interest to a few highly industrialized countries only, seabed technology includes quite an array of auxiliary technologies which, disaggregated, are directly and immediately useful to developing countries: in the sector of petroleum and mineral exploration and exploitation, of ship construction and navigation, and of a whole series of oceanographic sciences and skills directly applicable to the management of exclusive economic zones.

Seabed Minerals

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Research and development, furthermore, need not, and should not, be restricted to manganese nodule mining. Just like the European Community, the Seabed Authority could organize more than one project of R&D in advanced industrial technologies. A most suitable candidate, e.g., would be energy generation from the oceans, with special emphasis on OTEC and salinity-gradient-energy conversion, which might be pioneered by the International Seabed Authority. This, however, may be a few years in the future, although it certainly is not too soon to begin to think about it.

Minerals and development

Thus, the first useful function of the International Seabed Authority in the 1980s would be the establishment of a joint venture on research and development.

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The second function would be related to the first, and although it is not foreseen by the Draft Convention, it is in no way prohibited by it, provided member States wish the Authority to engage in this activity.

should not, fill the need on a global basis. Clearly, a public international institution is needed to coordinate services of the kind offered by Canada and already supported by Mexico and Venezuela. There is no need to create a new institution, with a new bureaucracy. No institution can be more suited than the International Seabed Authority with its enterprise system, its technology, and its possibilities of matching funds provided by states and their companies with public international funds.

Here, again, the International Seabed Authority could serve to respond to an immediate need, through "imaginative new arrangements," already pre-formed in the Law of the Sea Convention. All that is needed is the political will to utilize this potential by interpretation and state practice.

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The third practical function of the Seabed Authority in the '80s and '90s could be to ensure that at least one sector of ocean space, that is, the seabed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction, should be exempt from the arms race and preserved for peaceful purposes only.

Since the preservation for peaceful purposes is intrinsic in the concept of the Common Heritage of Mankind, the United Nations General Assembly adopted, in 1970, a Treaty Prohibiting the Emplacement of Atomic Weapons and Other Weapons of Mass Destruction in the Seabed and Ocean Floor and in the Subsoil Thereof: ~~one of the deplorably few instances where disarmament efforts lead to any positive conclusions at all, the Treaty, nevertheless,~~ suffers from a number of weaknesses. The weakest point, perhaps, is that there are no adequate provisions for surveillance and enforcement. The Treaty stipulated that each State party to the Treaty was to have the right to verify through observation the activities of all States parties on the seabed. But this was difficult to accept for ~~states~~ states that did not possess the requisite technologies for such inspec-

The Treaty,
in 1970

tion. The majority of States, already during the negotiations preceding the adoption of the Treaty, pressed for the internationalization of controls. A number of proposals were put forward: some delegations wanted a special body responsible for surveilling seabed installations and monitoring compliance with the prohibitions of the Treaty. Others suggested that existing international organizations could be entrusted with the task. Canada proposed that the Secretary - General of the United Nations be given a major role in controlling verification procedures.

Both the U.S.A. and the U.S.S.R. objected to the internationalization of verification procedures. They considered it unnecessary, premature, and costly to establish a special body and equip it with the necessary technology.

The Seabed Authority did not exist at that time, and nobody could predict what form it eventually was to take.

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Now the situation is entirely different. The Seabed Authority is ideally prepared to assume this function. If it is to engage in geophysical exploration, it must have the seismic and sonar technologies required for exploration; but these can also be employed for surveillance and for monitoring any activity on the seabed.

The Seabed Authority is also equipped with the organizational machinery for monitoring and surveillance. The Convention provides for a Technical Commission, with a "staff of inspectors," "who shall inspect activities in the area to determine whether the provisions of the Convention are carried out faithfully." On the request of any State party or other party concerned, the members of the Commission and their staff of inspectors shall be accompanied by a representative of the state or other party making the request, when carrying out this function of supervision and inspection.

Again, all that is needed is the political will to utilize this machinery and this technology, in this case, both for the enhancement of development and disarmament on the seabed.

The Seabed Disarmament Treaty is due for review and revision every five years. At the next review conference, member States might decide to amend the article entrusting verification to States only. In addition, they might assign this function to the Authority. Any State party might then request that its representative should accompany the inspectorate on its surveillance missions, and thus, smaller States and developing countries, unable, thus far, to share in this activity, would have the possibility to do so.

300 What may have been premature and costly in 1970 thus becomes practical and functional in the 1980s. While enhancing the role of the International Seabed Authority as an instrument of international industrial cooperation, an important precedent would be set for international monitoring and surveillance of disarmament agreements, along the lines suggested, in 1979, by the Government of France, which proposed the establishment of an international satellite agency to monitor disarmament agreements from outer space.

The fourth, crucially important function of the international Seabed Authority would be the protection and conservation of the marine environment on the deep sea floor.

This, too, is already foreseen in the Convention on the Law of the Sea, but its provisions must be interpreted and developed. The Authority indeed has the responsibility for "the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment."

For this purpose it also has the right to "issue emergency orders, which may include orders for the suspension or adjustment of operations,

to prevent serious harm to the marine environment arising out of any activity in the Area," and to "disapprove areas for exploitation by contractors or the Enterprise in cases where substantial evidence indicates the risk of serious harm to the marine environment."

This, certainly, provides an excellent spring-board for action.

But emergency measures are apt to come too late. The effects of collision between the different time scales of two different worlds -- the multi-million-years ecosystem of the abyssal ocean floor and the fast-moving industrial systems of our age -- may be irreversible. We know so little as yet about the world at the bottom of the ocean. And whence should the Authority gather its "substantial evidence"? What is it to do with the areas "disapproved for exploitation"?

304 We want to suggest that studies should be undertaken at once to determine which are the areas that should be "disapproved."

Some of the zones, at least, where plate separation and rifting give rise to hydrothermal vents with their unique flora and fauna, should be established as International Marine Parks. There, the Book of Job says, Leviathan makes the water at the bottom of the sea boil, and gigantic worms live on the seabed...How did the author of the Book of Job know about these things? We, today, do not know much more about them than he did, but we know they really are there, and we do not want to see them destroyed before we know more about them.

The Seabed Authority should administer these sea-floor marine parks just as the Department for National Parks administers the national parks on land and offshore within the jurisdiction of a State.

The suggestion, more timely than ever, is not new. As early as 1971, the preident Maltese Government proposed to the United Nations a Draft

- Intro: Importance of Convention, Alternative way
This on better Convention.

Significance of Authority:

Common Heritage
Multinational
Taxation
Production policy
Environmental policy

3 problems
US - Neo-

conditions it offered were less favorable, it would be out of business, and that was all there was to it.

History

No matter whether the Convention is ratified or not, the role of the International Seabed Authority has to be basically re-examined in the light of this new reality: for if it turned out to be useless and cumbersome, it will not be utilized in practice. A paper tiger, it will be bypassed by history and economic reality. A splendid opportunity to create something new and different, a prototype for industrial cooperation between North and South, East and West; a model for the international organization of the future; a great dream; a great inspiration, would be lost.

This need not be so. Even within the terms of the Convention, the functions and the structure of the International Seabed Authority can be adapted and adjusted to the changed reality. In spite of the divergence of interests and the conflict of pressure groups, there is a sufficient basis of common interest in and around this exciting new activity of ocean mining. Even in the changed setting, the International Seabed Authority could become a model for international organization.

At the present stage of development, the International Seabed Authority could fulfil four vitally important functions, and the Preparatory Commission established by the United Nations Conference on the Law of the Sea to prepare it for its role in the 1980s and '90s, should realistically channel its action in these directions.

7 The first is cooperative research and development.

As we saw in Chapter IV, in the late 'seventies, the major consortia successfully completed the first phase of their research and development

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with pilot mining tests which clearly demonstrated that manganese nodule mining is technically feasible. This phase of research and development was costly. About two hundred million dollars were invested between the major companies, and this, considering the high risk involved, triggered off the merger of the private sector in huge, globe-spanning consortia: ~~complex commercial~~ organizations in which national companies first formed a sort of "federation," and a number of such national "federations" then merged in a multinational consortium: a federation of federations of industries.

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The second phase of research and development, during which pilot operations will have to be scaled up to commercial dimensions, will require about three times as high an investment as the first phase, [while one single, fully developed commercial enterprise, producing about three million tons of nodules a year, may cost as much as a billion dollars.]

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These are not absurdly high figures for the mining industry, but there are factors that make it unlikely that private industry will rush into this kind of investment at this time. We are moving through a depression. Low and unstable metal prices, over-supplies of land-based resources, investments already directed towards traditional, land-based sources make it extremely difficult for a pioneering, high-risk industry to get off the ground. In fact, consortia are already in a process of disbanding, and the further development of deep-sea mining technology is being placed "on the back-burner."

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And yet, everyone agrees, the deep-sea ^{- sea} minerals and metals are needed: not now, but in ten to fifteen years, most certainly. To reassemble the dismantled machinery, however will take time: at least ten years, after the new start. The metals may not be there when needed. In other words, much valuable effort, and a great deal of money will have been wasted.

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42 x 8
386

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Industry is aware of all this. If the collaboration of governments were forthcoming, industry would be quite willing to go ahead. This is the case in Japan; it is not the case in the other industrialized countries, where other priorities may make it difficult to subsidize seabed mining companies. If governments cannot do this individually, however, they might instead be able to do it jointly. In other words, just as the first phase of research and development in seabed mining called for the internationalization of the private sector, the second, more costly, phase calls for the internationalization of the public sector and its integration with the private sector. This has happened already for the mining of the metalliferous muds in the Red Sea, for that matter, and it should happen for the mining of nodules in the Pacific and Indian Oceans. The reasons for the merger are the same as in the case of the private sector: reduction of cost and spreading of risk. It is the only way to go.

According to the Draft Convention, the International Seabed Authority has the mandate to coordinate and encourage international cooperation in industrial research with regard to seabed mining. It has the right to undertake such research itself, and it has the right to form joint ventures.

The first task of the International Seabed Authority in the present world situation, therefore, should be to form a joint venture for research and development, for the phase of scaling up production from the pilot-test level to full, commercial-size levels; for the establishment of a pilot processing plant, and for an economic feasibility study. Partners in this joint venture should be the Authority and any State or company that wished to participate.

There is at least one highly interesting precedent for international public/private cooperation and integration in a sector of advanced

scientific industrial research and development:

The European Commission has recently (1980) put forward a proposal for a five-year Community programme of research and development in biomolecular engineering.

Biomolecular engineering, that is, the modification and utilization of biological systems (bacteria, enzymes, algae) for industrial purposes, is one of the new developments revolutionizing the industrial system.

The programme of the European Communities originally covered six subjects, two in the general field of enzyme engineering, and four in the general field of genetic engineering. What is of particular interest for the Seabed Authority is the way in which these programmes are financed: The European Community puts up part of the money, and national governments the other part, by cost-sharing contracts between the Commission and private or public organizations in the member states. Each project is to be controlled by a small research group.

The total cost over five years was to be 49 million European units of account (approximately 62 million dollars), of which 26 million European units of account would come from Community funds. In other words, about 53 percent of the investment was to be borne by the Community, and 47 was to be contributed by States and their industrial companies.

During the course of negotiations, the programme was scaled down somewhat. The compromise proposal included an allocation of funds for training and education in the areas covered by five of the six projects in the programme; the programme of research and development, on the other hand, was reduced from six project to three, and the total cost to the Commission was cut from 26 million to 11.8 million European units of account, which amounts to about 15 million dollars over $4\frac{1}{2}$ years.

and it is ^{sure} ~~likely~~ ~~down~~ ~~then~~ ~~to~~ ~~negotiate~~.

Obviously, the scale of the project is much smaller. ~~An R & D programme for seabed mining might run up to \$600,000,000. Seabed mining is a capital intensive industry, and the stage of R&D is more advanced. There is all the more reason to proceed on a cooperative basis. The format, nevertheless, might be the same as that provided by the European Community for R&D in bio-engineering. As was pointed out in a recent debate in the House of Lords, when the European programme was discussed, "There is a general disposition to support a constructive and well-intentioned proposal for cooperative community action in the field of advanced technology."~~

Cooperation of this kind, obviously, can be carried out regardless of boundaries between national and international geographic areas, as demonstrated by the European precedent. Nor does it prejudice the way in which, subsequently, commercial exploitation is to be organized: whether internationally or bilaterally or nationally. If the experiment in international R&D were successful, however, it is likely that the chances of continuing with a joint venture system for the phases of exploitation and processing would be greater than they are today. A joint venture in international R&D would be a great learning experience for everyone concerned.

The advantage for the industrialized mining states would be considerable. ~~They would be supporting their ailing mining industries, with likely spin-offs for other industries; they would maintain continuity in preparing for commercial production when needed. They would utilize and develop their technologies and enhance international trade in their technologies. What is more, smaller industrial States which otherwise would have no chance to participate in the development of seabed mining could become partners in the joint venture.~~

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Developing countries, on the other hand, would be represented on the Authority's side of the venture and benefit from technology transfers