The 1982 Convention on the Law of the Sea

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OPENING CEREMONIES

WELCOMING ADDRESS

General Chairman Willy Ostreng
The Fridtjof Nansen Institute

Mr. Foreign Minister, Excellencies, Ladies and Gentlemen:

On behalf of the chairmen of this Conference, it is a great pleasure for me to extend to you all a sincere welcome to Norway, to Oslo and to the 17th Law of the Sea Institute Conference co-sponsored by the Fridtjof Nansen Institute. We do hope that you all have been comfortably accommodated and that you will have a nice and worthwhile stay in Norway.

The 17th Law of the Sea Institute Conference has chosen as its theme "The 1982 Convention on the Law of the Sea: The End Result of UNCLOS III." As stated in the program, the completion of this Convention is the culmination of the longest, largest and most ambitious collective effort ever undertaken to promote peace and prevent conflict by agreeing on the precise distribution and effective limitation of power among all the nations of the world.

Assembled here today and in the forthcoming days are some of the most outstanding experts in the complex web of ocean affairs. Some three-hundred participants have registered, coming from forty-three different countries all over the world. The Oslo Conference thus represents a unique occasion for an authoritative assessment of the Convention's significance, its impact on sea and land, its shortcomings, what remains to be done -- and, not in the least, the prospects for the future.

But given the prominence of the participants who hold high positions in their respective countries, it should be stressed that the Oslo Conference is a private undertaking beyond the realm of official representation. What we want to provide is a neutral forum for discussion involving individuals from governments, universities, corporations, research institutes and various kinds of educational institutions. Thus, all participants speak in their private capacity and not as representatives of their respective organizations. This approach is a prerequisite to promote an atmosphere where all can speak their minds on all issues.

The important thing at the present is to avoid nationalities to avoid parting minds even further; rather we should inspire minds to unite nationalities. Consequently, no idea, no thought, irrespective of how controversial it might appear, should be turned down for any reason before it has been the object of scrutiny and analysis. Any solution to complicated issues starts with the mind, with an idea. So, it is up to you to make this Conference a forum of minds.

With these words, I wish you all a stimulating, challenging, and fruitful Conference -- hopefully, for the best of the future of the sea, the common denominator of our mutual interests. Thank you.

Now, I have the great honor to call upon the Foreign Minister of Norway, Mr. Svenn Stray, to open the Conference.

WELCOMING ADDRESS

Svenn Stray
Ministry of Foreign Affairs
Norway

I have been invited to say a few words on behalf of the Norwegian Government at the opening of the 17th Law of the Sea Institute Conference, and I do so with pleasure.

The Institute has convened a great number of experts on the law of the sea and I heartily welcome you all, and in particular all the distinguished foreign participants. I am certain that your stay here will be interesting from a professional point of view, but I also hope that your visit will be pleasant and will give you an opportunity to get acquainted with Oslo and its surroundings. Again, a hearty welcome!

Throughout their history the Norwegian people have been dependent upon the sea to a large degree. Fishing and shipping have always been a vital part of our livelihood. In recent years the oil which we have found in the North Sea has added a new dimension to our economy. Experience has taught us that a legal order of the sea is just as necessary a condition for a prosperous development as laws have been, and still are, for peace and prosperity in our national domain.

It is, therefore, with great satisfaction that we have witnessed that the United Nations, after many years of hard work and with active participation from our side, has been able to carry out a review of the principles of the law of the sea and elaborate the 1982 Convention. Admittedly, it is a disappointment that it was not possible to reach consensus on the Convention. We have to note that the interests at stake with regard to an important part of the Convention were such that a consensus on the present text was unattainable.

However, this does not mean that we shall cease our efforts to arrive at a solution which will secure the widest possible acceptance of the Convention. It is thus important to consolidate those parts of the Convention on which there is general agreement and transform them into rules binding on all states. State practice will play an important part here, but so will the further work of experts like you. Progress in the field of law is normally a question of an interaction between the experts and the deciding authorities. I see your meeting here not least from this perspective.

With regard to the provisions relating to the international sea-bed area, it should be admitted that the particular application of the principle of the common heritage of mankind which is laid down in the Convention is not the only feasible

one. The negotiations on this question were particularly complex. We must realize that there has to be a reasonable degree of correspondence between the political and economic realities, on the one hand, and the solutions chosen, on the other. It would be difficult to establish an effective international regime on the basis of a majority decision which conflicts with the vital interests of some of those few states which have the necessary technical and economic capacity to utilize the resources of the seabed.

Efforts aimed at overcoming this last obstacle are continuing, and it may not be without reason that some progress is expected from the work of the Preparatory Commission for the Seabed Authority. However, the responsibility for achieving this rests with all parties, and it is a responsibility that we all shall have to take most seriously.

Against this background, Mr. Chairman, the Government of Norway offers its best wishes to the 17th Law of the Sea Institute Conference. We are confident that this international assembly of prominent experts will make an important contribution to the discussion and clarification of several issues in the field of the law of the sea.

May I, Mr. Chairman, Excellencies, Ladies and Gentlemen, with these words declare the 17th Law of the Sea Institute Conference opened.

WILLY OSTRENG: Thank you very much, Mr. Stray, for your kind and encouraging statement concerning the possible usefulness of our conference.

I now have the great pleasure to give the floor to the foremost representative of the Law of the Sea Institute, Dr. Paul M. Fye, President of its Executive Board.

WELCOMING ADDRESS

Paul M. Fye
Woods Hole Oceanographic Institution

Mr. Foreign Minister, Mr. Ambassador, Mr. Chairman, Ladies and Gentlemen:

It is a great privilege and honor to welcome you to the 17th, and largest, Annual Conference on behalf of the Law of the Sea Institute. It is an even greater privilege to meet in this beautiful city of the sea, here in Norway.

We come to Oslo very conscious of those who have preceded us. In particular I think of Fridtjof Nansen, to whom indeed all seafarers and oceanographers and all others concerned with the sea owe a great tribute. He was one of the great explorers of our oceans and our world. In my home institution, which is in Woods Hole, Massachusetts, we have the custom of naming some of our buildings or residences after famous research ships of

the past. And, of course, one of these houses is named "Fram Cottage."

Some years back, as I left the director's residence on my way to the office, I looked across at Fram Cottage and saw that it was all buttoned up, curtains drawn. Fram Cottage being usually occupied by graduate students, I remember thinking that students were no longer made of the stuff we were made of in my day. I thought the student was still in bed. Halfway to the office, however, I met the student living at Fram Cottage and he told me that he had been working all night in his laboratory and that he had such an exciting experiment going that he could not put it aside. I then realized that he indeed merited the privilege and honor of living in Fram Cottage.

Mr. Chairman, the Law of the Sea Institute is already indebted to the Nansen Institute for the co-sponsorship of this Conference. I am also confident that your wishes, Mr. Foreign Minister, will come to pass and that this will be indeed one of our best and happiest annual Conferences.

It is now my privilege to introduce to you the Director of the Law of the Sea Institute, Dr. John Craven. All of you who know him realize that he is a bundle of activity -- and a poet.

WELCOMING ADDRESS

John P. Craven
The Law of the Sea Institute

Mr. Foreign Minister, Excellencies, participants and colleagues:

Each year members and associates of the Law of the Sea Institute meet with anticipation -- anticipation of a vital, stimulating and relevant interchange on the Law of the Sea. But we have also come with the anticipation of obtaining an insight into the history, culture, and perceptions of the country of our host institution as it contemplates the sea. And as our thoughts turn toward Norway, that nation of mariners, the names of intellectual giants dominate our mind: Nansen in oceanography, Munch in art, Grieg in music, Ibsen in drama. And as we seek to find the Norwegian's primary and fundamental feelings with respect to the sea, we are drawn instantly to the fifth act of Ibsen's Peer Gynt.

Peer is returning from the sea after years abroad, and as he leans on the rail he strains through the mist seeing, at least in his own mind, the mountains and fjords of Norway -- as we, coming to this Conference, strained to see this fabled land from the ports of our aircraft flying over the Arctic along the western coast of Norway or across the North Sea. Peer Gynt sums it up for us in the opening lines of Act Five. He says:

Se Hallingskarven i vinterham; --
han brisker sig, gamlen, i kveldsols bram.
Joklen, bror hans, star bag paskra;
han har endnu den gronne iskaben pa.
Folgefonnen, hun er nu sa fin, --
ligger som en jomfru i skaere lin.

I am not sure if anyone understands what I just read, but that may have been evocative. There is a less romantic and more realistic view of the sea later in the Act. A storm has arisen. Now the theme of the Act is the theme of the magnificent poster of Espolin Johnson behind me. It tells us that at sea we are all in the same boat -- just as the theme of this Conference is that we must all pull together. Peer Gynt sums this all up with Scandinavian candor. In the English translation he says:

'A clear conscience makes an easy pillow.'
Well, that may be true when you're on dry land,
But it's not worth a pinch of snuff at sea
Where a decent man is just one of the mob.
At sea you can't ever be yourself;
You must toe the line with the rest of the ship.
If the hour has struck for the bos'un and cook
I, even I, shall sink with the whole boiling ...

WILLY OSTRENG: Thank you very much, both Dr. Fye and Dr. Craven.

I now call upon Mr. Alf Sanengan, Chairman of the Board of the Fridjtof Nansen Institute, to deliver his welcoming remarks.

WELCOMING ADDRESS

Alf Sanengan
Chairman of the Board
Fridtjof Nansen Institute

Mr. Foreign Minister, Excellencies, Ladies and Gentlemen:

On behalf of the Fridtjof Nansen Institute it is a great pleasure to welcome you all to the 17th Law of the Sea Institute Conference.

For many years our Institute has devoted itself to the study of the law of the sea and to related issues of international law and international relations. We have with the greatest interest taken part in the prior Law of the Sea Institute Conferences, and we consider them very successful. Under the leadership of an outstanding scholarly board the Law of the Sea Institute has become a truly academic institution.

The Fridtjof Nansen Institute was founded exactly twenty-five years ago. It is, therefore, a particular pleasure for me,

as Chairman of the Nansen Institute, to have the experience on this anniversary of cooperating with this great and important Conference. To us this has surely been the most challenging professional undertaking during these years, and I may assure you that our young and enthusiastic staff has taken up this challenge most seriously.

Our Institute bears the name of Dr. Fridtjof Nansen. He devoted his life to science, humanity, diplomacy, and international understanding. It is the legacy of our Institute to promote his ideals and to convey into the future the stubborn belief in the possibility of making the world a better place to live for all of us. However, realism must prevail in international relations. In this Conference we will be free to speak our minds on all issues, but the outcome of the Conference will also depend on our willingness to listen and to understand.

From the list of participants I see that we have convened probably the greatest gathering of scholars possible in the field of the law of the sea. I think this ensures that the 17th Law of the Sea Institute Conference will prove to be yet another successful meeting of the minds on issues of the utmost importance to humanity and international life.

I will, therefore, Mr. Chairman, congratulate you on your efforts and on the opening of the Conference. I alo extend my best wishes to all the distinguished delegates who have come to Oslo to take part in this particular event.

WILLY OSTRENG: Thank you ever so much, Mr. Sanengan.

From here we proceed directly to the keynote address. Ambassador Jens Evensen's achievements and contributions to the 1982 Convention on the Law of the Sea are so well-known to this audience, and world-wide, that there should be no need for any further introduction. I, therefore, now call upon Mr. Evensen to address the meeting.

KEYNOTE ADDRESS

Jens Evensen
Ministry of Foreign Affairs
Oslo, Norway

Distinguished Representatives and Friends:

It is with great pleasure and with some trepidation that I address this august gathering of representatives from all over the world. The purpose of this 17th Annual Conference of the Law of the Sea Institute is to make an assessment of the 1982 Convention on the Law of the Sea, an evaluation of its legal and political importance and impact, present and future.

It is also a source of humble pride for us Norwegians to note that the Fridtjof Nansen Institute is co-sponsor for this timely initiative. It is a great pleasure for me personally to meet again so many outstanding personalities and friends from the Law of the Sea Conference and from other fora of international law and international relations. We hope that you will have a fruitful and enjoyable stay in Norway.

INTRODUCTORY OBSERVATIONS

Allow me at the outset to try to place the UN Law of the Sea Convention of December 10, 1982, in a proper political and legal perspective.

When the United Nations in the fall of 1970 decided to proceed with the Third United Nations Law of the Sea Conference, the Organization embarked on a gigantic attempt to create a modern international constitution for the world oceans. These efforts were as much a daring venture of international politics and international relations as an exercise in international law. It is certainly the most comprehensive political and legislative work undertaken by the United Nations in its 38 years of existence. We have created a "New International Order" for five-sevenths of the surface of our globe. The results obtained by this unique exercise have been revolutionary in their political and legal implications. In many respects a centuries-old system relating to the oceans has been changed or fundamentally amended by the introduction of the 1982 Convention.

Admittedly, the traditional system governing the oceans with which the international community has lived for so long contains basic principles that are invaluable. But we must bear in mind that this traditional law of the sea and the underlying principles of foreign policy were mainly formed over the centuries by the world powers: the nations of Europe and later the United States and Japan.

Certain principles of this governing system of law met, perhaps first and foremost, the special needs and interests of these powers and of the industrialized world: their special rights and interests in unimpeded freedom of navigation; their

right to construct, equip, and man their merchant marines as they deemed fit; and their right to control the ocean by the overwhelming superiority of their naval forces, including their right to carry out naval maneuvers and naval warfare right up to the threshold of other coastal states. Of essential importance to their economies were their rights to fish freely and without control all over the oceans, presumably up to three miles from the coastline of other states, and to enjoy and exploit all other riches of the sea and the seabed up to this limit, including the right to use the oceans and the seabed thereof as dumping grounds for whatever waste their land areas could not absorb. It was a general freedom that in many ways was a blessing, and still is. But, at the same time, these traditional doctrines and freedoms reflected a stage of economic, technological, and political development that became increasingly outdated by the turn of this century. After the technological revolution and the complete upheaval of the existing international order following in the wake of the Second World War, this system was hopelessly doomed.

The factors contributing to the downfall of the system were many, including the overall technological revolution after the Second World War with the fundamental breakthrough of a technology that opened up the oceans, the ocean floor and its subsoil to a mode and rate of exploitation hitherto undreamed of. At the same time, this new technology exposed the marine areas to abuses and overexploitation of the living resources as well as of the mineral resources to an extent that mankind had never before envisaged.

Thus for the first time in the history of man, the realization dawned upon us that the living resources of the oceans were not inexhaustible, but were, on the contrary, highly vulnerable to new technologies and fishing techniques, and also to grave disturbances of the marine ecology and environment from the introduction by man into the oceans of a whole range of pollutants.

One future chapter of the history of man, of which we have been allowed only a few glimpses at present, is the potential for exploitation of the oceans and especially of the ocean floor and its subsoil through the extraction of their enormous hidden mineral resources. Perhaps the oceans are even a potential habitat for man as foreseen by Professor Cousteau and others. The possibilities of the oceans as a self-perpetuating source of energy through wave action, tidal action and currents likewise seem to be a thing of a not too distant future.

The existence of exploitable petroleum resources in the continental shelves of a number of countries has added new dimensions to their status and importance in foreign policy matters. I am convinced that developments up to the year 2000 and beyond will entail increased competition to secure food, proteins, essential minerals, energy, and other natural resources from the oceans. In a world where the land becomes ever more depleted with regard to these essential riches, ocean space will increase in possibilities and importance.

Another factor contributing to the downfall of the traditional system was the abolition of colonialism and the emergence of some hundred new states with their dreams and aspirations anchored in concepts that in many respects are different from those of the industrialized and westernized world. Thus, we experienced in the UN Conference on the Law of the Sea clashes of ideologies and cultural concepts with regard to the rights and uses of the seas and their seabeds that obviously caused and will cause international strains.

A serious problem for the industrialized world as well as for the developing world is the fact that mankind has exhausted, or is rapidly exhausting, basic mineral resources on land because of centuries of use and, unfortunately, also centuries of abuse of these land-based resources. The dissolution of the colonial empires dramatized the situation for the former colonial powers and for their multinational corporations. The activities of the multinationals have in the last decades been curtailed by the policies of a number of developing countries, whose aspirations naturally enough are to control and obtain "sovereignty" over their proper natural resources. In these circumstances the oceans offer tempting new opportunities for the multinationals.

The advent of the nuclear age, in which states are seemingly more bent on the destruction of our globe by the mad nuclear arms race than on the constructive use of the atom for the benefit of mankind, has also added new dimensions to ocean space, especially the strategic importance thereof. And this seems especially true with regard to the seas washing the shores of Norway.

The emergence of two superpowers that are both divided and linked by the oceans has polarized and accentuated this enhanced strategic importance of the oceans. The terror balance which they have established in the weird and perhaps justified hope that it will preserve world peace is, to a frightening extent, linked to the oceans, especially through their nuclear-armed and nuclear-powered submarines.

The U.N. Law of the Sea Conference decided after thorough deliberations that these strategic implications and the questions of arms control and disarmament in relation to the world oceans should not be taken up by the Conference. But the general view of the Law of the Sea Conference was expressed in two articles of the Convention. Article 88 entitled "Reservation of the high seas for peaceful purposes" provides, "The high seas shall be reserved for peaceful purposes." Article 301, entitled "Peaceful uses of the seas," is somewhat more specific in reminding all states of their obligations under the United Nations Charter. It states, "In exercising their rights and performing their duties under this Convention, States Parties shall refrain from any threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the principles of international law embodied in the Charter of the United Nations. It is high time that we return to these basic tenets

of the United Nations Charter on land, at sea, in the air and in space.

In view of the developments I have briefly outlined, it may be assumed that the opening up of ocean space is in many respects as fundamental and unprecedented in its extension of human activities as is the opening up of outer space. And we should approach problems in ocean space with the same reverence and feeling of interdependence with which we must approach the problems in outer space.

The U.N. Law of the Sea Convention was drawn up with all these new dimensions in mind. It is for these very reasons that it must succeed in attaining the status of a valid instrument and pillar of international law and international relations. The final success of this pioneering effort is essential if we are to be able to control and solve the confrontations and conflicts that lie smoldering in the sphere of ocean space. We must attempt to control the global tug of war with its inherent political, legal and economic conflicts of interest -- a juggling act with far-reaching strategic implications and with peace-preserving and environmental challenges that are mindboggling.

The world should also remember that the Law of the Sea Convention is the first concrete implementation of a New Economic World Order, especially with regard to the "international area" (that is, the deep ocean floor and its subsoil outside national jurisdiction). The enormous resources of this area have been vested "in mankind as a whole," and the area and all its resources are solemnly declared to be "the common heritage of mankind" under article 136 of the Convention.

In our modern world we must recognize and accept the interdependence between states and between peoples and nations, the wholeness of our existence, our dependence upon and obligations towards everything alive, towards our surroundings and nature as a whole. The U.N. Law of the Sea Convention is a modern international instrument in this respect as well.

THE MECHANISM OF THE U.N. LAW OF THE SEA CONFERENCE

The fabulous mineral resources in the form of manganese nodules situated on the surface of the deep ocean floor have been known to the scientific world for some time. But the attention of the political world was drawn to the inherent political and legal consequences thereof by Ambassador Arvid Pardo of Malta in his famous speech in the General Assembly on November 1, 1967. As a consequence the General Assembly decided to establish a Sea-bed Committee to develop the guiding principles applying to these matters.

Under the brilliant chairmanship of Ambassador Hamilton Shirley Amerasinghe of Sri Lanka, the Committee embarked on its work in 1968. The choice of Shirley Amerasinghe as its president was a stroke of luck for the Conference and for the United Nations. More than anybody he was the towering personality in the Conference and behind the scenes. He was the

unequalled diplomat and president in the U.N. system in the 1970's. For more than ten years our friend Shirley presided over the Sea-bed Committee, preparing the U.N. Conference, as well as over the Third U.N. Conference on the Law of the Sea. His untimely demise came as a shock. He is sorely missed by all his devoted friends and admirers.

Ambassador Amerasinghe presented to the 25th General Assembly in 1970 a Declaration of 15 seabed principles elaborated on the basis of the discussions in the Seabed Committee. These 15 principles were adopted by the U.N. General Assembly on December 17, 1970; 108 countries voted in favor and 14 states abstained. The Declaration established a worthy memorial indeed for the 25th anniversary of the United Nations Organization in 1970.

I shall not touch upon these 15 principles in detail. They are synthesized from certain basic tenets of international law and international relations. In this crucial area of human relations they obviously filled a void created by the rampant technological revolution. By sheer necessity and the very nature of things, some of these basic principles have, in my respectful opinion, acquired the force of international law, especially the following tenets of the Declaration:

Principle 1 which declares that the seabed, ocean floor and the subsoil beyond national jurisdiction and their resources "are the common heritage of mankind."

Principle 2 which provides that no state or person can "appropriate" this area and "no state shall claim or exercise sovereign rights over any part thereof."

Principle 3 provides that no state or person can: "claim, exercise or acquire rights with respect to this area incompatible with the international regime to be established and the principles of this declaration."

It is further provided in principle 7 that the exploration and exploitation of this international area and of its resources "shall be carried out for the benefit of mankind as a whole ... taking into particular consideration the interests and needs of the developing countries."

These main principles have been included in Part XI of the 1982 Law of the Sea Convention as the main take-off points for the international management and administration of the deep ocean floor and its resources.

The 1970 Declaration foresaw the establishment of a new international organization endowed with limited supranational powers. This was one of the main tasks to which the Law of the Sea Conference directed its attention. Accordingly, the Convention contains in Part XI detailed provisions concerning such a new organization, the so-called International Authority charged with the task of the administration and management of the natural resources of this common heritage of mankind. However, it can hardly be conceived how these provisions concerning the establishment of an international organization (endowed with supranational powers) can be implemented except as express treaty provisions. Thus, the organizational provisions

of Part XI of the Convention cannot be implemented without the entry into force of the 1982 Convention.

During the work of formulating the 15 sea-bed principles it became clear to the United Nations that the whole area of the Law of the Sea was ripe for revision. The four Geneva Conventions on the Law of the Sea of 1958 seemed totally inadequate to meet the new challenges, especially those offered by the emergence of some 100 or more new states. The preparations for overhauling the law of the sea started in 1970 upon the adoption of the 15 sea-bed principles.

After three years of preparatory work, the UN General Assembly, by a Resolution of November 16, 1973 (Res. 3067 XXVIII), called for the convening of the Third UN Law of the Sea Conference. The first session of this Conference -- a procedural session -- met in December of the same year. The Conference has held eleven sessions in all from 1973 to 1982. The second session, which actually was the first substantive session, convened for more than two months in Caracas, Venezuela on June 20, 1974. The final part of the eleventh session -- the signatory session -- convened in Montego Bay, Jamaica from December 6-10, 1982.

The Third United Nations Law of the Sea Conference will remain a significant chapter in the history of the United Nations and indeed in the history of international law. All member states contributed to the best of their ability. The United Nations Secretariat functioned throughout these many years with such unexcelled efficiency and will to succeed that it deserved and gained the unreserved respect and admiration of all participants.

The decision-making process adopted for the Conference was unique. From the outset it was acknowledged that it would be an exercise in futility to draw up a draft convention unacceptable to one or more major groupings within the United Nations. It was felt that if any main grouping remained outside the Convention, the Conference had failed in its main function, namely to create a political and legal constitution for the oceans acceptable to all. The universality principle was thus the principle around which the Conference had to build its structure.

The unique features of this decision-making process consisted of 3 elements:

1. The consensus principle;
2. The gentlemen's agreement adopted by the General Assembly on November 16, 1973;
3. The concept of the package deal.

The consensus principle was the cornerstone of the decision-making process of the Conference. As defined in the Law of the Sea Conference, it meant adoption of articles -- and the text of the Convention as a whole -- by general agreement (or understanding) without resorting to a vote and, in effect, without requiring an unanimous decision. It is a rather subtle

and equivocal manner of making decisions, but also a flexible one that presupposes a special atmosphere of understanding and detente in the negotiating forum.

The Gentlemen's Agreement was a necessary corollary to the consensus principle. The developing countries, and other countries as well, feared that a consensus principle without the possibility to resort to voting at some final stage -- if the process of consensus bogged down -- could in certain circumstances emasculate the Conference. Consequently, they insisted on voting as a final resort in such cases. After protracted negotiation, the Gentlemen's Agreement was arrived at. This compromise consisted of two elements. Firstly, all possible efforts towards arriving at consensus must be exhausted before voting should take place. When an affirmative vote declared that all such possibilities had been exhausted, voting on the outstanding issues was foreseen. But even then a cooling-off period of up to ten days was provided for, so as to allow for an ultimate round of negotiations before the fateful vote was cast.

Closely connected with the consensus approach was the concept of a package deal. The package deal entailed the notion that all the main parts of the Convention should be looked upon as an entity, as a single negotiated package, where the laws of give and take presumably had struck a reasonable balance between participating states considered as a whole. The package deal seemed a pre-condition for adopting the Convention by consensus. On the other hand, the package deal concept could obviously create complications if efforts were made to change or amend a single chapter or isolated articles during the course of the Conference -- however praiseworthy such efforts may have been.

Great store was put on this novel decision-making process. It was felt that it might mean a new impetus to the United Nations with regard to efficacy. Thereby it might enhance the reputation of the Organization not only with regard to law of the sea matters, but also as an efficient decision-making mechanism in general, for the future.

Two additional features with regard to the procedures of the Conference developed in a more spontaneous fashion.

One unique feature in the negotiating process was the role that informal groups -- either self-appointed or established by the Conference -- played in preparing draft articles. One such group was a self-appointed group of so-called legal experts. It worked as an entirely informal group of persons acting in a "private and personal" capacity, although the group in general consisted of heads of delegations. The group produced preliminary drafts on several of the main topics. Other groups worked in a similar fashion. The results obtained in such groups were frequently channeled into the Conference as anonymous papers by "friends of the President" or similar vague wordings. They were extensively used by the President. One group that had a fundamental impact on the Conference in advancing claims but also in formulating compromise texts was the Group of 77 -- a group consisting of all the developing

countries in the United Nations. Another group that exerted considerable influence in regard to certain problem areas was a somewhat heterogenous group of so-called "landlocked and geographically disadvantaged states."

Another unique feature which contributed to the successful outcome of the Conference was the initiative which the President took, beginning with the third session, to prepare comprehensive working papers together with the chairmen of the three main Committees and in close co-operation with the Law of the Sea Secretariat. These working papers, in the form of articles, grew from single negotiating texts (1975), and revised negotiating texts (1976) which served as a basis for the negotiations on, and formulation of, compromises in the Convention. Based on the work of the three main Committees and formal or informal negotiating groups these preliminary texts grew into a composite negotiating text (1977) and an informal draft convention (1979) as the discussions and compromises became more and more authoritative through the workings of the Conference. But it was the enormous prestige of President Amerasinghe and his exceptional impartiality, recognized by all, that made such an initiative acceptable to the Conference. In retrospect I believe that this unique approach chosen by Ambassador Amerasinghe at crucial stages saved the Law of the Sea Conference from foundering.

ADOPTION AND SIGNATURE OF THE U.N. LAW OF THE SEA CONVENTION

The text of the Convention of the Law of the Sea was adopted at the United Nations headquarters in New York on April 30, 1982, after some 15 years of arduous negotiations in which virtually all states of the world took part. It had been our aspiration that the Convention should be adopted by consensus. Unfortunately, we did not succeed. In a formal vote requested by the United States, 130 states voted in favor of the Convention, 4 voted against and 17 abstained.

Practically all states from the developing world voted for the Convention. So did a number of countries from "the Western European and Others Group" including the five Nordic countries, Australia, Austria, Canada, France, Greece, Ireland, Japan, Portugal and Switzerland. Thus a number of members of the EEC and of NATO voted for the Convention. The four countries that voted against, for somewhat different reasons, were the United States, Israel, Turkey and Venezuela. Among the states abstaining were the remaining countries from the Western Group and the Eastern European states with the exception of Romania and Yugoslavia.

The crowning event of the Law of the Sea Conference was the signing session, convened in Jamaica in the second week of December 1982. At this session the incredible number of 119 signatures was secured on December 10, 1982.

Additional signatures have been forthcoming. According to the latest count, 125 countries (and territories) have now

signed the Convention, including the overwhelming majority of developing countries, all the Eastern European countries (with the exception of Albania) and a great number of the industrialized western countries.

A few countries have even ratified the Convention already, i.e. Fiji, Jamaica and Mexico.

Admittedly, it was a disappointment that the adoption of the Convention by consensus eluded us in the very last phase of the Conference. This was mainly due to the hardened position of the new U.S. administration that took over in 1980. Even so, the struggle for a consensus text proved to be fruitful. The fact that the Convention obtained 119 signatures on the opening day demonstrates how widely the Convention has been accepted in the minds and politics of UN member states. The consensus approach may likewise have enhanced the possibility of rapid ratifications and accessions to the Convention by a sufficient number of states -- namely 60 -- for its entry into force. It may also facilitate the recognition of main parts of the Convention as general principles of international law, binding for the international community even before the Convention enters into force.

The law-making effects of the UN Law of the Sea Conference and the 1982 Convention may defy categorization under traditional doctrines of the sources of international law. But these general law-making effects should not be underestimated. They are clearly at work today and will be so in the future.

BRIEF OVERVIEW OF CONTENTS

Allow me now briefly to examine certain main aspects of the Law of the Sea Convention.

Jurisdictional Zones and Areas

The provisions on the territorial sea and contiguous zone are contained in Part II of the Convention. The Convention provides for a territorial sea of a maximum breadth of 12 nautical miles according to article 3. The negotiations in the Conference, together with the inclusion in the Convention of the 12-mile principle as to the maximum breadth of the territorial sea in the Convention, may have the effect of establishing the 12-mile limit as the governing principle of international law with regard to the extent of the territorial sea of a coastal state.

This assumption may have repercussions in two directions. It runs counter to the doctrine adhered to by a dwindling group of states which have claimed that the 3-mile limit is the only valid doctrine of international law in this field.

But the 12-mile principle is equally significant in affecting claims in the opposite direction, namely the claims of a growing number of coastal states to territorial seas wider than 12 nautical miles and up to 200 miles. The underlying reasons for such claims been mainly to protect the living resources of these areas from over-exploitation by invading fishing fleets.

Admittedly, the 12-mile doctrine has been somewhat beclouded by the fact that the Convention was not adopted by consensus. Thus, certain states may maintain in principle that they have the right to claim a wider breadth for the territorial sea, at least until all the elements of the package deal have fallen into place.

However, the principle laid down in the Convention of a 12-mile territorial sea combined with the concept of a 200-mile exclusive economic zone -- giving the coastal state exclusive functional sovereignty for the purpose of economic exploitation of the natural resources of this wider zone -- should meet the main concerns of coastal states. In my opinion, the concept of a 200-mile economic zone has also acquired the force of law.

Thus, the combination of a 12-mile maximum of the territorial sea and the concept of 200-mile economic zones should be considered part of prevailing principles of the international law of the sea. But special situations or geographic peculiarities, such as historic bays, historic waters, etc., may affect or temper these general principles.

The provisions in article 33 of the Convention deal with the traditional concept of contiguous zones for specific purposes, namely the maintenance of customs, fiscal, immigration and health laws and regulations. According to article 33 the contiguous zone may now extend to 24 miles from the baselines of the territorial sea. In the views of many, this implies an extension of the contiguous zone by 12 miles. It seems reasonable to assume that this 24-mile zone may also be considered as the established maximum breadth for contiguous zones.

Another major achievement of the UN Law of the Sea Conference is the introduction in Part II and Part IV of the Convention of the concept of archipelagic states. Under the Convention archipelagic states -- that is, states made up of a group of closely related islands and interconnected waters -- have sovereign rights over the archipelagic sea areas enclosed by straight lines drawn between the outermost points of the islands of the archipelago. But their sovereign rights over these archipelagic waters are subjected to the right of "sea-lanes passage." The ships of all other states enjoy the right of passage through archipelagic waters in sea-lanes designated by the archipelagic state. This doctrine of international sea-lanes passage is laid down in article 53 of the Convention.

Another delicate political and legal issue was the question of passage through international straits. This issue became a focal point at several sessions of the Law of the Sea Conference as a direct consequence of the proposal that the territorial sea might extend to a breadth of 12 nautical miles. Certain countries considered this as an extension of the territorial seas as compared to previous doctrines, resulting in the inclusion of a great number of straits in the territorial seas of adjacent coastal states. A new doctrine of so-called "transit passage" was adopted in article 37 of the Convention in order to meet these concerns. It was a major compromise. The

principle of "transit passage" provides that ships and aircraft of all nations are granted transit passage by normal modes of continuous and expeditious passage through the waters of such straits. It is inherent in the notion of transit passage that the states bordering such straits shall not hamper ordinary "transit passage" (article 44).

Have these concepts of "archipelagic sea-lanes passage" and "transit passage" acquired the status of governing principles of international law? The new concept of transit passage through straits and the concept of sea-lanes passage through archipelagic states' waters were closely tied respectively to the acceptance of a maximum breadth of 12 miles for territorial seas and to the concept of archipelagic states throughout the discussions of these topics in the Law of the Sea Conference. My submission, therefore, is that it would be both politically unrealistic and legally untenable not to accept that the provisions in the 1982 Convention concerning the unhampered passage through international straits and the concept of sea-lanes passage through archipelagic waters are prevailing principles of international law. These conclusions seem valid whether the Convention enters into force or not.

One of the major innovations of the 1982 Convention is the introduction of the concept of the exclusive economic zone of 200 nautical miles laid down in Part V of the Convention. Within this 200-mile zone, the coastal state may exercise sovereign rights for specific functional purposes, namely the exploration, exploitation, conservation or management of all living and non-living resources. The coastal state may likewise exercise jurisdiction over the establishment and use of artificial islands, installations and structures, marine scientific research and the preservation of the marine environment. The exclusive economic zone serves a dual purpose. With regard to living resources it is a fisheries zone with the traditional rights of coastal states, but also with the introduction of certain new obligations. As far as exploitation of non-living resources is concerned, the provisions of the economic zone are identical with those applying to the continental shelf.

The provisions of article 56 are an innovation in connection with the exploration and exploitation of the economic zone. The article provides that the coastal state possesses sovereign rights also with regard to such other activities in the economic zone as the production of energy from water, currents and winds. This includes the production of electricity from wave action, hydro-electric plants, ocean currents or tidal action, etc. These aspects may acquire considerable importance in the future.

One reason for introducing continental shelf aspects into the concept of the 200-mile economic zone was to ensure that states that have no geographical or geological continental shelf or only a very limited shelf can enjoy continental shelf rights up to the 200-mile limit.

The coastal states of the world have adopted the economic zone concept in their national legislation and international relations.

The idea of this extended zone of 200 miles for the exercise of certain functional sovereign rights was and is revolutionary from the point of view of foreign policy as well as international law. In my opinion, it seems beyond doubt that these provisions have acquired the force of international law with the rights, but also with the limitations, laid down in Part V of the 1982 Law of the Sea Convention.

This is a strange and thought-provoking phenomenon. It seems that in this respect the United Nations have acquired some law-making functions which are difficult to define and which do not seem to emanate from the UN Charter. The accepted assumption is of course that the General Assembly has no law-making authority. Is this concept being subtly changed as an inherent characteristic of the United Nations?

Perhaps so. But other forces are also clearly at work. The fact that representatives of all UN member states met officially year after year in the Conference and worked out compromises in the form of articles is not devoid of legal significance, even when the guiding principles are the consensus principle and the package deal. State practice, based on such minutely formulated compromises and draft articles, tends to be uniform and will thus have an inherent capability to create law in a shorter period of time than otherwise might have been the case. Such unification of activities through the United Nations has filled a legal vacuum created by the almost rampant technological revolution -- a void which needed to be filled for political and legal reasons. These special law-making effects of United Nations activities are peace-preserving to an extent that should not be underestimated.

Part VI of the Convention is devoted to the continental shelf. According to article 76, the outer edge of the continental shelf may extend beyond the 200-nautical-mile limit of the exclusive economic zone. Whether the outer limit of the continental shelf of a coastal state extends beyond this 200-mile zone depends on a rather complicated geological and sediment-thickness formula laid down in article 76. The continental shelf can in no event extend beyond 350 nautical miles from the coast or, alternatively, beyond a line drawn 100 nautical miles from the 2500 meters isobath (water depth). The Convention also provides that part of the benefits derived from exploitation of the shelf beyond 200 miles shall be payable "through the [International Seabed] Authority, which shall distribute them to States parties...on the basis of equitable sharing criteria" (article 82).

The provisions in Part VI, together with the provisions in Part V on the economic zone, strengthen the position of the continental shelf concept as an established principle of the modern law of nations, a concept that had already been adopted in state practice worldwide. In this context as well, the question arises as to whether the specific formula laid down

with regard to the outer limit of the continental shelf in article 76 and the benefit-sharing provisions contained in article 82 have also acquired the force of international law independent of the entry into force of the Convention. State practice to this effect is conspicuously lacking. As a matter of fact, the practice of states with regard to the outer limit of the continental shelf vis-a-vis the deep oceans still tends to favour the exploitability criterion -- that is, the national continental shelf extends as far out as modern technical development permits exploitation of the natural resources of the shelf and its subsoil. The inherent weakness of this yardstick is apparent. With modern technology and its futuristic possibilities there is no limit as to how far out the ocean floor and the subsoil will be exploitable. This is exactly what Part Xi on the international area and the "common heritage of mankind" are all about.

It should be borne in mind that the provisions of article 76 on the outer limit of the continental shelf and the provisions of article 82 on the sharing of revenues from the continental shelf outside 200 miles were important compromises arrived at in order to obtain, inter alia, the universal recognition through the Law of the Sea Conference of the economic zone concept and of the concept that the continental shelf can extend beyond the 200-mile limit. Hopefully, states will abide by the provisions of article 76 even before the entry into force of the Convention, based both on the general obligations of states to act in good faith and on a spirit of co-operation and friendly relations, as, for example, laid down in articles 1 and 2 of the UN Charter. There also exists an additional basis for such action, namely article 18 of the Vienna Convention of May 23, 1969 on the Law of Treaties, which provides that states are obliged to "refrain from acts which would defeat the object and purpose of a treaty" when they have signed a treaty. On the other hand, it cannot be assumed that the provisions of article 82 on benefit-sharing may become effective before the ratification and entry into force of the Convention.

Issues of Delimitation

One of the most crucial issues with which coastal states will be faced in the immediate future is the drawing of the line of delimitation between neighboring coastal states with opposite or adjacent coastlines. It is obvious that whenever maritime zones of coastal states are greatly extended -- be it to a 12-mile territorial sea, 200-mile economic zone, or a continental shelf which may extend up to 350 miles or more from the coast -- unsolved delimitation problems must necessarily arise between neighboring states. This is by no means due to ill will or bad faith on the part of the states concerned. It stems from the fact that vast new areas of the adjacent oceans are suddenly subjected to the jurisdiction of coastal states for specific functional purposes. Furthermore, experience shows that the drawing of frontiers between neighboring states has proven to be one of the most difficult, even most fateful, tasks in the field

of international relations. Another complicating factor is that the elements on which to base the drawing of maritime boundaries become more and more vague.

No wonder then that the provisions pertaining to delimitation, especially of the exclusive economic zone and of issues at the Law of the Sea Conference. The coastal states were more or less equally divided in two camps: "the median line group" which advocated the equidistance principle and "the equitable principle group" which advocated that equity should be the only guiding principle. In spite of their protracted negotiations, the two groups were unable to reach a compromise formula. But in the very last days of the 1981 session of the Conference, the President -- Ambassador Tommy Koh of Singapore -- proposed, on his own initiative, a compromise formula for the delimitation of the economic zone and the continental shelf. The new formulations were acquiesced in by the Conference and are included as articles 74 and 83 of the Convention.

Actually, the Convention contains three articles dealing with the delimitation of maritime zones between neighboring coastal states: article 15, dealing with the delimitation of the territorial sea; article 74, dealing with delimitation of the economic zone; and article 83, dealing with the delimitation of the continental shelf. There is a considerable difference in approach between the provisions contained in article 15, on the one hand, and articles 74 and 83 on the other.

Article 15 repeats the provisions of the Geneva Convention of 1958 dealing with the delimitation of the territorial sea and uses as its point of departure the following approach:

> Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two states is measured.

Article 15 also provides that "where it is necessary by reason of historic title or other special circumstances," the actual delimitation could be "at variance" with the equidistance line principle.

Articles 74 and 83 choose a different approach to the problem of delimitation. The main principle, as in article 15, is that neighboring states must effect the drawing of the line of delimitation concerning their respective zones by agreement.

But when the parties are not able to reach such agreements, the approach chosen in article 74 and 83 differs from that of article 15. Articles 74 and 83 contain no reference either to the principle of equidistance or the principle of equity, nor to the principle of "historic title" or "other special circumstances" for that matter. They confine themselves to a broad reference to article 38 of the Statute of the

International Court of Justice. That is the article referring to sources of international law applicable in cases before the International Court [1]. The formulation was meant as a compromise formula where the two opposing groups reserved their principal points.

It remains to be seen whether this compromise formula is a fortunate one. Its main strength is that it was accepted or acquiesced in as a compromise. But its weaknesses are equally obvious. It gives little or no guidance in concrete disputes as to applicable principles and concrete solutions. The reference to "equitable solutions" seems to give little comfort. Basically, it is the aim of all negotiations, agreements and lawsuits to reach solutions that are equitable. Furthermore, article 38, paragraph 1 of the Statute seems quaintly outdated to a modern student of international law in regard both to its drafting and to its contents

A few additional remarks with regard to the interpretation of article 74 and 83 may be called for. The reference to article 38 of the Statute of the International Court of Justice does not imply would indicate that the International Court of Justice is the only, or the preferred, means of peaceful dispute settlement in delimitation cases. The reference is meant solely as a reference to applicable sources of international law. Nor does the reference to article 38 of the Statute imply that its enumeration of the sources of international law is exhaustive. The dynamics of the international community, especially in such a progressive field as the law of the sea, must mean that additional elements of a legal nature may be relevant in concrete delimitation cases. Furthermore, the reference to article 38 of the Statute must be a reference to paragraph 1 of article 38. The provisions of article 38, paragraph 2, concerning decisions "ex aequo et bono," apply only where the parties agree in the concrete case. The reference to "an equitable solution" in articles 74 and 83 does not detract from this obvious conclusion.

In concluding my brief remarks on delimitation, I would mention one lacuna in the Convention. There is no reference in article 33 on the continguous zone to the question whether the outer 12 miles of this zone must be delimited according to the provisions of article 15 on the territorial sea or the provisions of articles 74 and/or 83. Hopefully, this question has theoretical rather than practical interest.

Seabed mining

In retrospect, it was Part XI of the 1982 Convention, dealing with the exploitation of polymetallic nodules and other minerals of the deep ocean floor, which caused the greatest difficulties but which also resulted in the most epoch-making solutions. These questions were, and still are, the most controversial issues of the Conference. Even today, the arguments for and against the Convention are mostly arguments for or against Part XI.

Over the years, herculean efforts were made in private meetings, in informal or formal meetings of the First Committee, and in the Plenary of the Conference to elaborate compromise solutions. By the end of 1979, the Conference believed that the pieces had fallen into place: that the Law of the Sea Conference more or less had arrived at a consensus with regard to the management and exploitation of the mineral resources of the international seabed area. The system established for the exploitation of these enormous mineral riches is in most respects revolutionary and future-oriented. All states of the world participated in this unique endeavor, and the participants believed that with some minor last-minute refinements of Part XI, a consensus solution was within reach.

The Convention establishes a new international organization, the so-called Authority, with certain functional supranational features. According to article 158 the principal organs of this Authority are the Assembly, the Council and the Secretariat. In addition, article 170 provides for the Enterprise which is the commercial arm of the Authority. The Assembly is the supreme organ of the Authority consisting of all member states (article 159). But the Convention provides that the Council, consisting of 36 member states elected by the Assembly, shall have the power to direct sea-bed mining as the "executive organ of the Authority" (article 162). The composition of the Council was a major source of disagreement. It was solved by the elaborate compromise formula contained in article 161. Part XV and Annex VI of the Convention also provide for the establishment of a new international tribunal, the International Tribunal for the Law of the Sea.

The underlying difficulties in drafting the provisions of Part XI were due to a fundamental difference in approach between the developing countries and a number of the industrialized countries. The approach of the developing world was that the riches of this "common heritage of mankind" should be exploited only by the international organization, "the Authority", through its commercial arm, "the Enterprise." A number of industrialized countries advocated a completely opposite stand. In their view, the exploitation should be free, left to private, and to some extent also state, enterprises, and the International Authority should remain solely an authority for the registration of mining claims. The system elaborated in Part XI of the Convention and Annexes III and IV was, with this background in mind, an ingenious compromise. formulation.

The Convention establishes a so-called "parallel system" for exploring and exploiting the riches of the "Area." In principle, all these seabed activities must be carried out either by the Enterprise or by private or state entities in association with the Authority. The Authority conducts its own mining operations through the Enterprise and, at the same time, issues permits to private enterprises or state enterprises to conduct mining operations. But the system is termed "parallel" for another reason as well. Article 8 of Annex III to the Convention provides that when a private corporation or state

enterprise files an application for a minesite, the application must cover a total area "sufficiently large and of sufficient estimated commercial value" as to allow two minesites. The Authority must then, within 45 days, decide which of the two minesites it wants to reserve for itself and then give the applicant a mining contract for the other. In this manner, the Authority may obtain reserved sites for its immediate use or for future exploitation.

The Convention contains provisions (in article 144 and article 5 of Annex III) concerning obligatory transfer of technology in order to provide the Enterprise with the technology necessary for its mining operations which is not available on the open market at fair prices. These provisions on transfer of technology were severely criticized by certain industrialized countries and were one of the reasons why the United States refused to go along with adoption of the Convention by consensus.

But other arguments against Part XI of the Convention may have been based on ideological considerations. Part XI will create an organization with certain supranational powers, thus allegedly reducing the "sovereignty" of states. A successful Convention will obviously also strengthen the United Nations as the World Organization, a thought which unfortunately goes against the trend in certain circles. Furthermore, the system may allegedly restrict the freedom of international mining interests and may in this respect also create undesirable precedents for the management and exploitation of outer space.

However, in my opinion the interests of the industrialized world seem to have been taken care of through compromises entered into during the last few days before the Convention was adopted on April 30, 1982. Significant in this respect are the two Resolutions which were adopted together with the Convention, namely Resolution I on the Establishment of the Preparatory Commission for the International Seabed Authority and for the Law of the Sea Tribunal and Resolution II governing Preparatory Investment in Pioneering Activities Relating to Polymetallic Nodules, the so-called PIP Resolution.

The PIP Resolution concerning protection for preparatory investments entails major concessions to the major mining interests of the industrialized world. It is based on proposals from the United States, and was believed to be the compromise which would secure consensus and general support for the Law of the Sea Convention. Actually, the purpose of this Resolution -- which was adopted during the very last days of the final substantive session -- is first and foremost to secure minesites for special interest groups. Eight such claims take precedence over other competing claims. Thus, four main consortia of the Western World each get one minesite each of their own choice and preference. These consortia possess the nationality of, or are controlled by, the following states: Belgium, Canada, the Federal Republic of Germany, Italy, Japan, the Netherlands, the United Kingdom and the United States. In addition, four states, namely France, Japan, India and the USSR, have been secured one

minesite each. The size of the minesites is considerable, namely 125.000 square kilometers each; a relinquishment period of 8 years will reduce the minesites to one-half of their original size.

The PIP Resolution is a highly complicated document, both technically and politically. One additional problem which has arisen, and which may cause considerable political tension, is that certain time-limits stipulated in the Resolution have already lapsed. This is not the fault of the pioneering investors. The time limits were obviously too short. Furthermore, the Preparatory Commission, which has been entrusted with certain tasks in regard to registering the mining claims under the PIP Resolution, has not yet become fully operative.

CONCLUSIONS

The practical implication of the compromises arrived at in the PIP Resolution is that the need for nodule exploitation has probably been pre-empted through these eight minesites for the foreseeable future, that is for the next 20 to 30 years. Furthermore, it is presumed that these eight minesites will cover the most promising nodule areas presently known, namely the Clarion-Clipperton zone in the Pacific, an area of some 2-3 million square kilometers [2]. Thus, the developing world made major concessions to the industrialized countries in accepting the PIP Resolution. They did so in the hope that the industrialized world would adhere to the Convention, and especially comply with the system of exploration and exploitation provided for in Part XI of the Convention. Serious clashes between the developing world and main industrialized countries in this area are, unfortunately, not unlikely in the situation which has arisen. Several industrialized countries such as the United States, the United Kingdom, Germany, France, Japan and Belgium have enacted unilateral legislation. By virtue of this legislation these countries claim the authority to grant national licenses for the exploitation of nodules in the international area contrary to the provisions contained in Part XI of the 1982 Convention. The developing world protests the validity of such legislation and such licenses. Here the stage may be set for a major North-South confrontation contrary to one of the capital aims of the UN Law of the Sea Conference.

The industrialized countries concerned argue that as long as they have not signed and ratified the Convention, they are not obliged to respect the system established in Part XI. Furthermore, the Convention has not yet entered into force, and will not do so for some time. The main point of departure for these states is that the principle of the freedom of the seas prevails and consequently that every nation enjoys the freedom to reserve minesites in the "Area" for itself and its nationals for the exploitation of nodules without regard to the system laid down in Part XI.

The developing world has an equally clear line of legal and political argumentation consisting of the following three main arguments:

1. The 15 seabed principles adopted by the UN General Assembly on December 17, 1970, by an overwhelming majority prohibit states from going it alone. These riches are the common heritage of mankind that no state or person may appropriate. No state can claim or exercise sovereign rights over any part of this area. These principles have become part of international law. Thus, the unilateral legislation recently promulgated by some states violates these principles.
2. The Law of the Sea Convention is a comprehensive package. No state can extract at will from this package those articles which suit its specific purposes and discard the rest. Thus, the whole finely balanced compromise Convention is at stake, leaving the world in a void. All kinds of conflicts and explosive situations may arise in this situation.
3. The basic principles of the freedoms of the high seas are completely alien to any assertion by states that they can stake out vast areas of the ocean floor beneath the high seas for their exclusive use and exploitation.

This is a deeply disturbing situation. We must attempt to find solutions thereto before it is too late. A major possibility has been offered us through the work of the Preparatory Commission. The Commission has been charged, inter alia, with the task of preparing the rules and regulations for the exploitation of nodules in the international area. Of course, the Commission has no authority to change or amend the articles of the Convention or its annexes. But in preparing the rules and regulations applicable to the sea-bed mining activities, the Commission can -- with the assistance of the industrialized countries -- work out a system which may be acceptable to all.

The next meeting of the Preparatory Comission will take place in Kingston, Jamaica from August 15 to September 9. Some major industrialized countries have not yet signed the Convention, but take part in these meetings as active observers. Hopefully, they will in due time adhere to the Convention. Unfortunately the United States has not deemed it possible up to now to participate in the work of the Preparatory Commission -- not even as an observer. There is, however, a genuine wish in the Commission to make a final attempt to elaborate rules and regulations for mining activities in the international area which are acceptable to those major industrial countries that for the time being remain outside the Convention. This desire should not be frustrated by the absence from this endeavour of any one of the major powers.

Is it not unduly pessimistic to feel that the world in the post-war era has not lived through a more critical period than

the 1980's, a period of increasing disregard for international codes of conduct between states, of pressures and strains on peaceful co-existence, and of unfulfilled demands for a more moral, rational and equitable administration and distribution of the limited resources of our globe.

We have through the instrument of the United Nations created a modern Constitution for Ocean Space. Hopefully we shall also be willing -- and wise enough -- to recognize the interdependence between states: wise enough to admit that the supreme goal of international peace and security can only be attained through co-operation and through the certainty of law and justice as it has been developed for ocean space in the United Nations Convention on the Law of the Sea of December 10, 1983.

Thank you.

NOTES

1. Article 38, paragraph 1 provides that in deciding a dispute brought before it, the Court shall apply: "(a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting States; (b) international custom, as evidence of a general practice accepted as law; (c) the general principles of law recognized by civilized nations; (d) ... judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law."
2. India will probably concentrate on an area in the Indian Ocean.

PART I

INTRODUCTORY OVERVIEW: A DEBATE

INTRODUCTORY REMARKS

Panel Chairman Bernard H. Oxman
School of Law
University of Miami

Ladies and Gentlemen:

Before proceeding to introduce our first panel, I would be remiss if I failed to acknowledge, on behalf of us all, the immense debt of gratitude that the international community owes to Norway, to its distinguished son, our keynote speaker, Jens Evensen, and to his resourceful colleagues for over a decade of leadership in the law of the sea negotiations.

It is now my honor to present our speakers. Their presence here amply demonstrates the liveliness and complexity of the American political system. Speaking in favor of the Convention is a distinguished Republican. Speaking against it is a distinguished Democrat, a member of the majority party in the House of Representatives. This should remind us that a decision to accept treaty commitments is complex and difficult in the US. It does not depend only on the preferences of the President and his advisors, but also on the will of an independent Congress that rarely divides along strict party lines, and ultimately on the conclusions of an informed public listening and making its views known, often at meetings such as this one.

Our first speaker is my former boss. He has held the positions of Attorney General of Massachusetts and of the United States, Deputy Secretary of State, Secretary of Commerce, Secretary of Defense, Secretary of Health, Education and Welfare, Ambassador to the United Kingdom, and -- most germane to this meeting -- Special Representative of the President to the Third UN Conference on the Law of the Sea. It is with pride as an American and as a colleague that I introduce Ambassador Elliot L. Richardson.

THE CASE FOR THE CONVENTION

Elliot L. Richardson
Milbank, Tweed, Hadley & McCloy

Thank you very much, Professor Oxman, for those gracious words of introduction. Old friend and colleague in debate and in the constructive effort to achieve a universal regime for the oceans, Congressman John Breaux, Distinguished Guests, Ladies and Gentlemen:

It is a privilege for me to stand at this rostrum and acknowledge the indebtedness of all participants at this conference to the Fridtjof Nansen Institute and to the Law of the Sea Institute for this opportunity to assess the prospects for the law of the sea in the light of the recent achievements of the Law of the Sea Conference.

It would be difficult, I think, to conceive of a more moving representation of the theme of this conference than the poster that has been affixed to the wall behind me or the lithographs by Espolin Johnson exhibited in the hall outside. It would be difficult to conceive of a more fitting theme because these works of art so graphically portray the universality both of the oceans and of the human condition. We are indeed, as was said earlier this morning, in one boat, and it is appropriate that I should open my statement on the case for the Convention by echoing this theme.

Parenthetically, I might note that the title of this panel "Introductory Overview" merely speaks of a debate without giving any real clue as to what the debate is about, except insofar as it is identified as a debate between a member of Congress of the US and a former head of the US delegation to the Law of the Sea Conference. Therefore, you are led inevitably to infer that this must be some kind of an argument internal to the United States. To a degree that is true.

Yet I think it would be a mistake to let the situation rest there. With that in mind it occurred to me that perhaps I should instead present to you a picture of the kind of debate that might take place if the two participants in this panel were, as it happened, both representatives of the Group of 77. They too could have an internal debate, but it might sound quite different.

They would denounce, for example, the degree to which the Law of the Sea Conference has failed to achieve any genuinely meaningful expression of the underlying concepts of the New International Economic Order. They would point to the extraordinary successes of the western industrial countries in gaining access to the exploitation of deep sea-bed manganese nodules for their multilateral corporations. They might, indeed, attack Part XI as having made the deep ocean safe for the multinationals. It would not be hard to demonstrate the degree to which this is true, particularly in those provisions that guarantee the opportunity to negotiate a contract for the

exploitation of manganese nodules whose terms cannot be modified without agreement during its life of perhaps 20 years. They might point to the fact that the revenue provisions of the Convention start at relatively low levels by comparison with the provisions commonly entered into by mineral extraction companies and developing countries. They might cite articles by a number of Americans who have demonstrated that, by and large, the provisions for the conduct of deep sea-bed mining operations by state corporations and multinational companies compare very favorably with the provisions normally entered into by mineral extraction enterprises in developing countries. This is true whether you look at the provisions for technology transfer, for the training of people in the acquisition of this technology, or for payments to the International Sea-bed Authority.

It is fair to say that this point of view is not recognized in the United States. Indeed, the misunderstanding in the United States of the significance of the achievements of the Law of the Sea Conference tends largely to derive from the assumption that the United States and other western industrial countries entered the bargaining process with no real need or incentive to make concessions. The result, therefore, is that when I have to appear before a committee of Congress and when I am interrogated by a congressman less well informed than Congressman Breaux, I often find myself having to answer the charge that I gave away the advantages of the United States.

This parochial assumption rests on the premise that American companies, as well as the companies of other countries, have a high seas freedom to engage in deep sea-bed mining which they can exercise at any time in the manner of their choosing, without let or hindrance, and certainly without the permission of anyone else. Given that assumption, to be required to make payments to an international body, to be obligated in certain circumstances to make technology available to an operating instrument of that body, and otherwise to submit to its jurisdiction can only be viewed as having unwarrantedly departed from an opening position of dominant strength.

But, of course, the reality was -- and is -- quite different. If you picture yourself as a potential investor in deep sea-bed mining, you start with the fact that even to define the area in which you propose to lift manganese nodules from the deep sea-bed, you need to spend upwards of $150 million in detailed exploration of the sea bottom; you need to feed into a computer information about the terrain and the distribution of the manganese nodules; and you need to take into account the metal composition of the nodules themselves in the design of the extraction equipment that you will employ at the shore-based facility where the metals are removed from the nodules. This means that you need to be able to continue to carry out all your future mining operations within that defined area in accordance with the detailed information used by your computers.

These practical considerations require, therefore, that you have a secure right to continue to carry out these operations within the same area for at least 20 years, because it will

require at least 20 years to recover a quantity of manganese nodules sufficient to earn a fair return not only on the initial $150 million, but also on the nearly $1.5 billion more required to purchase all of the capital equipment, -- including the mining vessel, the transportation ships, and the shore-based processing facility -- needed for a single deep sea-bed mining project.

If indeed deep sea-bed mining were a high-seas freedom equivalent to catching tuna, anyone else who came along would be free to engage in the exploitation of that same area of the deep sea-bed -- even perhaps deciding to follow your mining vessel in the same track -- and you would have no legal recourse. It is essential for the deep sea-bed miner, therefore, to acquire a right to engage in deep sea-bed mining that cannot be exercised by anyone else in the same area.

The miner, to be sure, could go to his own government and seek such a right, but his government can confer it only as against other nationals of the same country. No one disputes this proposition as a reflection of existing principles of international law. Certainly the United States does not dispute it. Since, therefore, a sovereign state can confer a secure right good against others only for the benefit of its own nationals, the would-be deep sea-bed miner must go somewhere else to acquire rights good against other nationals.

The miner could conceivably go to each country which might be contemplating deep sea-bed mining and try to gain recognition of his claim by every such country. Indeed, this is essentially the concept embodied in the reciprocal legislation that has already been adopted by the US, the UK, France, the FRG, and Japan. Under this legislation, these countries would in effect recognize the claims of each other's miners.

But what of the rest of the world? There is nothing unique about the capacity to engage in deep sea-bed mining. It is an exercise which can be duplicated by anyone willing to spend a certain amount of money on technological development and engineering. Indeed, it is increasingly likely that as time goes on the technology will be available on the open market. A decision to go into deep sea-bed mining requires only an informed judgment as to its potential profitability. While it may well be that metal prices will not in fact reach a level justifying deep sea-bed mining for a considerable time, to the extent that it does look like a profitable opportunity, any group of individuals, companies, or countries could decide to put together the resources required to engage in deep sea-bed mining. They would not be required to respect the laws of any other country or indeed the reciprocal arrangements entered into by several other countries -- at least, they would not be required to do so to the extent that deep sea-bed mining is a high seas freedom.

The result is that, in order to achieve the security that will justify investing $1.5 billion in a single deep sea-bed mining site, and in order to have the opportunity to recover that investment over a period of twenty years, the miner must

have the consent of substantially all countries. Universality thus becomes necessary to the investor. By this route we come back -- even at the most advanced technological frontier of ocean resource exploitation -- to the theme so eloquently expressed by Mr. Johnson's lithographs.

But there is another aspect of the need for universality on which the case for the Convention rests. Ironically, it is once more the advanced Western industrial countries, particularly those with major reliance on naval vessels and merchant fleets, which need it most.

At the beginning of the sequence of steps leading toward this conference -- back in 1969 and 1970 -- I was Deputy Secretary of State. I worked then with the Deputy Secretary of Defense, David Packard, toward the convening of a new conference on the law of the sea that could help to check the tendency of coastal states to assert claims in coastal waters incompatible with the traditional freedoms of navigation and overflight. This was an objective in which the Defense Department and the State Department were united because of their awareness that the mobility of our air and naval craft requires universal rules pursuant to which such freedoms can be exercised.

During the years since then, there have been those -- to be sure -- who have raised the question why the superpowers should care what the rules are. The fact is that the superpowers have special reason to care because their defiance of the rules will inevitably incur heavy political costs -- and these costs are cumulative. The United States cannot lightly defy the views of a country such as Indonesia regarding the movement of vessels through the waters interior to its islands; if we do so, we do it at inevitable cost to the good relations between our countries. And what is true as between the United States and Indonesia is true of the relations between the United States and countless other coastal states around the world -- as it is also true of relations between the Soviet Union and the coastal states.

We need to be able to send our ships and planes through the vital chokepoints of the oceans without having to pause and calculate the political cost. That is why transit passage of straits was from the outset vitally necessary to any willingness on our part to acquiesce in an extension of the territorial sea from three miles to twelve. All of the world's major straits are less than 24 miles wide. We could not acquiesce in the extension unless it were accompanied by the assurance of freedom of navigation and overflight through these straits.

The importance of universal rules, then, is simply this: because they are universal, we can invoke them when we exercise the rights they purport to confer, in the confident belief that most other countries will support our assertion of right whether or not they agree with our purposes in exercising that right. Lacking such rules, we would constantly face the risk of defying other countries.

Beyond this specifically ocean-related interest in universality, it needs to be emphasized that the United States

-- in common with any other power exercising major global responsibilities -- has a vital interest in the rule of law itself. We have such an interest because the rule of law is the foundation of international stability, and for many obvious reasons we have a larger stake in the achievement, preservation, and enhancement of global stability than perhaps any other single country. Therefore, the Law of the Sea Conference and the Convention that emerged from it need to be perceived also in terms of their contribution to the enlargement of the rule of law, not only with respect to the oceans, but equally with respect to all the many other matters arising out of the interdependence of the world, both in terms of security and in economic terms.

In the last decade, the nations of the world have been falling farther and farther behind in their ability to manage the increasingly difficult realities of interdependence. This is a dangerous lag. The most significant gain towards overcoming it so far achieved is the Law of the Sea Convention. This is true not only, or even primarily, because of what the Convention does to extend the rule of law over more than two-thirds of the earth's surface, but also because of what it has done, and can yet do, to encourage comparable responses to other needs for managing the realities of interdependence.

To be sure, whenever one discusses the rule of law, one touches an idealistic chord. But these are practical requirements. Just as law throughout the millennia of civilization has contributed to the creation of civilization itself -- first as between individuals in a community and within a nation and slowly among nations -- so we shall need increasingly to invent the multilateral institutions required to deal with problems that no nation can cope with by itself.

Because of what the Law of the Sea Convention stands for as a precedent for addressing this kind of requirement, all those who had any part in it can justifiably feel that whatever its deficiencies or limitations -- whether perceived from the perspective of the Group of 77 or from that of the Reagan Administration -- they are no more than the price of agreement. A bargain can only be the product of concessions from each side. By definition it cannot be perceived as wholly satisfactory to either side. Indeed, any bargain that is viewed with too much satisfaction by one side is inherently unstable as it is likely to be the product of overreaching by that side.

The ultimate case, then, for the Convention is that it embodies an extraordinary accommodation among the valid, competing, and often intense interests of all nations of the world in the most complex, ambitious, and far-reaching international agreement ever achieved.

BERNARD OXMAN: Thank you, Ambassador Richardson.

Napoleon once predicted that the cession of Louisiana would make the United States a great maritime power. It is, therefore, not surprising that our next speaker has, in a decade of service in the Congress, become one of the best informed and

most influential members on ocean matters. He followed the law of the sea negotiations closely, not merely in Washington but also by taking the time to come to the meetings of the Conference to talk to foreign delegates. As Chairman of the Subcommittee on Oceanography and now the Subcommittee on Fisheries and Wildlife and the Environment, he has helped shape most of the modern US legislation on fisheries and ocean matters, and he will certainly continue to have a commanding role in shaping future legislation and policy in this field. As a former civil servant, I can assure you that ill-prepared Executive Branch witnesses appear before our speaker at their peril. As a former member of the US delegation to the Law of the Sea Conference, I can also assure you that he did everything he could to help the delegation. It is a great honor for me to introduce Representative John Breaux of Louisiana.

THE CASE AGAINST THE CONVENTION

John Breaux
House of Representatives
United States Congress

Mr. Chairman, Ambassador Richardson, Distinguished Guests, Ladies and Gentlemen:

I thank the conference leadership for the opportunity to appear on this program. Unfortunately, my stay in Norway will be much too short. Having arrived only yesterday, I must leave this afternoon.

Last night I decided to set up a meeting with all those who supported my position -- and I want you to know the meeting was very small. As a result of that, we decided not to call for a vote after this debate.

I doubt very seriously that I will be able to change the minds of any of you in this meeting who have strong opinions -- and opinions that are arrived at through years of study -- regarding the Law of the Sea Conference and the Law of the Sea Convention. But I do think that this is a good opportunity for those of you who may not be as familiar with our system of debate in the US Congress. You may get a better understanding of the perspectives that I hold and of the perspectives that are shared by many in our government. As Ambassador Richardson indicated, I am a Democrat and he is a Republican. So there may be some confusion as to why our Republican president, President Reagan, has decided not to sign the treaty and how the United States has arrived at its current position.

I am particularly pleased to be on the same platform once again with our distinguished Ambassador, Elliot Richardson, who has had a long career of distinguished public service to the United States in many varied and important positions, but I must add that he and I disagree on this particular subject. I must also point out that my comments are my own and that they should not be considered an official statement on the part of the US government -- even though I have tried many times to convince Washington that my opinions should become official policy. Not having been always successful, I would point out that I was the original author of the deep sea-bed mining legislation, passed by the Congress and signed into law by President Carter. Since then I have introduced domestic legislation establishing an exclusive economic zone for the the waters surrounding the United States. Recently I introduced legislation for the creation of a National Oceans Policy Commission, to be composed of the best and the brightest minds within my country, to look carefully at where the United States needs to go, now that we have made a decision not to sign the existing Law of the Sea Convention.

At this stage in my country's history as a major maritime power that has so much at stake in the orderly utilization of the natural resources of two-thirds of the surface of the earth,

I consider it extremely important that we have a policy that is clear -- and that is well understood by other nations with like-minded interests. Although I often felt that my days of debating and arguing about the need for an international law of the sea treaty had come to an end, it is, therefore, no surprise that I find myself once again at an international forum discussing the advisability of the Law of the Sea Convention.

It is very clear that my country has made a strong statement in opposition to the existing treaty as it now stands. This is not to say that we should not be continuing our discussions about the good features of the existing Convention as well as about those that we found to be unacceptable, but I agree with the decision of the President of the United States to reject the Convention as being fundamentally flawed in a number of areas. In appearing before one of the committees of the Congress in 1977, our distinguished Ambassador to the Law of the Sea Conference also took the position that the text in existence at that time was fundamentally flawed from the US perspective and that it could not be accepted in that particular form. I would take that position and bring it up to date by saying that in my opinion it is still fundamentally unacceptable insofar as the basic interests of the United States are concerned.

This would also be my view even in the event that, in the absence of a treaty for the seas of the world, there would not be a clear set of rules and regulations to fall back on. My position would not be different if the utilization of the oceans of the world were not governed adequately by existing customary international law. I would say that we should not accept something which my government has decided is flawed because it fails to meet our concerns in a number of areas, and specifically in the areas dealing with the mining of the sea-beds.

I think that these flaws cannot be corrected by the Preparatory Commission. When a treaty, a statute or a law is clear in its direction, adoption of rules and regulations cannot change that direction. In Congress we frequently pass a statute that is fairly simple and quite clear in its stated purpose, yet sometimes rules and regulations are written that interpret the statute in a manner contrary to its clear intent. The courts in the United States have generally struck down such rules and regulations on the ground that they are not consistent with the clear intent of the statute.

I also submit that if the defective portions of the Convention were somehow magically corrected by the Preparatory Commission in a manner to which the United States could agree, the other nations of the world would disagree. Would they not object and declare that this is not what was negotiated for ten years, that the outcome of those negotiations cannot be corrected in a Preparatory Commission, and that the corrections do not conform to the intent of the Convention? Of course, they would object, and I think that they would be correct in their objections.

The President has stated, and many members of Congress have agreed, that in the area of deep sea mining the Convention is flawed because there is no assured access to the mineral wealth of the oceans. The security of tenure of contracts is lacking; production is uncertain; production controls are unacceptable; and technology transfer requirements are unfair and impractical. I could spend a great deal of time on each of these issues, but I speak to experts: all of you know what our objections and our concerns in these areas happen to be.

For instance, on the question of technology transfer it is not sufficient to say -- as Ambassador Richardson had indicated -- that the technology is not that complicated and will be sold eventually on the commercial market. I submit that when we are considering this treaty we are not just dealing with the law of the sea; there are implications for future treaties and for future discussions on technology transfer. How about technology transfer in other areas that are sensitive to my country and to your country: microchips, or computers, or other scientific developments that will not be sold on the open market? I fear that the precedents and principles on which we agree in this Convention are going to be around for a long time and that the parties to an international agreement on technology transfer in the area of deep sea mining will be called upon in the future to agree to similar technology transfers in other areas. It would be pretty difficult to say why technology transfer in deep sea mining is appropriate and why it is not appropriate in other areas that are very sensitive to all our countries' interests and that we want to protect.

In addition, the United States has some very serious problems with the make-up and voting in the Council and in the other forums which are going to make the real decisions with regard to the Convention and deep sea mining. The Council can be argued both ways. It can be said that as a leading consumer of the minerals, the US will be assured a seat on the Council. But by whose standards are we the leading consumer of the minerals that will be mined? It depends on the standards that are used. I do not think that by any accepted standard we would be assured a seat on the Council, and that gives the Congress and the Administration some very legitimate concerns. The present Convention is defective and deficient in this respect.

Contract approval can also be argued both ways, but in my view there is a serious question as to whether a qualified sea-bed miner would be able to obtain a contract to carry out sea-bed mining. Approval is certainly not assured, as an application would be handled by the Legal and Technical Commission. Of course, if it rejects an application, we would have the right of trying to reverse that decision in the Council, but I think that the odds would be against us. So even at the very best there is not assured access in the way in which we would like to see it.

Production limitations are something that we consider unprecedented in any international commodity arrangements. We feel that they are inappropriate. It is not sufficient to say

that the US should not worry about the production ceilings because they are so high that they will never be reached. The fact that they exist will cause market distortions and affect investment patterns, and they discriminate against developed countries in the area of sea-bed mining.

I have already mentioned my concerns about technology transfer and these I consider most serious.

The Review Conference provisions are also unacceptable because that Conference would be able to amend the Convention and we would be bound by those amendments without ever agreeing to them. I think this is also a very important flaw.

Some would make the argument that the United States and other countries have negotiated on this Convention for more than ten years in good faith, that the other countries have made concessions to the United States and that for these reasons we are somehow under a moral obligation to agree to it. That is ridiculous. Along the way we have also made concessions in many, many areas in an effort to reach agreement on a treaty. It would be like Congress working on legislation and at the end of the session Speaker Tip O'Neill arguing to me that somehow I should vote for the final package merely because we have been working on it for two years. That is certainly not a sufficient reason. The fact that we have worked very hard, very honestly and very seriously in a spirit of compromise does not necessarily mean that we have to support the final product. The final product has to be judged on it own merits -- and on those merits alone. That we worked so hard for so long is not sufficient reason for any country to say that somehow we are now bound to ratify the Convention. The Convention is flawed. I wish that it had come out differently, but that is our opinion.

I am in agreement with something that my good friend Ambassador Richardson said in his comments about the need for a treaty. I disagree with some of the hard-line ideological foes of the Convention in the United States who say, "We will never move! We will never compromise!" I think it would be far better to have an international agreement that governs two-thirds of the surface of the earth and it would be far better for us all to be able to agree on an orderly system of governance for that large a portion of the world. I agree with Ambassador Richardson on the need for an international order and I would agree further that such an order could probably best be clearly spelled out in an international treaty.

But I would disagree that this Convention provides that type of agreement. And I would disagree that it is in the interests of the United States to sign the Convention in its present form. I think that the price to my country -- considering the interests that we are concerned about -- is too great and the rewards too little. As I mentioned earlier in my statement, that would also be my opinion if there were no system of rules and regulations to govern the sea in the absence of the Convention, but in my view there is very little outside the deep sea mining part of the Convention that is not already adequately covered by customary international law. Apart from the deep

sea-bed provisions, the Convention reflects in almost all other areas a codification of the principles that have developed over the years by the nations that are most concerned with the use of the natural resources of the ocean.

The United States does not take this position because we are big and strong -- of course not. We take this position because we think customary international law has developed to a point that makes these principles right and correct. Transit through straits, navigation, marine research, and marine pollution -- those areas that are not presently covered by existing customary international law -- I think that they are being dealt with very properly in limited treaties that cover those particular areas. We have not had such a huge number of problems in these areas that there is an absolute need for a treaty.

I would also disagree with those who argue that somehow the US would lose its rights under customary international law merely because we refuse to sign and ratify a treaty that basically codifies customary international law. I submit that customary international law could continue to govern our actions.

I also take issue with those who say that other nations have problems with the Convention too, that it is, of course, not perfect, but that it comes very close to serving the needs of the world. I am fearful, as I mentioned before, that what we are writing in this treaty will become the basic doctrine to be followed in other international agreements such as the treaty on Antarctic resources. What we do here will be remembered long after we have finished debating the points directly related to the law of the sea.

In closing, I recognize that the United States cannot go it alone in the international community. I recognize that the world and the community of nations is rapidly changing and that the interests today are different from those of twenty-five years ago or even a decade ago. I recognize the needs and the rights of developing nations. But I reject the idea that in order to protect the rights of other nations, my nation should somehow be called upon to make basic compromises -- and compromises in areas that are of fundamental importance to the United States as a sovereign nation. I think that we can do better than this Convention and I hope that we continue to work towards that end. Such an effort would certainly have my support as one member of my country's national parliament.

Thank you very much for your attention.

BERNARD OXMAN: Thank you very much. Our speakers now have the opportunity to exercise a right of reply.

ELLIOT RICHARDSON: I can only say, Congressman Breaux, that I think you did the best you could have done in the circumstances with the case you had to make.

As to the Convention being fundamentally flawed: I think you gave your position away at the end in your very closing

words when you said that the United States should not be called upon to make basic compromises. Frankly, I do not see how the United States or anyone else can ever undertake to engage in any serious international negotiations unless it is prepared to make basic compromises.

As to my own observation in 1977 that the treaty was flawed, I would like to remind you that I was referring to what was then called the Informal Composite Negotiating Text, and that in the period from July 1977 to the end of the August session of 1980 there were 138 changes made in the sea-bed mining provisions alone -- all but seven of which were in favor of the Western industrial countries.

As to the proposition that the work of the Preparatory Commission is irrelevant to the criticisms that have been made of the text, I would like to point out that fundamental to the compromises achieved, particularly in 1980, was the notion that a number of key issues would be dealt with by regulation. It was also fundamental that the regulations emerging from the Preparatory Commission would take effect as binding regulations upon the Convention's entry into force, and that they thereafter could be changed only by the Council. The provisions on Council procedures state that alterations of the regulations can be adopted only by consensus. The result is that the regulations that come out of the Preparatory Commission will take effect on day one of the Convention and that, if the United States is represented in the Council, they can be changed after that only with the consent of the United States. This means that the question of the US seat on the Council can clearly be determined by regulation because regulation is just as necessary here in order to make clear what "largest consumer" means as it would be under a US tax law.

There is similar opportunity to clarify by regulation the significance of the so-called pro-production clause in the article setting forth the general purposes of the International Sea-bed Authority.

One criticism against the Convention which is constantly being made in the United States is that it provides for the sharing of the proceeds of deep sea mining with liberation movements, including the Palestine Liberation Organization. The answer here is that the regulations would expressly address the question of who is eligible, and it has been assumed by the US, as it was understood in the process leading to this language, that the United States would be able to prevent the inclusion of the PLO in the drafting of the regulations.

The same can be said with respect to the provisions involving the approval of a contract and the clarification of the language -- if there is any need for clarification, which I personally doubt -- with respect to access and with respect to the transfer of technology. And as to that, lest there be anyone here who does not clearly understand it, the technology transfer provisions deal only with the sale of technology, on fair commercial terms and conditions, subject to commercial arbitration of any dispute arising over that issue.

I, for one, am not concerned about the implications of the Convention from the standpoint of its precedent-setting impact. In the case of the deep ocean floor we are dealing with resources belonging to a global commons. To the extent that it is appropriate to regard outer space or Antarctica as a global commons, it will again be appropriate to deal with the question of what is fair as well as workable. And only a fair and workable agreement can be a universal one.

Finally, I would simply point out that all of my remarks and all of Congressman Breaux' remarks on sea-bed mining to this point have been focused solely on Part XI of the Convention itself. As Ambassador Evensen said this morning, it can well be argued that the preparatory investment provisions -- the so-called PIP provisions, carving out special treatment for the so-called pioneer investors -- are substantially more favorable to the multinational corporations of the industrialized countries than the Convention itself. You will hear more on this tomorrow morning when the former Deputy Chief of the US delegation, Mr. Leigh Ratiner, explains the implications of the PIP provisions.

BERNARD OXMAN: Congressman Breaux.

JOHN BREAUX: I really do not have a lot to add. With regard to the Preparatory Commission I would like to say that there were many of us in Congress, and also in the Administration, who felt that when a treaty is fairly clear in a number of areas, it will not be possible to make substantial policy changes in a group that is going to write rules and regulations interpreting what is fairly clear. In addition, if the rules and regulations adopted by the Preparatory Commission do in fact make changes that are of substance and that make the Convention more acceptable to the US, I venture to say that these new rules and regulations would not be adopted by consensus in the Council. Therefore, it would not be appropriate for us to try to make major changes in the Preparatory Commission -- changes that we were not able to make in a ten-year period of negotiations. Our experiences in Congress with similar procedures have not been very good.

On the issue of revenue sharing in relation to national liberation groups, I tend to agree with Mr. Richardson that this is something that could adequately be taken care of. I would also point out that there are a number of developing countries that are making substantial progress right now on a reciprocating states agreement, which would be limited legislation directed at trying to orderly manage deep sea mining around the world. The legislation I initially introduced in Congress provided for revenue sharing for all the nations of the world in respect of deep sea mining. This is not something that many people in the US disagree with; they recognize that there are some common heritage principles that need to be addressed and, at the time the legislation was introduced, we thought revenue sharing was an appropriate way to do so.

BERNARD OXMAN: Thank you, gentlemen. We now have a little time for discussion from the floor. Ambassador Kolosowski.

IGOR KOLOSOWSKI: Thank you, Mr. Chairman:

First of all, I would like to thank the organizers of this conference for inviting me to this forum. With your permission, Mr. Chairman, I would like to introduce some foreign country views into this domestic debate between one Republican and one Democrat of the United States. I do so in my private capacity and not as a member of the Soviet delegation during nine years of the Conference. I do not speak as an ambassador, but simply to try to contribute to the purpose of this meeting, which is to discuss the Convention and the future of the uses of the ocean and its resources.

The debate so far has been for and against the Convention. We have just listened attentively to an explanation why the United States opposes the Convention and rejects it. There were some reasons and considerations: transfer of technology, limitation of production, difficulty of access, control, and so on. But are these all the reasons why the United States rejects the Convention? I do not think so! Therefore, let us try to analyze the main reason why one country accepts the Convention and supports it, while some other countries -- the United States in particular -- reject the Convention and do not sign it.

Mr. Evensen already noted that the main task of the Conference, as decided by the United Nations, was to prepare a convention which could prevent chaos in the world ocean and to establish a legal order in the ocean, and in this way to contribute to international peace, security, and cooperation. This was the main task of the Conference and this was the main aim of the Convention. The Convention as it now stands reflects this aim. The Convention as a whole, its articles, its preamble -- all say that its aim is to reinforce international order, peace and security and to prevent chaos in the ocean. This is precisely the reason why 125 states are in favor of this Convention -- why they adopted it and signed it. This becomes very clear if you read the records of the last session of the Conference on the Law of the Sea in Montego Bay when 122 representatives of different countries expressed their appraisal of the Conference and explained why they would subscribe to the Convention and why they would sign it.

What, then, of the United States rejection of the Convention? By logic those who reject the Convention do not want to contribute to peace, stability, and cooperation. Why? What is the explanation for this position of the United States? Some people say -- and Mr. Richardson took that approach -- that it was a miscalculation of the American administration, an erroneous perception of the nature of the Convention and the compromises adopted at the Conference. This may be so, but is it a coincidence that the United States began to reject the Convention two years ago, precisely at the moment when the present Administration came to power in Washington? No, it is not a coincidence, because the United States position towards

the Convention is an integral part of the foreign policy of the present United States Administration. It rejected a lot of agreements and understandings -- SALT II, for instance -- and it rejects the United Nations Convention on the Law of the Sea, which exemplifies the possibilities of cooperation between all nations and all socio-economic systems and of reaching agreement based on equality -- I underline equality -- and mutually acceptable principles.

It is not a coincidence that the United States rejected other compromises and agreements based on equality and mutual benefit. It was clear during two last years of the Conference that the United States demanded from the Conference the introduction of changes into the draft Convention that would give unilateral privileges to the United States. That demand was rejected by the Conference by an overwhelming majority. It is precisely this which explains why the United States has rejected the Convention.

One of the earlier speakers rightly said that we are in the same boat -- we will die together or survive together. Yes, we are in the same boat. This is the earth. We will live here, survive together -- or we will die in the flames of atomic war. The Law of the Sea Convention is a contribution to survival, to strengthening peace and cooperation based on equality and mutual benefit. This is why so many countries from all geographical regions and from all socio-economic systems speak in favor of the Convention and try to support it and implement it. So I hope that those who decided not to adhere to the Convention will at least not undermine the Convention, that they will refrain from violating the Convention, and that they will not prevent other countries -- the absolute majority of states -- from going ahead with the Convention and the creation of the International Sea-bed Authority.

BERNARD OXMAN: Thank you Ambassador Kolosowski. Does either of our panelists wish to comment?

JOHN BREAUX: I want to make very clear that I am not for chaos and confusion. I think that in the area of the peaceful uses of the oceans the world has been served very well by existing customary international law. If there were chaos and confusion in the oceans of the world, I could perhaps agree with the view that without the Convention chaos and confusion would continue. But that is not the situation and that never was the situation.

As to the statement that the present US position was adopted when President Reagan came into office, I would like to make it very clear that certainly my position and my objections to the developing convention were established when President Reagan was still riding horseback in California. The domestic deep sea-bed mining legislation was adopted by Congress and signed into law during the previous administration. So I think that it is improper to say that somehow the US has drastically changed its position with the advent of this particular

LUNCHEON SPEECH

BERNARD OXMAN: Our luncheon speaker today has had a long and distinguished career at the United Nations, representing Sierra Leone at the Third U.N. Conference on the Law of the Sea, where he also served as chairman of the African group with great distinction and effectiveness, and now representing his government at the United Nations. It is a great honor to introduce the first of the four outstanding friends and colleagues that we are fortunate to have as our luncheon speakers this week, Ambassador Abdul Koroma.

THE FUTURE OF THE COMMON HERITAGE OF MANKIND

Abdul Koroma
Permanent Mission to the United Nations
Sierra Leone

One reason why I was buoyed to accept the invitation to speak on this topic was the positive and confident way in which it was formulated. For my part, I do not consider the topic petitio principii. On the contrary, it is a confident reaffirmation of a regime which now enjoys recognition and acceptance on the part of the overwhelming majority of states, as reflected in their signing of the United Nations Convention on the Law of the Sea in Montego Bay on December 10, 1982.

As we all know, after more than nine years of intensive and painstaking negotiations in one of the most representative conferences ever held under the United Nations auspices, 119 states signed on that day the Convention on the Law of the Sea. The signatories were drawn from all the regions of the world, including states with different socio-economic and political systems, industrialized and developing countries, coastal and land-locked states, and states with special geographical characteristics. By signing the Convention all 119 states affirmed that the resources of the sea-bed beyond national jurisdiction constitute the common heritage of mankind.

But then the issue is not only one of numbers. Most important is that the future of the common heritage is assured because it meets the needs and interests of both the industrialized and the developing countries. This is further buttressed by virtue of the fact that an institution -- namely: the International Sea-bed Authority and the Enterprise -- has been stipulated to ensure the rational and efficient exploitation and management of the resources of the sea-bed, including the protection of the marine environment.

Despite this obvious assertion, you have, nevertheless, asked me to discuss the future of the regime. But in order to pursue this question further -- and notwithstanding what Nietzsche might have said -- it will be worthwhile to look into the past of the common heritage principle in order to trace its genealogy or its pedigree. The reason for this is simple: having stated the conclusions so early, it is necessary to marshall the evidence. The best way to go about this is -- in my view -- to garner from diverse pronouncements a synoptic and consistent statement on which the legality of the principle was constructed until it was eventually written into the Convention itself.

Much has been written about the origin and theoretical foundation of the common heritage principle. The concept itself has been attributed to some leading jurists of the last century who had maintained that certain resources of the sea belong to mankind as a whole and cannot therefore be appropriated by any state or person. But for our own purposes, the common heritage principle is of more recent vintage. Technological advancement coupled with the desperate economic plight of the poor countries

have been the catalyst. In the 1960's technological development had made it possible, not only for the continental shelf, but also for the sea-bed beyond to be explored and its resources exploited. It was in order to prevent its exploitation and even occupation by only those who possessed such technology that the US declared in July 1966 that

> under no circumstances,...must we ever allow the prospect of the rich harvest and mineral wealth to create a new form of colonial competition among the maritime nations. We must be careful to avoid a race to grab and hold the lands under the high seas. We must ensure that the deep seas and ocean bottoms are, and remain, the legacy of <u>all</u> human beings...

Thus, even before the commencement of the Third Law of the Sea Conference, one of the main protagonists of that meeting had called, first, for international cooperation in the exploration and exploitation of the sea-bed and its resources; secondly, for its non-appropriation; and thirdly, for the sea-bed and its resources to remain the common heritage of mankind as a whole.

At about the same time, the developing countries were beginning to manifest interest in the economic potential of the oceans and in marine activities. It was also at this time that Ambassador Pardo, on behalf of Malta, proposed to the General Assembly of the United Nations that the sea-bed beyond national jurisdiction must be internationalized to prevent its appropriation and partitioning by states that had acquired the technology for its exploitation. Pardo also proposed that part of the revenue to be derived from the exploitation of the resources of the sea-bed should be utilized to aid the development of the poor countries and to finance the United Nations. Finally, in order to provide a structure or institution for these proposals, he called for the establishment of an international agency to regulate, supervise and control all activities relating to the area beyond national jurisdiction. These initiatives were formalized in General Assembly Resolution 2340 of December 18, 1967, which recognized the existence of the area beyond national jurisdiction. That resolution also mandated the committee thus set up

> to indicate practical means to promote international cooperation in the exploration, conservation and use of the sea-bed and ocean floor and sub-soil thereof and their resources.

Later this mandate was extended to include the

> study and elaboration of legal principles and norms which would promote international cooperation in the exploration and use of the sea-bed and the ocean floor and the subsoil thereof, beyond the limits of national jurisdiction and to ensure the exploitation of their resources for the benefit of mankind, and the economic

and other requirements which such a regime should satisfy in order to meet the interests of humanity as a whole.

Specifically, there was a call to elaborate a regime for the area beyond the limits of national jurisdiction. The result was incorporated in the now famous General Assembly Resolution 2749 entitled: "Declaration of Principles concerning the Seabed and Ocean Floor and Sub-soil thereof beyond the Limits of National Jurisdiction." Resolution 2749 which was adopted by a vote of 108 to 0, with 14 abstentions, provided for the non-appropriation of the sea-bed beyond the limits of national jurisdiction, for the use of its resources to promote the development of the developing countries, and for the establishment of an International Sea-bed Authority to regulate the exploitation of the sea-bed and its resources.

It was on the basis of this widespread understanding and commitment that the Third United Nations Conference on the Law of the Sea undertook its arduous and painstaking negotiations, resulting in the adoption of articles 136 and 137 of the Convention. Article 136, as all of us know, stipulates that the Area and its resources are the common heritage of mankind, while article 137 stipulates that

1. No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or national or juridical person appropriate any part thereof. No such claim, exercise of sovereignty or sovereign rights, nor such appropriation shall be recognized.
2. All rights in the resources are vested in mankind as a whole, on whose behalf the Authority shall act.
3. No State or national juridical person shall claim, acquire or exercise rights with respect to the minerals recovered from the Area except in accordance with the Convention.

To date, 121 states have signed the Convention, which includes the above-cited provisions.

My purpose of tracing the genealogy or the pedigree of the common heritage principle is to demonstrate that all along the line -- be it in the form of a unilateral declaration or the adoption of a General Assembly resolution or through the signing of an international convention -- the principle has received recognition and acceptance from the overwhelming majority of states of the world, industrialized as well as developing states with different socio-economic systems, as well as coastal and land-locked or states with special geographical characteristics.

But notwithstanding such an overwhelming endorsement of the principle by an overwhelming majority of states, a number of industrialized countries have declined to sign the Convention.

They have instead adopted unilateral sea-bed mining legislation with a view to eventually concluding a mini-treaty under which they would coordinate their sea-bed mining laws and issue licenses to companies linked to their individual states, or under their control, to undertake deep sea-bed mining. In other words, these countries do not consider themselves bound by the provisions of the Convention on sea-bed mining; and they intend instead to carry out sea-bed mining outside the framework of the Convention.

Before going on to consider the possible implications of such a move for the common heritage principle, I should state that, as a result of the universal endorsement which the Convention has received, it has been possible to convene the Preparatory Commission for the International Sea-bed Authority and for the International Tribunal for the Law of the Sea. Among the numerous functions of the Preparatory Commission are the drafting of rules, regulations and procedures on conditions of prospecting, exploration and exploitation to be submitted to the Authority and to be applied provisionally by it, pending their approval. In accordance with Resolution II which governs preparatory investments in activities relating to polymetallic nodules, it is for the Preparatory Commission to recognize the status of a pioneer investor of a state or mining consortium that has expended the sum of US $30 million by January 1, 1983. The Preparatory Commission held its organizational meeting in Kingston, Jamaica in March and April of this year. Applications have since been submitted to it by potential pioneer investors. It is, therefore, obvious that the Law of the Sea Convention has not merely remained on paper. A number of countries have also ratified it and undertaken action for its implementation.

Therefore, analyzing the situation in terms of the common heritage of mankind, the position is as follows. There is, first of all, an international regime for the sea-bed and its resources beyond national jurisdiction which has received the overwhelming support of the vast majority of states and which is to the effect that the sea-bed and its resources beyond the limits of national jurisdiction belong to mankind as a whole. An International Sea-bed Authority has been set up to regulate exploitation. Secondly, the Preparatory Commission intended to facilitate the entry into force of the Convention is already operating. Thirdly, there is a purported attempt to set up a rival regime to the Sea-bed Authority for the mining of the sea-bed.

It is my view that the same area cannot have a dual status or two regimes. There must exist an objective regime for the maritime space beyond national jurisdiction -- just as there is an objective regime for the high seas itself. Furthermore, its status can only be established by a majority of the states of the world community. The position is similar to a jus in rem, in which ownership of a thing precludes others. It is, therefore, submitted that only one status can exist for the maritime space beyond national jurisdiction. The fact of the matter is that most of the states of the world -- Asia, Oceania,

Africa, Latin America, Eastern Europe, India and China -- have signed the Convention. Those signatories represent an overwhelming majority of mankind. They have endorsed the common heritage principle as expressed in the Convention. It is, therefore, the Convention alone that can establish a valid and internationally recognized regime for the sea-bed and its resources. It is in this sense that I would like to submit that the future of the common heritage of mankind is assured and that any attempt to set up an alternative regime will be untenable.

On the other hand, it is a fact that some industrialized countries are unhappy about certain aspects of the sea-bed mining provisions of the Convention. Such concerns are by no means uniform, but they can nevertheless be addressed within the following framework.

There is a general consensus among all states that the resources of the sea-bed beyond national jurisdiction belong to mankind as a whole and that part of those resources must be utilized to aid the development of the poor countries. I will mention here that even the US Deep Sea-bed Hard Mineral Resources Act of 1980 recognizes the common heritage of mankind principle. Therefore, if what is being asked for is not the abandonment of the common heritage or the unscrambling of the entire Convention, it is my view that the Preparatory Commission provides a forum conveniens to iron out whatever differences remain in constructing a universally acceptable regime for the sea-bed. In this way the interests of the entire international community will be served.

Industrialized countries, including the United States, have a vital role to play in meeting the objectives of the common heritage of mankind, as set out in the Convention. To translate the common heritage into meaningful and material terms, finance and technology will be absolute requirements. The industrialized countries are, therefore, pivotal in translating the common heritage of mankind into material terms and there is a price to be paid for this. We believe that the present Convention meets their needs and interests. It provides them with unimpeded access to the resources of the sea-bed, some would even say in perpetuity. It allows them to compete effectively with the Enterprise. I do not believe that there are issues that cannot be ironed out to the mutual satisfaction of all parties to the Convention.

There is still a time and place to engage in consultations, namely in the Preparatory Commission. It, therefore, behooves us all to work assiduously to make a success of the Preparatory Commission as was the case in the Conference itself. The future of the common heritage of mankind is contingent on the successful outcome of the work of the Preparatory Commission. All states -- industrialized and developing -- by agreeing to work together within the framework of the Preparatory Commission can find solutions to whatever outstanding problems there may be, thus ensuring the attainment of the material objectives of the common heritage of mankind.

PART II

THE SIGNIFICANCE OF THE CONVENTION

INTRODUCTORY REMARKS

Jens Evensen
Ministry of Foreign Affairs
Government of Norway

Distinguished delegates:

We will now start the panel on the three main committees that were at work throughout the Conference. As you all know, the work of the Conference was performed through these committees. The First Committee dealt with Part XI and the relevant Annexes to Part XI -- that is, the international seabed area. The Second Committee dealt with the more traditional topics pertaining to the law of the sea in Part II to Part X, including such innovations as the economic zone concept and the archipelagic states concept. And then we had the Third Committee, which dealt with three main topics: Part XII on the preservation of the marine environment, Part XIII on marine scientific research, and Part XIV on the transfer of marine technology.

In my keynote address this morning, I mentioned how fortunate the Conference has been -- and the United Nations has been -- in finding the right persons to accomplish its main tasks. It is, therefore, a very special pleasure for us today to have present here two of the three committee chairmen. Throughout the Conference, Ambassador Paul Engo was the chairman of the First Committee and Ambassador Alexander Yankov was the chairman of the Third Committee. The chairman of the Second Committee, Ambassador Aguilar, is unfortunately unable to participate. Instead, we will have a Norwegian legal scholar: Carl August Fleischer has stepped in at short notice and will deal with the questions of the Second Committee.

Our first speaker is Ambassador Paul Engo, whom I have known for many years, even before the work of the Law of the Sea Conference. I met him first when he acted as president of the Sixth Committee in the United Nations, a task he performed with unique excellence. It is a great pleasure for me to ask a towering figure in more ways than one to address you on First Committee matters. It was the most troublesome of the Committees, but he weathered all the difficulties with his famous stamina. I would also thank you, Ambassador Engo, for tearing yourself away from all your major commitments in your home country, Cameroon, and coming here halfway around the globe to participate in our conference.

Our second speaker is Professor Carl August Fleischer of Oslo University, who had the qualifications and the willingness to fill in on one day's notice when Ambassador Aguilar became ill. I am sure that you all know Professor Fleischer's name. I have had the pleasure of working with him in the Legal Department of the Norwegian Foreign Ministry for many years, and I benefited from that cooperation more than he did. We are very grateful to him, and are anxious to listen to one of the great scholars in the field of the law of the sea.

Our third speaker is Ambassador Alexander Yankov of Bulgaria. We have shared many pleasures -- and concerns -- in relation to the Law of the Sea Convention throughout many years of cooperation. In his quiet and confident manner, Ambassador Alexander Yankov piloted us through some of the politically most difficult waters of the Conference, especially with regard to the protection of the marine environment against pollution and the explosive issues of marine scientific research. Alexander Yankov is also known as an outstanding draftsman of international treaty texts. The Law of the Sea Conference benefited from his faculties in this respect to such an extent that in my respectful opinion, the articles on these two topics, by sheer excellence of draftsmanship, will be established quickly as general principles of international law. Allow me to add that the International Law Commission of the United Nations benefits in the same manner from Alexander Yankov: I can testify to the contributions he makes every day during our meetings in Geneva to the progressive development of international law through the International Law Commission.

ISSUES OF FIRST COMMITTEE AT UNCLOS III

Ambassador Paul Bamela Engo
Chairman of the First Committee, UNCLOS III
Permanent Mission of Cameroon to the United Nations

> My bias is -- and I believe it to be natural and sound -- my deep-felt belief that we live in a period of world history when it is an essential task of mankind to strengthen international solidarity, collaboration and organization -- even at the expense of unfettered sovereignty.
>
> Edvard Hambro.*

BACKGROUND

The genesis of our contemporary preoccupation with international regimes for the deep sea-bed may be traced to the activation of nationalism concerning the area in the mid-forties. The ravages of the global wars had their serious repercussions on the economies and capabilities of maritime powers. These wars also appear to have stimulated research-oriented programmes that ushered in an era of unprecedented advancements in science and technology. These in turn opened new vistas of knowledge about the universe, especially the resources of our planet Earth.

With de facto monopoly of this knowledge in the hands of a privileged few, it was easy to maintain secrecy regarding the scope and nature of these resources. National security interests demanded for most that access to the new source of resources be guaranteed, while maintaining the existing inexpensive ones in the less-developed world. With the rate of increase in consumption of mineral resources had come a disquieting dependence on those existing sources. The trend had to be arrested because of the potential for disruption in the balance of global power. It was clear that direct access to these resources in areas brought within national jurisdiction would enhance the consolidation of national power and capabilities.

To give permanency to assumed rights to appropriate, it became necessary in the first instance to attach some credible form of legality. Given the unsettled problem of the function of law in international relations, justifications were sought for recognizing legal rights, based sometimes on natural phenomena and often on rational political thought. The world would receive the declaration issued by one of the "super powers" in the bi-polar system, the United States, that "efforts to discover and make available new supplies of these resources should be encouraged" [1]. It would further reiterate that nation's view:

> that the exercise of jurisdiction over the natural resources of the subsoil and sea-bed of the

> continental shelf by the contiguous nation is reasonable, and just, since the effectiveness of measures to utilize or conserve these resources would be contingent upon cooperation and protection from the shore, since the continental shelf may be regarded as an extension of the land-mass of the coastal nation and thus naturally appurtenant to it, since these resources frequently form a seaward extension of a pool or deposit lying within the territory, and since self-protection compels the coastal nation to keep close watch over activities off its shores which are of the nature necessary for utilization of these resources.

Based on this reasoning, President Truman would proclaim that the natural resources of the subsoil and sea-bed of the continental shelf [2] beneath the so-called high seas, but contiguous to the American coasts, henceforth appertained to the United States, subject to its jurisdiction and control.

Just as history is said to be what victors say it is, legal theory has tended to respond to the perspectives of the strongest. Thus, rather than mount any significant opposition, nations used this "legal theory" to make similar proclamations.

We observe, for example, the agreements entered into by Chile, Ecuador and Peru regarding the exploration and conservation of the maritime resources of the South Pacific. They, too, would follow reasoning that was not dissimilar, declaring that:

> owing to the geological and biological factors affecting the existence, conservation and development of the marine fauna and flora of the waters adjacent to the coasts of the declarent countries, the former extent of the territorial sea and contiguous zone is insufficient to permit of conservation, development and use of those resources, to which coastal countries are entitled [3].

These Governments consequently proclaimed "as a principle of their international maritime policy" that each of them possessed "sole sovereignty and jurisdiction over the area adjacent to the coast of its own country and extending not less than 200 nautical miles from the said coast." The proclamation specified that this included the ocean floor and the subsoil thereof.

These resultant claims by various nations, vividly motivated by subjective national interests, were obviously not inspired by the utopian quintessence of Jeremy Bentham [4]. Economic considerations -- rather than strategic or, broadly speaking, political factors -- would appear to have been the deciding factor [5].

What was claimed by the Latin peoples of the Americas, for instance, was "patrimony" with regard to the "resources," the

basis of which went beyond the mere assumption of rights thereto under a declaratory act of a state. The rights were attached to states by virtue of their birth as coastal states. It became clear that the scope of divergent interests would lead to conflicting claims of jurisdiction.

The International Law Commission [6] became a forum for testing ideas and working out compromises. The Commission's final draft formed the basis for the deliberations of the mainly maritime nations assembled at the first UNCLOS at Geneva in 1958. The results of the work of the Conference's Fourth Committee [7] launched the Continental Shelf Convention.

With the Geneva Conventions, many alternative ideas disappeared. The exploitability test introduced by the Continental Shelf Convention opened the gate to competing interests in areas normally outside claimed jurisdiction. Staggering developments in science and technology would complicate international legal principles, expose them to frustration and move them beyond recognition.

The Conventions -- as a codification and development of the customary law and practices of maritime powers -- could not withstand the advent of many new nations and the vocal hostility that their crop of economic and security interests infused. The race for the resources of the deep sea-beds was seen as a maritime repeat of the despicable scramble for Africa and, as such, provocative of contemporary economic and social misgivings.

The growing apprehension of dangerous and disruptive conflict, resulting from both this menacing "scramble" among the industrialized nations and the military uses of the ocean floor, made the timely address of Malta's Ambassador Arvid Pardo at the U.N. General Assembly such a historic landmark. U.S. Ambassador Christopher Phillips [8] was to admit that although "legally" [9] the US could rely on the exploitability test to extend jurisdiction unilaterally, the "uncertainties surrounding sea-bed boundaries, and ... the great opportunity the international community now has to rectify the inequities of the law of the sea ..." presented a better alternative for "states to renounce under a treaty all national claims beyond the 200-meter isobath, leaving the international sea-bed area as the widest area possible."

Ambassador Phillips may have opened a large window in introducing the spirit of the Nixon proposals, but subsequent negotiations demonstrated that the main door to the accommodation of diverse perspectives of national interest regarding sea-bed resource exploitation remained repellingly shut. In spite of the Declaration of Principles [10] that was adopted -- without a single dissenting vote -- to provide definite guidelines to the negotiating effort, we were treated to a painful parade of that diversity, exhibiting at its worst the characteristic of retrograde nationalism that mocks peaceful co-existence in contemporary international relations.

This situation, however, was not to prove too obstructive in the long term. It infused a desirable sense of realism. To

attract universal endorsement, a new convention on the law of the sea had to be seen to have taken into full account all interests stated or claimed. Each view had to be introduced into a "fair hearing" chamber, where it met contemporaries with similar as well as divergent perspectives. A proponent tamed by such experience was subsequently persuaded to shy away from repetitions that left him wondering whether he was trying to convince himself about acceptability.

In the long run, the protraction of debate and negotiations paid off. The Montego Bay Convention, with the accompanying Resolutions, is not an attempt to present the original viewpoints of any single nation or group. It presents the productive results of a decade of pragmatism, the rewards of accommodation, and the attainment of constructive compromise in the pursuit of universal aspirations for international peace through legal order for ocean space. The dynamics of the negotiations eluded those who did not have the privilege of participation. For this reason, without succumbing to exasperation, we must inform those who begrudge the Convention in ignorance of the methodology and the packages which provide its foundations.

THE MANDATE OF THE FIRST COMMITTEE

The mandate of the First Committee derived from that given to Sub-Committee I [11] in accordance with agreements reached regarding the organization of the work of the Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of the National Jurisdiction [12]. It reads as follows:

> To prepare draft treaty articles embodying the international regime -- including an international machinery -- for the Area and the resources of the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of the national jurisdiction, taking into account the equitable sharing by all States in the benefits to be derived therefrom, bearing in mind the special interests and needs of the developing countries, whether coastal or landlocked, on the basis of the Declaration of Principles Governing the Sea-Bed and the Ocean Floor and the Sub-Soil thereof beyond the Limits of National Jurisdiction, economic implications resulting from the exploitation of the resources of the Area (Resolution 2750 A (XXV)), as well as the particular needs and problems of landlocked countries (Resolution 2750 B (XXV)).

PROBLEMS

One important feature was clearly evident as the United Nations established the Sea-bed Committee. The debates gave the impression of a North-South dialogue with divergent perspectives and objectives following archetypal lines. For the industrialized countries, it appeared to be part of the eternal

struggle among nations for access to power and wealth. The common good of mankind as a whole was not a priority item on the agenda. They were speaking from positions of technological and economic strength. They seemed to be preoccupied with rivalry among themselves. For the young nations of the Third World, it was a fundamental matter of survival: a struggle for the right to participate in the sharing of benefits, keeping a watchful eye on their worsening economic malaise. The priority item was the collective interest of mankind as a whole, from which they held hopes of equity.

The universal endorsement of the proposition that an undefined "common heritage" concept attached to the politico-juridical status of the deep sea-beds seemed at first to bring a strange sense of comfort to the developing and developed countries alike, each lured to illusory vistas of national well-being in an emerging legal consensus. It most certainly brought with it grave problems of perspectives based on divergence of interests and nationalist sentiments. It was fortunate that all sides [13] shared the common aspiration for a universally recognized international law in ocean space in general, and over the area and resources of the deep sea-beds in particular.

The industrialized countries saw sufficient vagueness in the "common heritage" concept, which permitted of convenient interpretations. The theories of res nullius and res communis provided the only two viable approaches to its definition. With respect to access, it made no substantive difference for those who enjoyed absolute monopoly of the technological means of recovering the resources so critical to their economies. The 1958 Geneva Convention on the Continental Shelf had introduced the exploitability test, which could be relied upon to extend that access well beyond the normal area covered by national sovereignty. The attitude may be categorized as an emphasis on the acceleration of development of resources and active encouragement of private investment in exploration [14]. Some also suggested a fall-back to rights based on "customary international law" ideas of freedom of the high seas.

From the viewpoint of these countries, an international review of the relevant Geneva Convention was necessary for two main reasons. The first was to minimize or avoid conflict deriving from competing claims and interests among states, as part of a process of reconciling contentious uses of the marine environment [15]. The exercise, for our purposes here, focused mainly on major questions relating to mineral development [16]. The second was to give thought to the problem posed by the outcry of the developing countries for equitable sharing of benefits. The determination of appropriate policies was a difficult matter in light of the bitter internal debate within the industrialized countries, the uncertainties surrounding the nature and economic viability of each of the minerals to be extracted from manganese nodules, and the existence of information gaps on trend data regarding economic activities in the general area of the ocean floor, including the continental shelves around the globe.

The developing countries came to the global dialogue determined to ensure that they were not left out of the activities in the deep sea-bed area. For them, the common heritage concept meant indivisible "joint ownership" by mankind as a whole of legal property. The "freedom of the high seas" had in effect meant simple freedom of mobility and of exploitation of resources for maritime powers with technological capabilities. The 1958 Geneva Conventions were a mere codification of the customary practices of those maritime nations, coupled with their "progressive development" in the exploitability test. The line of reasoning presented by the industrialized countries was unacceptable. The old theories of res nullius and res communis were also considered inappropriate.

The young nations [17] would emphasize not only their right to benefit from activities in the international sea-bed area but also a principle that there had to be an active promotion of their effective participation in those activities. The "common heritage" concept symbolized "... the hopes and needs of the developing countries .... [the] benefits would help to dissipate the harsh inequalities between the developed and the developing countries" [18]. It would be categorized as "a useful rallying cry," symbolizing the interests, needs, hopes, desires and objectives of all peoples [19].

A protracted debate on the definition of the concept, if permitted, would have been unproductive. In the introduction to the Informal Single Negotiating Text [20], the First Committee Chairman stated his view that it was difficult -- and in fact unnecessary -- to resolve the question of defining so new and so revolutionary a concept in precise terms. He pointed to the "better approach" of elaborating "norms and principles from which rational definitions may later be made by jurists and political scientists ..." The primary preoccupation was not with jurists and the juridical classification of concepts.

It was possible for the chairman to say this in 1975 because the committee already had as a guide the Declaration of Principles governing the sea-bed and ocean floor [21]. In spite of the criticism regarding its adequacy, it was generally agreed that it provided an excellent basis for working out the modalities by which the concept would henceforth be identified. The "Area" is not "subject to appropriation by any means by states or persons, natural or juridical, and no state shall claim or exercise sovereignty or sovereign rights over any part thereof" [22]. Furthermore, "No state or person, natural or juridical" could "claim, exercise or acquire rights with regard to the Area and its resources incompatible with the international regime to be established and the principles of this Declaration" [23].

The Declaration formalized the solution to the concern of the developing countries for participation [24], encouraging international cooperation in the fields of scientific research, prevention of pollution, etc. [25]. It provides that the activities of "exploration of the Area and exploitation of its resources shall be carried out for the benefit of mankind as a

whole ... taking into particular consideration the interests and needs of the developing countries" [26].

The industrialized countries subscribed to the Declaration, although some would later dispute the scope of application of the principles contained therein. What was more, a moratorium contained in a General Assembly Resolution [27] was considered highly controversial by these countries -- interpretations of its implications illustrating the range of misgivings regarding the entire scheme contemplated for administering the common heritage.

The Declaration thus resolved some of the major problems touching upon philosophy, outlining the perimeters within which treaty articles would be elaborated. Much of the language of the Declaration was retained in the introductory policy parts of the negotiating texts and in the new Convention [28]. But the Declaration left to the negotiators the task of working out the modalities and solutions of associated problems, bringing to bear on these the brunt of their respective national interests or group perspectives. It was the clash of those interests and perspectives that defined the issues at the Conference.

ISSUES

Access -- The Main Course

The ensuing debates in the Sea-bed Committee brought out a clear, overriding consideration of interest to all parties: the guarantee of access for states to the benefits of exploring and exploiting the resources of the area.

For the industrialized countries, it meant guaranteed access to the resources through direct exploitation and acquisition of legal title to the resources. Some of their cherished arguments [29] had been overwhelmed by the dictates of the Declaration of Principles, especially regarding the legal status of the area and its resources, as well as the provision for benefit accruing to mankind as a whole. The one critical area that appeared not to have been clearly ruled out was that of the scope of access for states who saw the area as a new source of assured supply of minerals to meet growing demands in a vibrant industrial expansion.

For the developing countries, it meant guaranteed access to "benefits" in a broader sense. A number of them [30] shared the aspirations of the industrialized countries because of the possibilities for their immediate future. The so-called "Brazilian Clause" may have been one response to this. The vast majority of the developing countries, however, sought to accumulate for the international machinery the bulk of the access, in the hope that through the new International Sea-bed Authority, access to benefits and protection against adverse effects associated with sea-bed mining would be guaranteed.

The preliminary atmospheric problem to be resolved was a political one. What type of international regime and international machinery would be most appropriate, having regard to the principles enunciated in the Declaration and to the

contentious, but important, problem of accommodating the undefinable "security" [31] interests of the industrialized countries regarding access to resources considered critical to their development process? This question was to dominate the negotiations for the entire decade of the seventies. It surfaced in various forms. Although procedural parenthesis joined other matters to blur it on occasions, this central theme remained the real issue.

From the Chair it appeared that most issues detracting from this course were wasteful, time-consuming and without merit, fit to be assigned to tranquilizing private consultations. The political issue had to be handled with considerable care, resorting sometimes to these otherwise unproductive consultations for desired delays. Some matters under consideration in other Main Committees had significant repercussions in the First Committee. Trade-offs were discussed in private among interested parties, the details of which were not always known to the majority of the negotiators. The same went for the construction of a number of the packages [32], which did not become identified until the limitation placed on participation was lifted by those concerned [33].

We may note in passing that an issue of direct interest to the negotiations in the First Committee was under discussion in the Second Committee. The fixing of an outer limit of the exclusive economic zone determined the base size for the international area. This Committee also treated the limits of national jurisdiction for coastal states with regard to the continental shelf. Landlocked and geographically disadvantaged states jealously watched the volume of what was available as common heritage. They consequently opposed the proposals of states with wide shelves to extend jurisdiction throughout the breadth of the continental margin, because it would reduce the common heritage [34].

We were also to observe that matters resolved elsewhere had soothing effects too. The vast territory granted to coastal states by the concept of the exclusive economic zone, for instance, made the access issue a little more manageable [35].

For developing and developed countries alike, the prevailing feeling was that no nation could afford to commit itself to any isolated arrangements or to consensus until the entire picture was clear. This was inevitable having regard to the purely economic approach that the developing countries felt obliged to emphasize. John Freeland [36] of the United Kingdom expressed his nation's view that:

> it is surely right that at the end of the day, at the time when the decisions come to be taken, at the very least, a parallelism should be achieved so that States are in a position to look at the whole package that is available. It may be that it is only when the various issues can be seen together in this way that States will be in a position to make calculations of national

advantage and disadvantage and of international interest which will enable them to make up their minds [37].

For reasons of time and inadequate space, it is not considered useful to squeeze out the issues with a discussion of these aspects. We shall consequently proceed with an examination of some of the "real" issues that derived their foundations from this main course. For convenience, these will be referred to as "battlegrounds."

Battlegrounds

"Strong" Versus "Weak" Regime [38]

For the developing countries -- as for some of the less industrialized of the developed countries -- the dictates of the Declaration of Principles, as well as the aspirations of that category of nations, could be met only by a strong international regime and machinery. This in effect called for the establishment of an international institution with full powers to act on behalf of mankind as a whole. It was to have such legal capacity as would enable it to exercise effective control over activities in the area, including a monopoly in the exploitation of its resources. That institution was to safeguard the common interests of the international community and open the door to equality of opportunity for all states who desired to participate with the Sea-bed Authority in those activities.

As indicated earlier, at the center of these broad objectives was the interest of the young nations to share in the benefits of the declared "common heritage." This involved, at the bottom of the scale, revenue sharing of the proceeds of exploitation [39]. A major benefit for them would be an increased capacity to participate in activities in the area, more for reasons of exposure to the new crop of ocean technology than for the actual investment in exploitation enterprises. Some of the poorest among them entertained the more pragmatic hope that their nationals trained in such technology would bring their newly acquired skills to bear on domestic development programs. The third objective was born of their contemporary frustrations with what they saw as the proven tyranny of the powerful minority in the global politico-economic system. They insisted on a decisive share in the decision-making processes [40] as a guarantee that the changing times would have unfettered effect on the imbalances of global economic, social and -- consequently -- political power.

The industrialized countries opted for a "weak" international machinery. The approach of the developing countries would not provide the assured access to the resources desired. "Such a proposal would not provide adequate incentives and guarantees for those nations whose technological achievement and entrepreneurial boldness are required if the deep sea-beds are to benefit mankind as a whole. It would give control to

those who do not have the resources to undertake deep sea-bed mining" [41]. Not even a proposal [42] for guarantee of supply of processed minerals would do. Guaranteed access would better come from effective control by the interested states of all stages of the activities, from recovery to sale of processed products.

The respected US chief negotiator, John R. Stevenson, was firm when he addressed the Sea-bed Committee on 10 August, 1972:

> It is important to dispel any possible misconceptions that my government would agree to a monopoly by an international operating agency over deep sea-bed exploitation or to any type of economic zone that does not accommodate basic US interests with respect to resources as well as navigation.

The Nixon administration, for which Stevenson was speaking, proposed the establishment of an international agency or registration center. Its power would be limited to authorizing and regulating exploration and use of the resources of the area. Applications for exploration and exploitation would be filed with the agency and financial arrangements would be worked into the treaty to make royalties available to the developing countries.

The attempt to reassure the Group of 77 that revenues accruing would virtually belong to them was perhaps intended to give an illusive impression that the so-called Third World was the real beneficiary of the common heritage. The Group of 77 saw little benevolence in those proposals and held to its position. Given the manifestations of serious divergence of view and interests, a new basis had to be found for further negotiations.

Western delegates were persuaded to suppress the call for a "weak" machinery. It was clear that the demands of the Declaration of Principles could not be met by such a machinery. The real course shifted to a new battleground: the precise nature of the international machinery, especially with regard to the actual conduct of activities in the area. The Conference Jargon was "the system of exploitation."

The System of Exploitation

The "battleground" here was "who" would exploit. As observed above, the Group of 77 insisted on a unitary system in which all activities were to be carried out by the Authority. The industrialized countries wanted the actual exploitation to be carried out by them or their companies [43]. Two preoccupations were evident in the quest for compromise. The first was apprehension about the role of multinational corporations. The second was the question of the control of the Authority over their activities.

There was a feeling outside the Western group of industrialized countries that the multinationals could alter or undermine the nature of the common heritage by the sheer might

of their financial and technological power. If there were to be any links at all, they had to come by way of states who demonstrated effective control over them at the national level. The developing countries wanted participation, if any, by states and public or private entities to be through service contracts or joint ventures with the Authority. The form of association was to be guided by the need for technology and efficient organization in the early period.

The Chairman of the First Committee exploited a thread, attenuated as it was by the deadlock, that appeared to link the two ideologies. He proposed in the Informal Single Negotiating Text [44] (ISNT) that as a fundamental principle, "activities in the Area shall be conducted directly by the Authority" [45]. The Text further proposed that:

> The Authority may, if it considers it appropriate ... carry out activities ... through States Parties to this Convention ... by entering into service contracts, or joint ventures or any other such form of association which ensures its direct and effective control at all times.

State enterprises, or persons natural or juridical which possessed the nationality of such states or were effectively controlled [46] by them or their nationals, or any group of these, were also permitted such participation, subject to the provisions emphasized.

Grudgingly, the Group of 77 accepted this proposal, but not before the militancy of the industrialized-country condemnation was known [47]. In spite of this, there was a will to pursue the ideas much further. The Chairman opened the Fourth Session of UNCLOS emphasizing that the ISNT had been "designed to identify problems, not to solve them" [48]. His consultations during the intersessional period had shown that "the subject ... was ripe for negotiation."

The Revised ISNT was to be based on the negotiations at that session. The industrialized nations proceeded to dictate the rythm. A group of self-styled "Interested delegations" -- involving most of the outstanding speakers of the Group of 77 [49] and the Western countries [50] -- undertook, with the Chairman's blessings, intensive informal consultations. Assured that the necessary feedback to their respective geographical groups would be made regarding any agreements, the Chairman made a sacred commitment to be bound by any agreements reached. Indeed, the revisions [51] contained in the Revised Informal Single Negotiating Text (RISNT) were the product of that group! [52]

The new Text introduced a duality styled the "parallel system." The erroneous omission of commas attracted various interpretations:

- <u>As a single system</u>: the Authority would operate directly but only through controlling the specified entities;

- As a dual system: activities would be carried out (a) directly by the Authority through the Enterprise and (b) by specified entities, but in association with the Authority and under its control;
- Three possible modes of exploitation: (a) directly by the Authority through the Enterprise; (b) by those entities in association with the Authority; (c) by those entities under the control of the Authority.

The central difficulty in the ensuing debate was to find an acceptable system which offered opportunities for production sufficient to meet world demand for raw materials and which also ensured fair and equitable participation in the benefits of sea-bed mining by all interested parties. A critical aspect of that difficulty was the viability of the Enterprise -- the business arm of the Authority -- in terms of its financial capacity to commence commercial production expeditiously or at the same time as other prospective miners.

In an obvious attempt to break a continuing impasse, Secretary of State Kissinger announced [53] that the United States would:

- meet the reasonable demands of the Group of 77 for transfer of sea-bed mining technology;
- "see to the financing" of the Enterprise and ensure that it commenced functioning at about the same time as US firms in the area or very soon thereafter; and
- agree to a complete review of the system of exploitation after 25 years [54].

Although domestic criticism blocked public knowledge of the complete nature of that offer, it did clear the way for some more constructive deliberations. Informal understandings among the negotiating partners kept the ball rolling. The motivating assumption was that the Kissinger offers were to be followed to their logical end. Important elements in the ensuing package were:

- The proposed dual system was to operate for a fixed period [55], thus defining its transient nature. During that period, there had to be periodic reviews [56] to determine whether the system was in practice meeting the objectives of its creation and if any measures were necessary for achieving improvements in the operation of the regime. A review conference was to be held before the end of the fixed period to define the regime that would apply thereafter.
- The viability of the Enterprise was to be ensured by allocation of mine sites equal in numbers and economic value to those to be exploited by states and private companies, by financing, and by transfer of technology.
- Important items had to be settled relating to the qualifications and selection of applicants: the terms of contracts, including their financial terms, the procedure and

criteria for their approval, the security of tenure, etc. One closely associated issue was the definition of the scope of the Authority's control of activities.

With informal negotiations indicating steady progress on the various fronts, the parallel system had come to stay. The system guaranteed direct access for the industrialized countries and the Authority, as conceived by both sides of the debate. It may be argued that neither received in volume exactly what they wanted access to; yet it was a compromise because both sides lost something and our joint endeavours for consensus succeeded.

Preparatory investments already made raised the problem of pioneers in the development of sea-bed mining technology. This would have been in the package if Western industrialized countries had not allowed the subject merely to lie on the table, giving no specific proposals for a long time. It was the Chairman's impression that the nature of the proposals depended on the guarantees negotiated, as well as on the number of mine sites that could be projected from the proposed ceiling in the system of production limitations. The so-called "PIP" (Preparatory Investment Protection) issue was to be negotiated practically last of all, the developing countries keeping their informal commitment to work out realistic provisions for pioneers after a settlement had been reached regarding the treaty provisions on the overall system of exploitation. The Socialist countries could see no real basis for requesting such provisions, but they would go along in the interests of consensus.

The economic issues [57] were largely left to informal consultations among land-based producers and prospective sea-bed miners [58]. The final years of the Conference found compromise proposals setting production limitations and creating machinery for resolving the critical problem of the land-based producers, especially the developing countries among them, regarding adverse economic effects of sea-bed production.

Transfer of Technology

This battleground never seemed to the Chairman to be a serious one outside pure ideology. As pointed out earlier, the industrialized countries considered the monopoly of sea-bed mining technology as the basis for a claim of right to direct access. "The reach of the technology and modern communications has tempted nations to seek to exercise control over ocean areas to a degree unimagined in the past," said Secretary of State Henry Kissinger [59].

Although the US was many years ahead of any other country in the technology of deep sea mining and had the capacity to protect any claimed "interests," it realized that "while such a course might bring short-term advantage, it poses long-term dangers" [60]. Eventually, any one country's technical skills were bound to be duplicated by others. A race would then begin

to carve out deep sea domains for exploitation. This could not but escalate into economic warfare, endanger the freedom of navigation and ultimately lead to tests of strength and military confrontations. Mr. Kissinger went on to say:

> America would not be true to itself or to its moral heritage, if it accepted a world in which might makes right -- where power alone decides the clash of interests. And from a practical standpoint, no one recognizes more clearly than American industry that investment, access, and profit can best be protected in an established and predictable environment.

This broad and enlightened perspective aided the resolution of the problems [61]. The arguments that purported to reflect negative industry views regarding mandatory transfer did not have much impact. Most of the US industry representatives confided that the technology needed would in any case be available in the open market. Since what was involved in the "transfer" bid was a license to use, it was generally agreed that the actual technology be kept a matter of secrecy to protect the manufacturer's, or developer's, copyrights or patents. It would appear that a mandatory transfer of what the seller wishes to sell for profit anyway would be most welcome to him!

Mr. Kissinger said that the US was prepared to make "a major effort to enhance the skills and access of developing countries to advanced deep sea-bed mining technology in order to assist their capabilities in this field." He gave as an example the establishment of incentives "for private companies to participate in agreements to share technology and train personnel from developing countries." Any insistence beyond this on the part of objectors merely confirmed their continuing contempt for the genuine compromise presented by the parallel system. "Transfer of technology" is a term that seems to attract mystical connotations, out of touch with the simple aspirations of those who share the lofty ideals of global peace and progress enshrined in the United Nations Charter.

Decision-Making

This battlefield was deliberately left until the last. It lost the intensity of its importance as other matters were resolved. It was a critical part of the strategy of the industrialized countries to ensure that no decisions could be taken in the Council to block or impede direct access.

Opinions may differ as to the scope of the aspirations here. It may be said that the broad underlying objective was to stretch the "veto" power to the workings of the proposed new international system for ocean space. If that were true, then it appears to have been short-sighted. For indeed, a veto system in which the privilege of its use is not left to named countries [62] presents a double-edged sword. The minority user -- or majority user, for that matter -- could come from any side

of the North-South arena or from any interest group or from a rival camp within the same interest group.

The Chairman was persuaded to believe from the facts that most of the proposals were motivated by genuine apprehension for the plight of each side in the race for desired access. The complex system now introduced in the Convention was intended to reassure those who needed reassurances. Of all the formulae tried during the years of informal consultations, this was the only one that achieved consensus, and then only after resolution of other matters had opened the way for realism on this issue. Its success will depend on the political skill of member states in ensuring that the entire system does in fact work.

THE FUTURE

Time and space make more discourse of so profound and complex a subject impossible. The attempt has been to identify and to demonstrate the role and the central theme of the historic negotiations in the First Committee. The illustrations discussed are by no means all that could be given.

A new U.N. Convention on the Law of the Sea has been launched. Over two-thirds of the membership signed it on the very first day in Montego Bay, Jamaica. At its adoption, only one delegation -- the US -- voted against Part XI dealing with the common heritage issue. Before this eventful and regrettable voting [63], I had the occasion to appear in open debate with that nation's chief negotiator, Ambassador James Malone [64], at Berkeley, California. The exchange was published in full by the Journal of Contemporary Studies [65]. I need not repeat the details of the response I gave to the preoccupations of the Reagan Administration on that occasion.

The appeal I made and the hopes I entertained for the final session were to remain unfulfilled. The US seat on the train to the international cooperation of which Henry Kissinger spoke is empty. Standing near seats reserved for them are some of its allies -- demonstrating either hardened solidarity or seeking reasons to waiver. For those who spent a critical part of their lives dedicated to the great ideal of peace through universally recognized law in the ocean space, it is an occasion for remorse, but, one hopes, not for discouragement.

> We are convinced that our common progress requires nations to acknowledge their interdependence and act out of sense of community .... The nations of the world now have before them a rare, if not unique, opportunity. If we can look beyond the pressures and the politics of today to envision the requirements of a better tomorrow, then we can understand the true meaning of the task before us ....

Those were the words of Henry Kissinger, the historian, a great Republican speaking for a Nixon Administration, which, like the Reagan Administration, upheld the highest aspirations

of American Republicanism in this century. One cannot over-emphasize the hope that the present Administration will find new and inspired reasons to join the rest of the world in making the Convention's proposals for a productive form of relationship among states work for the good of all.

My closing remarks at Berkeley remain my valid thoughts today. Neither the lack of institutions nor the creation of them per se impedes international peace and security. The problem is rather human nature, with its complexity of illusions and intellectual arrogance. The true test will be our capacity as a generation to recognize the wisdom of investing our limited national interests in the larger freedom of collective action for resolving global problems of development.

These sentiments are not intended for consumption by our US friends alone: they are for all of us. We have now entered a new phase in our effort to implement our joint resolve to "foster a healthy development of the world economy and balanced growth of international trade ... to promote international cooperation for the overall development of all countries, especially developing states ...." [66]. Ocean space and the new Convention present a new frontier in perhaps the last outpost available to man.

It is my view that, without resorting to revision or amendment of a Convention only recently adopted, we ought to examine seriously all possible avenues for making the new document more acceptable to the absent and the hesitant. I venture to propose that opportunities be exploited in the elaboration of detailed rules, regulations and procedures for sea-bed mining. We may also examine informally the possibilities for admitting new miners without significantly disrupting the objectives of the production limitation. There may be other avenues. The Preparatory Commission should not shy away from taking new looks. If for no other reason, all approaches to saving face for desirable "fellow travelers" and bringing them back on board would be worth trying. In all frankness, however, it must be added that such a venture would only be worthwhile, and perhaps successful, if those "fellow-travellers" are prepared to demonstrate a clear willingness to be helped back aboard.

Nothing said here is intended to encourage the creation of deadlocks to impede progress. All sides must understand the scope of the accommodation by the developing countries, the Socialist countries and the lesser industrialized among the Western developed nations. Access to resources has been granted irretrievably -- by the provisions of the package containing the Convention and Resolutions I and II -- to a limited number of nations and their nationals. We must not be seen to insist, even indirectly, on provisions that remove from the rest of mankind the hopes of meaningful sharing in the benefits offered by ocean space.

NOTES

* (Institute of Public and International Law, University of Oslo) Paper on "International Use of the Sea-Bed," submitted to the Proceedings of the Seventh Annual Conference of the Law of the Sea Institute, University of Rhode Island, Kingston, Rhode Island, 1972. Edvard Hambro, a Norwegian and one of the most reknowned jurists in contemporary times, was Chairman of the General Assembly Sixth Committee and President of the United Nations General Assembly (23rd and 25th Session respectively).

1. Proclamation by President Truman of September 28, 1945, on Policy of the United States with Respect to the Natural Resources of the Subsoil and Sea-Bed of the Continental Shelf.
2. The possibilities for the exploitation of which had become apparent in the early forties.
3. Traduction libre from the original Spanish version.
4. In "Principles of International Law" (said to have been written between 1786-1789).
5. Ambassador Andres Aquilar, Venezuela, speaking at the Law of the Sea Institute in Rhode Island (June 29, 1972) pointed out that the sovereign rights were exercisable, under the concept of "patrimonial sea," over "the resources existing in the zone and not over the zone itself." Writing in the American Journal of International Law (Vol. 68, No. 1) in 1974, Garcia-Amador explained that the attempt was not to protect the territorial sovereignty of the state in its entirety. On the contrary, it was an attempt to claim for the coastal state rights for specific purposes in the zone in question -- those of reserving, protecting, maintaining and utilizing the natural resources of the maritime zone.
6. The Commission commenced development and codification of topics relating to the Law of the Sea in 1949.
7. Mandated to deal with the continental shelf.
8. US Representative on the Sea-bed Committee at the close of the Session on August 28, 1970, promoting the Nixon proposals.
9. Under the 1958 Conventions.
10. General Assembly Resolution 2749 (XXV) of December 17, 1970.
11. There were three Sub-committees of the whole.
12. Doc. A/AC/138/SR.45 issued during the March 1971 Session. Chairman Dr. Seaton, Tanzania, read out its terms at its 45th Meeting on March 12, 1971.
13. As it turned out, there was more than a mere North-South dispute. Interests respected no traditional political boundaries; they made strange bed-fellows rendering simplistic classifications both dangerous and unproductive.
14. In the US, the Marine Resources and Engineering Development Act of 1966 mentioned these as the national objectives.

15. Recall President Johnson's 1966 statement at the commissioning of "the Oceanographer."
16. See e.g., debates during the US 90th Congress; Hearings before the Special Subcommittee on Outer Continental Shelf (December 1969 - March 1970).
17. Including landlocked states.
18. Ambassador Sen, India, commenting in the First Committee of the General Assembly at its 24th Session; see A/C1/PV. 1673 on October 31, 1969, p.28.
19. Ambassador Lennox Ballah, Trinidad and Tobago, at G.A. First Committee, 24th Session, supra.
20. UNCLOS Doc. A/CONF. 62/C.1/L 16 of September 5, 1975.
21. Supra.
22. Principle 2.
23. Principle 3.
24. Principle 9, prescribing also the establishment of an international machinery which would by its very existence guarantee this.
25. Principles 10 and 11.
26. Principle 7.
27. Res. 2514 D (XXIV)
28. E.g., articles 3, 4, 7 of the ISNT and 136, 137, 140, etc. in the new Convention.
29. E.g., Brazil, Mexico, India, Chile and Peru.
30. Including sharing of revenue, transfer of technology (training programmes), participation in activities of exploration and exploitation, etc.
31. The term "security" seemed to have been applied in its broadest sense, implying that economic, political and other interests touched directly the existence and thus the security (in its narrower meaning) of the state. It would appear that its stated content eluded a clear definition of the scope.
32. Most of the packages were inevitable as the only means of mutual accommodation among conflicting national interests.
33. On many occasions, the Chairman was excluded from knowledge of the workings, but knowledge of the content of the agreements was presumed by the authors!
34. Coastal countries which feared too much jurisdiction for those already rich proposed that the extension beyond the 200-mile limit of the EEZ be applied only to developing countries. The present solution in article 82 did not come easily.
35. A discourse on trade-offs must await a full treatise on the mechanics of the negotiation processes.
36. Legal Advisor to the Permanent Mission of the United Kingdom to the U.N. and Legal Advisor to the British Embassy, Washington, D.C., at the time.
37. See Natural Resources Lawyer, Vol. IV, No. 4 of November 1971; Journal of the Section of Natural Resources Law, American Bar Association.
38. The nomenclature employed are terms of trade -- jargon adopted for convenience by delegates.

39. It became clear to them, in light of their numbers and the needs of the new Authority's budget, that the actual amount of cash available would be too insignificant to share among them, even if the developed countries relinquished their claim to participate in the revenue-sharing programmes. This perception was enhanced by the quest for a solution by way of monetary compensation to the problem of minimizing the adverse effects of deep sea-bed mineral exploitation on the export earnings of developing land-based producers of those minerals.
40. A weary thought for the major powers, but they saw no alternative response to the run-away economic injustices that weakened them steadily.
41. Dr. Henry Kissinger, US Secretary of State, before the Foreign Policy Association, the US Council of the International Chamber of Commerce and the UN Association of the United States at New York on April 8, 1976.
42. Informally made during private consultations.
43. Eastern Europe could not comprehend the constitutional nature of a supra-national institution assuming such functions as the new Convention assigns to the Enterprise. For them, states were <u>the</u> subject of international law, and in the case of the Authority only states members could exploit on behalf of mankind.
44. Conference doc. A/CONF.62/WP.8/Part I of May 7, 1965.
45. The famous "Article 21."
46. An attempt to tighten the provisions relating to flags of convenience.
47. Some developing countries saw in it a give-away to inequitable sharing of benefits <u>de facto</u>. One western paper categorized the text as the product of "Mr. Engo's developing country mentality."
48. See Doc. A/CON.62/C.1./SR 24 of March 16, 1976.
49. Mainly the most developed of the Latin American countries.
50. Led by the US spokesman in the First Committee.
51. Apart from modifications to article 21, no substantive and significant alterations were made to the ISNT.
52. Unfortunately, the Group of 77 participants did not sell the product to their Group, exposing the Chairman to blind criticism. It may be recalled that, on the insistence of some delegations, the Committee decided to set up an informal working group headed by two co-chairmen, an impossible combination of two representatives (one from the West and the other from the Group of 77) whose respective views differed on almost every material detail.
53. Press conference September 1, 1976, and later before a selected team of negotiators suggested by the Chairman of the First Committee. Two weeks earlier, Dr. Kissinger had come to consult the Conference official leadership in President Shirley Amerasinghe's office at the U.N. He asked the Chairman of the First Committee what could break the impasse. The Chairman asked for a formula which would enable the Enterprise to go into production at about the

same time as the US corporations. It was the critical price to pay for the "parallel system."

54. It was not clear at the time whether he had addressed by implication the question of what happened if the Review Conference failed to agree on revision or otherwise after the fixed period.
55. Suggested by some to coincide approximately with the life of the first generation of mine sites to be explored.
56. Significantly by the Assembly, not the Council with its complex decision-making process -- a price the industrialized countries had to pay as part of having to reassure the Group of 77 that there was no intention of blocking necessary measures for improvements.
57. Addressed in the old article 9.
58. Headed on either side by Canada and the United States. Although Canada belonged to both categories, its desire to protect existing interests as the largest producer of nickel gave the Canadian delegation the leadership role of the group of land-based producers. Its expertise was very helpful for some developing country participants within that interest group.
59. At the April 8, 1976, Statement, supra.
60. Kissinger, April 8, 1976.
61. Mr. Kissinger's speech also opened significant doors to more productive negotiations regarding the concerns of land-based producers, revenue sharing, etc.
62. See the U.N. Security Council rules of procedure.
63. Insisted upon by the US Chief Delegate.
64. Special Representative of the US President at UNCLOS 10th Session.
65. Vol. V., Number Two, Spring 1982.
66. Article 150 of the Convention.

SIGNIFICANCE OF THE CONVENTION: SECOND COMMITTEE ISSUES

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INTRODUCTORY REMARKS

As regards the Convention in general, there is in my mind no doubt whatsoever that Ambassadors Jens Evensen and Elliot Richardson have been absolutely right in stating that the Convention is an immense achievement in international legislation. I will only add that the work carried out so far has already had, and will continue to have, a tremendous impact on international law and international relations. In my view, this will be true whether or not the Convention becomes formally binding on contracting parties through the traditional mechanisms of treaty-making. In other words: the Convention will continue to play an extremely important role with or without formal ratification and entry into force.

The Conference -- UNCLOS III -- thus presents us with a large measure of success, not failure. This was, in my opinion, manifest as early as 1977. As I found it appropriate to state in a short article in Environmental Policy and Law [1], even at that stage it was already correct to say that the Conference machinery and methodology of international law-making had contributed to the development of an entirely new global system of resource protection and management through the establishment of the 200-mile zones and the regime applicable there.

Turning to Second Committee issues in particular, it should be observed that these cover a great number of questions belonging to the international law of the sea. Most questions traditionally regarded as law of the sea issues fell within this Committee's competence and are addressed in the Convention. While the competence of the two other committees was limited to specific issues, the Second Committee dealt with the law of the sea in general. It took up subjects of paramount importance for the present as well as the future such as the territorial sea, rights of passage through the territorial sea and through straits used for international navigation, overflight, archipelagic waters and rights of passage in and through such waters, exclusive economic zones, including the rights to fisheries and biological resources, the continental shelf, and the rules concerning the high seas, including, inter alia, the high seas freedoms of navigation and overflight, which will continue to exist in the 200-mile economic zone as well.

Of course, it may be that some will regard my perspective as somewhat biased when I stress the particular importance of the Second Committee and the questions dealt with by that Committee.

There are perhaps two reasons for this perspective. First, as my main occupation is that of a legal scholar, I may be tempted to emphasize those questions which occupy the major number of pages in the traditional textbooks of international law. Second, as a Norwegian and as one who has spent some time since 1970 as a member of that country's delegations to UNCLOS III and the Seabed Committee, I may have a tendency to regard the achievements concerning the continental shelf and the 200-mile limit for fisheries as the most important and interesting ones. These are clearly the two fields that have the most direct and practical importance for my own country today. The rules concerning transit passage through straits used for international navigation are also particularly significant in this connection.

Regardless of all such possible reservations regarding my own perspective, it may safely be asserted that Second Committee issues cover a wide range of matters where the vital interests of states are at stake, both at present and in the years to come. While the actual economic or commercial value of deep sea mining may be dubious, and such mining at any rate seems to be, the Seabed Committee was faced with vital present-day interests of states and with actual as well as potential conflicts.

The divergent interests of the different sides and the different parties and their magnitude are easily ascertained. Against this background, the fact that the Second Committee and the Conference have really performed the tasks of codification and progressive development of international law in regard to such a vast number of truly difficult issues is an immense and, at least in the eyes of some serious observers in the early 1970's, an almost impossible achievement.

It may be difficult to distinguish between achievements which are a result of UNCLOS III -- or, in other words, of the Conference as a law-making body -- and those which are the results of the Convention. Obviously, the successes to be noted as early as 1977 [2] on the basis of state practice in accordance with ideas developed and refined at the Conference were not the direct result of the 1982 Convention as such but possibly of its predecessor, the Negotiating Text, and the more or less collective anticipation of the 1982 Convention in the minds of the relevant decision-makers of different states.

The most spectacular result of the work carried out by the Conference is the advent of the 200-mile economic zones or fisheries zones. Coastal states now have, as a general rule and practice, the sovereign right to exploit, manage and conserve the resources found within a 200-mile belt off their coasts.

I shall not, of course, attempt in any way to infringe upon the domain of the eminent Chairman of the Third Committee, Ambassador Alexander Yankov, concerning the issues falling within the competence of that Committee. It should, however, be mentioned that even as far as the protection and preservation of the marine environment is concerned, the rules deriving from Second Committee texts have been of decisive importance. This is true not only because of the fundamental provisions on the

establishment of the EEZ as such and on its maximum breadth of 200 miles, but because the system of coastal state management over resources, and over living resources in particular, presents us with far better means for protecting and preserving these very important parts of the marine environment. With respect to environmental law and policy in a broad sense of the term, it is the combined result of the Second and Third Committee texts that presents us with a more viable system than existed in most areas of the sea before the extensions to 200 miles in accordance with UNCLOS III texts. The extent to which various coastal states will in the future really make efficient use of these enhanced possibilities for the protection and preservation of some of the most important resources of the world is another question. Here, only the future can tell.

INTERPLAY BETWEEN INTERNATIONAL "LAWMAKING" AND THE ACTS OF INDIVIDUAL STATES

The first United Nations Law of the Sea Conference was successful in that it adopted the four Geneva Conventions of April 29, 1958. But it was unsuccessful in that it did not solve the issue of the extent of the territorial sea and a possible contiguous fishery zone beyond the territorial sea. At that Conference it was stated by Iceland, represented by Ambassador Hans Andersen, that Iceland could no longer await the outcome of attempts to settle these important questions on the international level; Iceland had to take measures under its own legislation to provide for the protection of coastal fisheries and the conservation of stocks in coastal waters [3].

The creation by Iceland of a fishery zone of 12 nautical miles in 1958 brought about the first so-called "cod war" between Iceland and the United Kingdom. The United Kingdom contended that international law did not allow for the extension of national jurisdiction over fisheries beyond the traditional limit of 3 nautical miles. This point was argued so strongly that the U.K. considered itself justified in sending naval units to protect British vessels fishing in the new 12-mile zone of Iceland, i.e., in what the U.K. still saw as part of the high seas.

The next major step of the international community was the Second United Nations Conference on the Law of the Sea in 1960. This Conference was convened especially for the purpose of settling the issue of the breadth of the territorial sea and a possibly extended zone of coastal state fisheries jurisdiction. When this Conference too did not reach a definite conclusion on those matters, it became the turn of Norway and other countries to extend to 12 nautical miles. However, this was done with particular reference to the "near-agreement" and emerging consensus presented by the Conference. An understanding was arrived at with the U.K. in the Anglo-Norwegian agreement on fisheries off the Norwegian coast of November 17, 1960. This agreement contained a *de facto* acceptance of a 12-mile limit off Norway. But this was, as far as the agreement is concerned,

done with a certain amount of hesitation and reluctance on the part of the U.K. The U.K. Government would not "object to" the exclusion of British fishing within 6 nautical miles and within 12 miles beginning in 1970. This was stated, however, with a clear non-prejudice provision, so that the general principle of a 12-mile zone should not be regarded as having been accepted. Moreover, acceptance of this exclusion of British fishing vessels from what might be regarded as a part of the high seas was linked to a system providing ten years of transitional fishing rights for British vessels between 6 and 12 miles [4].

The following event on the international scene, particularly insofar as Europeans and other traditionalists were concerned, was the European Fishery Conference in 1963-64. This Conference produced general agreement on a system of 12-nautical-mile coastal fishery zones, with certain rights for other states to continue fishing in areas between 6 and 12 miles. This Conference was followed by an extension of the U.K.'s own limit to 12 nautical miles, with effect erga omnes, i.e., with effect also in regard to countries not participating in the the Convention adopted by the 1963-64 Conference [5].

Then in 1972 Iceland extended its fisheries jurisdiction to 50 miles. This action resulted in a second "cod war" and -- with possibly more far-reaching implications for the international lawyer -- in cases being brought before the International Court of Justice by the U.K. and the Federal Republic of Germany. They contended that Iceland's new limit was not in conformity with international law. The Court found that the new limit was not opposable vis-a-vis the the two plaintiff countries, as they had not accepted the new 50-mile zone by agreement. The Court held that Iceland was entitled to a preferential share of the resources between 12 and 50 nautical miles, but could not unilaterally exclude British and German vessels. That was 1974.

In view of the conclusions reached by the Court in respect of the issue of a possible 50-mile fishery limit, it might seem a somewhat surprising consequence that the Court at the same time presented us with an important and fairly radical contribution in regard to general jurisprudence and the future possibilities of legislation by majority decisions or by consensus at international conferences [7]. It is evident that this very mechanism has played an important, and possibly decisive -- role in subsequent developments, in particular in the establishment of 200-mile zones from 1975/76 onwards.

EXTENSIONS TO 200 MILES ON THE BASIS OF THE VIEWS PREVAILING AT UNCLOS III

Only two years later, in 1976, it was decided by both plaintiff countries to extend their own limits to 200 miles. At that time the negotiations at the Third United Nations Conference on the Law of the Sea had made clear that a possible solution and a possible consensus within the international community must be based upon that very principle, namely a 200-

nautical-mile economic zone or a special fishery zone of 200 miles. There was no such thing as a formally adopted convention, nor any act approaching signature and ratification, which would have been binding upon individual states. There was only an informal negotiating text drafted by the three Chairmen in 1975 and revised by them in 1976 in their capacities as officers of the Conference.

Although the system of 200-mile zones had already manifested itself as probably the only practicable means to arrive at a new conventional solution by consensus or majority decision, one was rather far from any agreement to the effect that the 200-mile zone was already part of existing international law. Nevertheless, the emerging consensus, with a view to the possible future adoption of the text of a convention, sufficed to inspire individual states to extend their limits to 200 miles more or less in accordance with the Conference texts. Thus, those texts did form part of the basis of a new practice in the international community, also adhered to by states earlier favoring as the absolute maximum, the traditional limits of 3, and later 12, nautical miles.

INTERNATIONAL "LEGISLATION," STATE PRACTICE AND LEGAL REASONING

The formative stages of the Third United Nations Conference on the Law of the Sea reached their end with the adoption of the Convention on the Law of the Sea on April 30, 1982. As far as Second Committee issues are concerned, the main conclusions were arrived at even earlier. There the possibilities of new developments through the negotiating machinery of the Conference have been rather limited ever since the emergence of the ICNT of 1977. After 1977, negotiations at the Conference mainly concentrated upon the First Committee and the regulation of deep sea mining beyond the outer limits of the continental shelf.

The legal material of the Conference and the Convention is established fact. It forms part of the basis upon which legal conclusions must rest. Consequently, there is a marked shift in emphasis. The factors which will henceforth determine the actual content of the applicable rules and their further development are now the practice of states and the legal conclusions which representatives of the legal and related professions draw from the existing material.

In the future, the Convention will obviously play a double role in international relations and in the law. In the fields covered by the work of the Second Committee the Convention will -- pending ratification and entry into force and also after that stage, vis-a-vis non-contracting parties -- play the role of an important source of law containing combined political-juridical guidelines for the conduct of individual states. The standards set by the Convention will be invoked as evidence of customary law or, in more general terms, as the most authoritative expression of the prevailing opinions in the international community as to what the law is or should be. Terms such as an existing or emerging consensus, or even the opinio juris sive

necessitatis, will occupy a particularly prominent place in discussions concerning those parts of the Convention which are the result of deliberations of the Second Committee. Obviously, the Convention will in several instances be considered to be far better evidence of the existing or emerging rules of the international community than any material which has existed before, e.g., traditional textbooks of international law.

This does not negate the fact that the value of the Conference texts as sources of law, and their impact on future state practice, will depend largely on whether the Convention becomes formally binding on individual states through the ordinary procedures of signature, ratification and entry into force. There is an obvious difference between a situation where a text is formally binding on the states involved as part of an international convention and the situation where the text is merely one of several factors to be taken into account, in particular as evidence of a possible or emerging consensus in the international community as to what the rules of international law are or should be. The latter was noted earlier, the situation which provided the basis for the reasoning by the International Court of Justice in the 1974 Icelandic Fisheries Jurisdiction Cases [8].

Obviously, the leeway for states to choose the one or the other solution in their actual practice will be more restricted if and when the Convention is formally binding upon them. But whether or not states are bound as treaty parties, the conclusion of the formative stages of the negotiating process means that the emphasis is now on the process of interpretation and application in actual practice, that is, on the work which we must undertake in the future.

Of course, what has been said does not imply a lack of recognition of the important contribution to the new law of the sea which UNCLOS III has already made in particular by inspiring the vast amount of state practice which now exists in regard to the 200-mile zones of special jurisdiction, be they so-called exclusive economic zones or merely zones for jurisdiction over fisheries. One may say that UNCLOS III has given the starting point, but we must carry on with the work.

TREATY LAW AND NON-CONVENTIONAL LAW

An element of dichotomy has become one of the more prominent features of the international law of the sea. While some states are formally bound by international conventions and must conduct their policies within the terms of such conventions, other states will be bound only by a more or less uncertain general international law. More precisely, the anatomy of international law consists of bilateral relationships. A state having ratified an international convention will be bound by its rules vis-a-vis other parties, while in regard to states non-parties it is only bound by, and obliged to apply, general international law. If a state becomes a party to the new Law of the Sea Convention, it will be bound

by it and entitled to invoke its rules in relation to other states that have also accepted the Convention. But the general law will continue to apply in regard to third parties.

This means, for example, that a coastal state that is a contracting party may refuse to accord to non-parties the rights or privileges which other states can claim under the Convention, e.g., the right to be authorized to fish for surplus stocks within the 200-mile limit. Secondly, a coastal state party may meet with a contention on behalf of certain other non-party states to the effect that the latter are not bound to accept the 200-mile limit at all. The basis for such a contention may be that the 200-mile limit has not become part of general international law.

To go beyond the field of fisheries, coastal states can argue that transit passage through straits used for international navigation set forth in the Convention cannot be claimed by foreign states that are not parties to the Convention. Moreover, as a possible matter of policy, some coastal states may even take the position that in the intermediate period before the Convention's entry into force, they do not wish to accord the rights of passage set forth in the Convention to foreign states, in particular states which have made known their intention not to accept the Convention.

The question of the validity of such contentions, to the effect that the general non-conventional law is different from that of the Convention, cannot be answered with any certainty at this stage. It is clear that a generally adopted and accepted Convention may play an important role as a source of law in regard to legal relationships not formally governed by the Convention. In 1974 the International Court even accepted something less, namely proposals to and recommendations by an international conference as evidence of the existing legal situation [9]. But there will often be doubt and uncertainty regarding the relevance and weight to be accorded such factors in establishing the content of the rules of general international law outside the areas that have been formally regulated by a treaty binding upon all parties. Consequently one may also be left with doubts and uncertainty concerning the question of what exactly the prevailing rule of law is.

Statements concerning existing general international law in those matters and the rights and duties of the state must, therefore, always be understood and qualified in the light of the uncertainties of general international law. The dichotomy described derives from certain fundamental characteristics of international law. These are, of course, also important in other contexts, but they seem to be of particular relevance and interest in the fields here discussed.

THE INTERPLAY BETWEEN UNRATIFIED TREATY LAW, STATE PRACTICE AND FORMAL RATIFICATION OF A LOS TREATY

As demonstrated above, we cannot expect general international law in relation to Second Committee issues to be

clear in all respects in the present situation. The period of uncertainty may stretch over a number of years, depending on the fate of the 1982 Convention. Only time will reveal the extent to which the Convention becomes formally binding on states -- and thereby on relevant bilateral state-to-state relationships -- in accordance with the ordinary mechanisms of ratification and entry into force. Important relationships concerning, inter alia, the right to fish, will continue to be governed by general international law as opposed to formal regulation by a law of the sea treaty. There will also be other treaties entered into by two or more states to deal with their special problems which contain rules more or less different from those of the Convention.

As indicated above, a treaty may -- even if it is not yet ratified and brought into force for the states concerned -- play a more or less important role as one of the sources relevant to determining the content of general law. But the persuasive force of such an argument with reference to a treaty provision not formally binding on the state concerned will vary greatly from case to case. It seems that the persuasive force of provisions in a treaty such as the Law of the Sea Convention would be particularly great if the provisions are intended as a codification of already existing law or if they are consistent with a more or less general custom also followed by non-parties. The preamble of the 1958 Geneva Convention on the High Seas stated expressly that its rules were in the main in conformity with existing non-conventional law. The same was not said in the preamble of the Geneva Convention on the Territorial Sea and the Contiguous Zone, but this Convention has also played an important role as an indication of existing general rules. The principle that a conventional rule can be adopted by subsequent state practice and thus become applicable to states that do not ratify the convention was accepted by the International Court in the 1969 North Sea Continental Shelf Cases [10]. But the Court found that the so-called "median line/special circumstances rule" had not become binding in this manner as there was not a sufficiently uniform practice based on an opinio juris sive necessitatis [11].

In the international law of fisheries, it is of particular relevance that the system of 200-mile economic zones or special fishery zones was incorporated very quickly into state practice even before the text of the Convention had been formally adopted by the Conference. Also there is a great deal of practice concerning the right to fish within the new 200-mile zones, although this practice is not uniform and does not in all cases correspond to what has been provided in the text of the Convention. It may, therefore, be difficult to determine at any given moment the general rule on the extent of coastal state jurisdiction and on the right to fish within coastal state waters.

In particular, it must be pointed out that one cannot reasonably argue that all these rules set forth in the Convention on the right to fish, with all their details and

specific aspects, are based on customary law existing prior to the Convention or even prior to the negotiating texts presented at the Conference. In some instances the national practice of states has been based not on the Convention, but on its predecessors in the form of informal negotiating texts, e.g., when extension to 200 miles took place in 1976 based on the then existing Revised Single Negotiating Text. It may happen, but cannot be foresaid with any certainty, that such states will later bring their practice in line with what have now become the provisions of the Convention.

DOMESTIC INTERESTS REGARDING RATIFICATION

There is a definite, but possibly complex, relationship between formal ratification and the acceptance of the treaty provisions in customary law. If the greater number of states in all regions choose to adhere to the Convention by ratification, this will both incite the remaining and reluctant members of the international community to follow suit and strengthen the argument that the fisheries regime of the Convention is in accordance with accepted general law. The more certain the perception of states that conventional rules correspond to general non-conventional law, the more reason they have to ratify. When the correspondence between treaty rules and general law is established, a state cannot regard itself as a loser -- as having to give up positions of importance -- if it also accepts the treaty by formal ratification.

However, the argument that a treaty corresponds to general international law may also be counter-productive in this regard. If the treaty is already being practiced as general customary law, there is not necessarily anything to gain by ratification. The rules are being followed anyway. Particularly on the domestic level, it may be an argument against ratification that some of the treaty's provisions correspond to general international law while others do not. With respect to the new law on fisheries established by the 200-mile zones, this factor may turn out to be of decisive importance at least in most parts of the world. The 200-mile limit as such may be considered as generally accepted in practice, which to a great extent was true even prior to the formal adoption of the Convention. But it may be argued, rightly or wrongly, that the specific provisions on the rights of other states to fish do not have the same character of general law.

The dangers inherent in such a selective policy -- an *a la carte* approach -- should be obvious to everyone. But that does not mean that we can overlook the possibility that such policies will be followed, by at least some states in the future.

THE "PACKAGE DEAL" ARGUMENT AS PART OF GENERAL INTERNATIONAL LAW

As far as the Convention is concerned, the feature of indivisibility is apparent: no reservation is permitted to the Convention. The provisions were worked out over a large number

of years, going back to the days of the Seabed Committee and through the entire existence of UNCLOS III, with the aim of arriving at one general package acceptable to all participating states, or at least to a sufficient majority. The results arrived at in one part or in regard to any one single article, and the concessions given, have been contingent upon the results to be arrived at, and the ensuing concessions, in relation to other parts and articles. Consensus on item A has, directly or indirectly, been connected to a similar consensus on items B, C and so forth.

An interesting and extremely important question is whether, and to what extent, this principle of the so-called "package-deal" can also be considered as part of the general international law.

First of all, it should be observed that the term "customary" international law may be somewhat too narrow. The question does not relate only to customary law in the sense of rules adopted by state practice over a period of time in accordance with a more or less clear-cut opinio juris. We are here also faced with the evolution of new legal concepts and a new legal order through the quasi-legislative functions of the negotiations at the Conference combined with the decision-making of individual states. To use the language of the International Court in its 1974 judgements: the question must be considered what rules of law have "crystallized," or will "crystallize" in a relatively short period of time, on the basis of the consensus or near-agreements arrived at through the negotiations at the Conference [12]. International law consists not only of treaties and customary law; other sources may be also relevant as the foundation for rules of law, including "general principles of law" as mentioned in article 38 of the Statute of the Court. Decisions by international conferences, treaties not ratified or even not adopted at the relevant conference, and proposals put forward can also play a role in ascertaining the content of general international law. This is borne out by the International Court's jurisprudence, in particular in the two cases just mentioned [13].

The concept of the "package deal," and thereby the inseparability of the different provisions of the Convention, was indeed at the root of the results arrived at UNCLOS III. What remains to be seen, however, is the extent to which that concept will also be regarded as part of general international law, applicable in the period pending ratification and entry into force and to non-parties thereafter.

It may be a persuasive argument that the established "package" of the Conference entailed a system of rights and obligations which are inseparable, and that this "package deal" concept is therefore also part of the customary law -- or the law based on "general principles" or general "consensus" or "near-agreement" or whatever -- established in conformity with the ideas of the Conference and in the wake of the different negotiating texts produced by the Conference. Accordingly, one cannot reap the benefits of the new legal developments without

accepting the corresponding obligations. In particular, this view may turn out to be the correct one as regards the link between certain major features of the Convention within specific fields, such as the relationship between the sovereign rights over biological resources within 200 miles and the obligation to make surplus fisheries available to foreign states.

As demonstrated by these obervations, there may indeed be two different versions of the "package deal" argument, both of which may be regarded as plausible elements of general law. There may also be intermediate modalities.

The more far-reaching version is that all elements of the Convention are inseparably linked together. In consequence, no part and no rule of the Convention can be invoked by any state unless that state has ratified the Convention and thereby contributed to its entry into force or is, at least, willing to respect the Convention in its entirety. For instance, a coastal state would have no right to establish a 200-mile economic zone or fishery zone unless that state is at the same time willing to accept all obligations of the Convention, including those of Part XI on the rights of the international community and the Authority over the international sea-bed area. Furthermore, this general "package deal" argument would also include the more specific, detailed or contractual provisions of the Convention, as opposed to its general principles and basic concepts. In this version the "package deal" concept may be regarded by some as a rather tall order.

The second and more limited version of the argument is that a state cannot apply provisions that are favorable to it unless it respects the main obligations and applies the main principles which are more or less directly connected to the matter at hand. For example, a coastal state cannot invoke the system of a 200-mile limit unless that state respects the main obligations to give access to foreign fishing; similarly, it cannot invoke rights of sovereignty over a strait unless it respects the obligation to allow transit passage through straits and archipelagic waters.

In this latter version, the "package deal" concept may be considered as part of the general law in regard to the major features of the Convention and the quid pro quo's of UNCLOS III, even if the detailed provisions of different articles and the specific contractual and institutional provisions are not being regarded as generally binding on non-parties.

It goes without saying that a state desiring to apply a system different from that of the Convention would be in a stronger position if it based its position on the law existing prior to UNCLOS III than if it invoked certain provisions of the Convention in its favor without accepting the obligations and burdens imposed by those provisions. A state claiming the benefit of a 12-mile territorial sea -- which could be regarded as accepted under general law irrespective of the deliberations at the Conference -- would probably be in a more secure legal position than a state invoking the perhaps more novel and more controversial concept of archipelagic waters without respecting

the principles of archipelagic sea-lanes passage. However, even in relation to the powers of coastal states under the law prior to the Conference and the Convention, the situation may now be different from that existing at an earlier stage. In particular, it may be argued that the newly established consensus or near-agreement has removed the foundations for earlier concepts regarding the general law on coastal state rights versus the rights of the international community.

PARTICULAR ELEMENTS OF THE CONVENTION

In this short presentation it is impossible to try to highlight anything but a very few of the large number of important issues within the mandate of the Second Committee that have been dealt with by the Conference and the Convention.

With respect to the territorial sea, the fixing of a maximum limit of 12 miles may be the most important feature. It may be regarded as significant in two respects.

First of all, the Convention implies a general recognition of the right to extend the territorial sea up to 12 miles. This brings to an end the age-old controversy between the Western powers' claim to the effect that 3 miles is the general maximum, albeit with certain exceptions as recognized, inter alia, by the United Kingdom in regard to Norway, and the countries claiming 12 nautical miles. It is well-knowm that the Soviet Union has for long been the most traditional and the most prominent example of the latter group; it has a 12-mile limit going back to 1921, which until recently was regarded by some as an infringement upon the freedom of the high seas. Non-ratification of the Convention means that the United States at the present time may continue to maintain its view in principle that 3 miles is the maximum. This must be taken as a fact, but it seems that the Convention as an important expression of the views of the international community, at least on a de lege ferenda basis, will contribute to the acceptance of the 12-mile line as valid under contemporary law. Neither international tribunal nor the international community in general can overlook the fact that the states participating in the Conference, and in particular the two so-called superpowers, have managed to reach a common understanding and to strike a balance between the interests of coastal states and the navigational interests of the world community in general.

Secondly, and probably even more important, there is the other side of the acceptance of 12 miles as the maximum limit. The Convention also signifies that the general community has not found broader claims to be compatible with a possible and reasonable compromise between coastal and non-coastal interests. This may be considered as important in establishing the content of international law -- with or without formal ratification. In this connection the Convention may even be regarded as an important contribution to world peace in general, lessening the potential of future conflict between states.

The regimes of passage through straits and archipelagic waters may very well prove to be the most important testing grounds for the new order of the international law of the sea. Personally, I can very well remember when the concepts of "transit passage" through straits used for international navigation and of "archipelagic sea-lanes passage" were introduced into the discussions concerning the new Convention to be elaborated and eventually adopted at the Conference. It may be tempting to conclude that, as the concepts are novel, so is the substance of the provisions which have been worked out. Consequently, here we would not be faced with elements of customary or general law to be invoked by non-parties to the 1982 Convention.

But such a conclusion is not obvious. First, it must be observed that a conventional rule can be adopted by states in a very short period of time and become generally binding as part of more or less "instant" customary law. As stated by the International Court in the 1969 North Sea Continental Shelf Cases, such a process is perfectly possible [14]. Second, we must here consider the weight to be given to the Conference texts as such, and in particular the Convention, as expressions of the general consensus of the international community. This represents an additional element, an additional source of law, to be taken into account in the evaluation of the existing legal situation, a situation that is not the same as that which existed prior to UNCLOS III.

This difficult issue of the legal impact of the Convention, and of the possible practice in accordance therewith, must be considered against the background of the views that are possible or plausible in relation to the earlier legal situation. In short, we have three possible positions concerning passage rights through international straits.

One position is that represented by the traditional concept of "innocent passage" applicable in the territorial sea in general. Second, there is much to commend the position that even under traditional law there exists a stronger right of passage in straits used for international navigation than that established by the general rules of innocent passage. In particular, one may cite the judgement of the International Court in 1949 in the Corfu Channel Case [15]. A special rule is also found in article 16, paragraph 4 of the Geneva Convention on the Territorial Sea and the Contiguous Zone. The third position would regard the 1982 Convention and its provisions on transit passage as a separate norm, or system of norms, for straits under international law.

Admittedly, the 1958 Geneva Convention speaks about the rights to use international straits under the general heading of innocent passage. At first glance this seems to contradict the concept of wider rights for international navigation that are suggested by the regime of "transit passage." However, it must be noted that we are facing here only a specific difference, namely that between the third position of transit passage and the second position that the traditional rules on straits used

for international navigation afford somewhat stronger rights than those accorded in the territorial sea in general. Even while the 1982 Convention is not in force, and thereafter vis-a-vis non-parties, there may be some merit in the contention that UNCLOS III and the 1982 Convention, as expressions of the general views of the international community, may have a certain law-creating effect, thus closing the gap between the second and the third positions.

The basis in traditional law for the concept of archipelagic sea-lanes passage may seem even weaker. But it might be possible here to apply an analogy with the rules on transit passage in straits, as the two concepts are closely related and are derived from similar considerations.

Of course, ratification of the Convention by a sufficient number of relevant states would serve to remove the doubts that will otherwise continue to exist on these highly complex issues.

The Convention's significance should also be emphasized in that it recognizes the concepts of archipelagic baselines and the regime of archipelagic waters applicable therein, thus removing yet another source of conflict.

As already mentioned, the so-called exclusive economic zone of 200 nautical miles or the more limited 200-mile fishery zone must be at the center of attention when taking stock of the results of the UNCLOS III deliberations and of state practice in connection with the Conference. The 200-mile zone will probably go down in history as one of the two major new legal norms created by the Conference and by the Convention -- the other one being the principle of the "common heritage of mankind" relating to the international sea-bed area beyond the limits of national jurisdiction. Acceptance of the Convention as such will mean that we will have a clear basis for coastal states' rights and obligations and for the rights and duties of other states. But it must be remembered that in some respects the Convention gives only the basis and the framework for further regulation, in particular as regards the conservation of living resources and the future regulation of foreign access to part of the resources found within the EEZ.

As for non-conventional law on the 200-mile zones, the situation may in part be more uncertain, although there is much state practice. Personally, I would regard the right to a 200-mile zone for all coastal states in respect of fisheries to rest on firm ground as a result of existing state practice.

What I have just said should perhaps be qualified by the observation that there is still no unanimity as to the existence of a sufficient legal basis for coastal state jurisdiction under general, non-conventional law. Although we have a large volume of state practice, it might still, at least from a theoretical viewpoint, be regarded as provisional or as based on bilateral arrangements or recognition in areas that are truly high seas even in matters of resources, etc. Personally, I do not think that such a position -- according to which acceptance of the Convention by all interested states would be the only viable legal basis for coastal states' rights to the 200-mile zone --

is any longer a realistic one in view of the events which have taken place in recent years. But it should be mentioned for the sake of completeness since it may still create some uncertainty as to the very foundation of coastal state rights. However, as long as the Convention is not accepted and brought into force, the main uncertainty in the field of living resources will be found in respect of the obligations of coastal states, and in particular in regard to the obligation to give access to the fishing vessels of foreign states. Doubts may arise as to whether there is any legal obligation whatsoever and as to the conditions and criteria for such access.

In regard to the resources of the sea-bed and the subsoil, the situation is clear enough as long as one considers the areas that are part of the continental shelf proper, i.e. areas that are part of the natural prolongation of the land domain. Greater doubts may arise concerning sea-bed and subsoil resources within the 200-mile limit where there is no continental shelf on the basis of geological or geographical criteria. Uncertainty may also arise concerning what may be termed the "third element" of coastal state rights falling within the Convention's "economic zone package," i.e., those elements which do not directly concern the living and the non-living resources of the sea-bed, the subsoil and the superjacent waters. The very complexity of the Convention's rules concerning matters such as artificial islands, installations and structures, preservation of the marine environment, and scientific research may make it more difficult to establish their existence as rules of general international law than is the case with respect to rights to resources. We also lack the same degree of general state practice with regard to this "third element" of the package.

As for the general, non-conventional rights of foreign states in relation to navigation and overflight -- and other traditional high seas freedoms not swallowed up by the new coastal state powers -- we are probably again on more firm ground. There is no basis here for rules which are at variance with those of the Convention. It may be observed, however, that some uncertainties may arise in the future insofar as certain forms of exercise of the traditional high seas freedoms may interfere with the exploitation and management of resources of the 200-mile zone by the coastal state [16].

With respect to the continental shelf, the Convention is significant in that it provides clear legal title to the coastal state in regard to its rights over the continental margin throughout the entire natural prolongation. It is also significant in that it limits the extension of coastal state rights and provides for a demarcation in regard to the international seabed area. Furthermore, the Convention gives coastal states rights in accordance with the continental shelf regime out to the limit of 200 miles in cases where there is no natural prolongation -- something which may be doubtful under customary law. As for revenue sharing in shelf areas beyond the 200-mile limit, we are faced with a rule with such contractual

and institutional features that it may be difficult to regard it as part of general law existing apart from the Convention.

The provisions on the international high seas are in general a codification or restatement of principles hitherto applied on the basis of customary law as laid down in the 1958 Geneva Convention on the High Seas. This is an extremely important part of the law of the sea and it applies -- as part of general international law -- in the economic zones or fishery zones seaward of the 12-mile limit (or from a narrower limit if a coastal state has a smaller territorial sea).

As they now stand after last-minute compromises, articles 74 and 83 on delimitation between adjacent and opposite states do not contain any substantive rule. There is only a reference to the applicable sources of law in accordance with article 38 of the ICJ Statute, and to the object of reaching an equitable solution. There may be a certain ambiguity in relation to article 6 of the 1958 Geneva Convention on the Continental Shelf, but there seems to be no occasion to apply article 311 of the new Convention in this connection, as there is no conflict between the provisions of the Geneva Convention and those of articles 74 and 83. According to article 6 of the Geneva Convention, the equidistance or median line is applicable, but only insofar as another boundary line is not "justified" by special circumstances. It seems that the term "justified" is closely connected to the objective set forth in the 1982 Convention, namely that of an "equitable" solution. The terms "justified" and "equitable" appear to convey essentially the same idea, so there is no occasion to set the Geneva Convention aside because of the priority rule laid down in article 311 [17]. And by their very wording the articles 74 and 83 do include a reference to applicable treaties as relevant sources of law, including the Geneva Convention.

A specific, but rather important, issue is addressed by article 121 concerning islands. The establishment of 200-mile zones, and the application of the continental shelf regime, around small islands -- and even lesser geographical features, falling under terms such as sand cays, islets or rocks -- may have implications for vast sea areas. According to paragraph 3 of article 121, the rights to 200-mile zones or continental shelves do not apply in respect of "rocks" which cannot sustain human habitation or economic life of their own. Regardless of the ambiguities or uncertainties which might be caused by this provision, it should be observed that the Convention is significant in removing some of the problems which might otherwise exist and which will continue to exist under customary law. In situations governed only by general international law, one will be faced with arguments going in both directions. It may be argued that even in cases clearly falling under the term of "islands" rather than "rocks," there is no basis in general international law for creating continental shelf or economic zone rights. On the other hand, one may be faced with claims of coastal state rights under general international law in regard to "rocks" excluded under article 121, paragraph 3.

CONCLUDING REMARKS

In conclusion, it should again be stated that the Convention presents us with the results of an extremely important effort on the international level. We have here an immense achievement in the form of law-making by the international community. It has already had a great impact and will continue to play an important role in regard to the law of the sea and international relations in general, with or without the formal processes of ratification and entry into force. Even if viewed from the perspective of the Second Committee alone, the Convention represents, in my humble submission, perhaps by far the most important and successful legislative effort ever carried out on the international level by a very large number of countries, including those that only recently took their place as active and equal members of the international community.

This fact must never be overshadowed by some disappointments encountered in the later stages of the Conference which prevented the acceptance of the entire system of rules by consensus among all participating states. The particular experiences regarding Part XI and the degree of uncertainty which still continues to exist regarding other matters, including several important issues falling within the competence of the Second Committee, diminish appreciation of the very large degree of success achieved by the Conference. There is a broad measure of acceptance, in fact. It exists in regard to the codification as well as the progressive development of the international law of the sea and covers a host of highly complex and controversial issues. Without in any way underrating the importance of ratification and entry into force -- and the further clarification of the legal situation which is thereby to be obtained -- I fully endorse the view that signature at Montego Bay was the "crowning event." Even without an additional measure of success, the important contribution of the Conference and the Convention to the new law of the sea will still be apparent.

NOTES

1. "The Law of the Sea Conference - Success or Failure?" Environment Policy and Law, 1977, p. 3.
2. See note 1.
3. United Nations Conference on the Law of the Sea, Official Records, Vol. II - Plenary Meetings, 1958, p. 78.
4. See on this agreement C.A. Fleischer, "Norway's Policy on Fisheries 1958-1964", in: Developments in the Law of the Sea 1958-1964, ICLQ, Supp. 1965, p. 97 et seq.
5. Ibid., p. 106 et seq with notes 26-30.
6. ICJ Rep. 1974, p. 3 and p. 175.
7. See notes 9 and 12.
8. See note 6.

9. See in particular the acceptance by the Court of a rule on preferential rights for the coastal state beyond the 12-mile limit, accepted as part of the ratio decidendi in the judgements on the basis of, inter alia, a 1958 resolution and proposals at the 1960 conference (UNCLOS I and II); see ICJ Rep. 1974, p. 3 and p. 175.
10. ICJ Rep. 1969, p. 3.
11. Ibid., p. 43 et seq.
12. See the dicta given in ICJ Rep. 1974, p. 3, concerning the legal status of the 12-mile fishery zone and also the notion of preferential rights: "However, after that Conference the law evolved through the practice of States on the basis of the debates and near-agreements at the Conference. Two concepts have crystallized as customary law in recent years arising out of the general consensus revealed at that Conference. The first is the concept of the fishery zone, the area in which a State may claim exclusive fishery jurisdiction independently of its territorial sea; the extension of that fishery zone up to a 12-mile limit from the baselines appears now to be generally accepted. The second is the concept of preferential rights of fishing in adjacent waters in favor of the coastal State in a situation of special dependence on its coastal fisheries, this preference operating in regard to other States concerned in the exploitation of the same fisheries, and to be implemented in the way indicated in paragraph 57 below."
13. See notes 9 and 12.
14. ICJ Rep. 1969, p. 3.
15. ICJ Rep. 1949, p. 4.
16. See with regard to the particular item of artificial installations and structures, arts. 60 and 80 of the Convention; with regard to the laying and maintenance of submarine pipelines and the exercise of the rights of the coastal states in respect of the sea-bed and subsoil, art. 79.
17. The relationship between the formula of art. 6 of the Geneva Convention and that of "equitable principles" applicable towards non-parties (to the Geneva Convention) according to ICJ Rep. 1969, p. 4 (and ICJ Rep. 1982, p. 18) was discussed in the 1977 Anglo-French Arbitration concerning delimitation in the English Channel, etc., UNRIAA XVIII, p. 3 et seq. It should in this connection be observed that arts. 74 and 83 of the 1982 Convention do not contain any of the competing formulae in regard to the substantive rules -- such as that of "equitable principles" -- but merely lay down the objective of an "equitable solution".

THE SIGNIFICANCE OF THE 1982 CONVENTION ON THE LAW OF THE SEA FOR THE PROTECTION OF THE MARINE ENVIRONMENT AND THE PROMOTION OF MARINE SCIENCE AND TECHNOLOGY -- A PAPER ON THIRD COMMITTEE ISSUES

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INTRODUCTION

The overall significance of the 1982 Convention on the Law of the Sea is to be assessed, first of all, by the impact of the Convention on the establishment of a comprehensive legal framework for international cooperation in the exploration, exploitation, management and preservation of the world ocean and its resources. As stated in the Preamble, the Convention has been inspired "by the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea" and thus contribute "to the maintenance of peace, justice and progress for all peoples of the world."

The comprehensive character of the new Convention is perhaps one of its most important features. For the first time in the history of international law, an international treaty of such magnitude and widespread international recognition has attempted to draw together the basic components of the regime of ocean space in a manner that is universal in its scope and geographical application. The fundamental objective of this regime is the achievement of optimum coordination and harmony among the multifarious uses of the marine environment and the protection and preservation of its natural resources.

The international significance of the 1982 Convention also must be appraised in light of its important contribution to the codification and progressive development of international law and particularly the law of the sea. The Convention reflects the endeavors of the international community of states to reaffirm certain basic rules of existing law and to respond, to the extent possible, to the newly emerging and pressing economic, political and ecological requirements of international reality. Thus, the 1982 Convention should be assessed in the light of the international effort to establish a new international economic order and to meet the challenges of new modern technology, with its present and future economic advantages and ecological risks.

The provisions of the 1982 Convention reflect a compromise solution on a significant number of critical issues which the previous United Nations Conferences on the Law of the Sea in 1958 and 1960 failed to resolve or avoided altogether. The earlier deficiencies and lacunae related, inter alia, to the maximum breadth of the territorial sea; the outer limits of the continental shelf; the large-scale exploration, exploitation and management of ocean resources; the protection and preservation

of the marine environment; the universal recognition of shared interests in navigation and oceanic research; international cooperation in the field of marine science and technology; and the procedural and institutional arrangements for the settlement of disputes in regard to maritime matters. The new Convention has endeavoured to provide the best attainable resolution of these complex problems through mutual accommodation between opposing national interests and priorities.

The adoption of such a comprehensive Convention on the Law of the Sea was the culmination of long and arduous negotiations on all major problems of the law of the sea. All issues relating to the multiple uses of the seas and their implications addressed by the Convention are intrinsically linked.

Some of the most important components of this overall "package" of interrelated issues are those assigned to the Third Committee of the Conference. The subjects within the terms of reference of this Committee were: protection and preservation of the marine environment, marine scientific research, and development and transfer of marine technology. They constitute three parts of the Convention: Part XII - Protection and Preservation of the Marine Environment, Part XIII - Marine Scientific Research, and Part XIV - Development and Transfer of Marine Technology. These three parts consist of 87 articles and, together with a number of provisions on the same subject matter in other parts of the Convention, represent about 40 to 50 percent of the total number of provisions of the Convention.

The three categories of issues within the purview of the Third Committee are closely connected to the other main parts of the Convention relating to the regimes of the various maritime areas under the sovereignty or jurisdiction of the coastal state, such as the territorial sea, the contiguous zone, archipelagic waters, straits used for international navigation, the exclusive economic zone and the continental shelf. They also are closely connected with the parts of the Convention relating to the regime of areas outside national jurisdiction, such as the high seas and the international sea-bed area. These issues should also be considered in relation to the regimes governing the multiple uses of the seas for navigation and communications, fisheries, and the exploitation and management of the mineral and other natural resources of the sea. It is obvious, on the one hand, that these uses inevitably affect the marine environment and very often have adverse consequences. On the other hand, the efficient and rational uses of the seas and their resources in various areas of ocean space rely extensively on the proper utilization of scientific data and advanced technology.

Furthermore, it should be pointed out that there is a close relationship inter se between the protection and preservation of the marine environment and marine science and its application. Hence, it is obvious that the measures to prevent, reduce and control marine pollution require advanced scientific methods and sophisticated technology. The global dimensions of the efforts in the field of the protection and preservation of the marine

environment call for the establishment of viable international legal regimes for the conduct of marine scientific research and broad international cooperation aiming at the acquisition and dissemination of scientific knowledge and the development of the necessary technological infrastructure. It therefore can be maintained that the common ground of the three categories of subject matters within the terms of reference of the Third Committee were their global dimensions and significance, as well as their close interconnection with both the advantages and hazards resulting from the great technological advancements of our time. Another common feature between the rules governing the protection of the marine environment and the promotion of marine science and technology is their relevance not only to present needs but their orientation toward the challenges of the future. Therefore, most of the provisions in Parts XII, XIII, and XIV -- while codifying existing customary and conventional law as evidenced by state practice -- basically form a significant body of newly emerging rules reflecting the progressive development of the law of the sea.

THE PROTECTION AND PRESERVATION OF THE MARINE ENVIRONMENT: ONE OF THE MAJOR ASPECTS OF THE 1982 CONVENTION

The Concept of Protection and Preservation of the Marine Environment and its Significance

The negotiation of the provisions on the protection and preservation of the marine environment was influenced by some new perceptions regarding the global dimensions and significance of international action in this field. Specific measures to prevent, reduce and control marine pollution were viewed as part of a greater cooperative effort to check the alarming trend towards rapid and serious degradation of the marine environment. It was obvious that a viable international regime for the protection and preservation of the marine environment would require a comprehensive approach to the codification and progressive development of international law, namely one that established general rules that might serve as a basis for further, more specific, regional or global agreements. This concept is expressed in article 237 of the Convention, which specifies that the provisions of Part XII are without prejudice to the special obligations assumed by states under international agreements prior to, or following, the new Convention, provided that these are consistent with the general principles and objectives of the Convention. Thus, the 1982 Convention is assigned the role of a basic and coordinating international legal instrument in respect to all other agreements dealing with particular sources of marine pollution or applicable to specific areas of ocean space.

Another important aspect of the comprehensive approach to the protection and preservation of the marine environment in the 1982 Convention is the fact that it provides for all-embracing rules governing legislative and enforcement measures with respect to all major sources of marine pollution, whether

emanating from land; through or from the atmosphere; from navigation; from sea-bed exploration and exploitation; from construction and operation of artificial islands, installations and structures; from marine scientific research; from dumping, i.e., disposal of wastes or other matter at sea; or from the use of technologies or the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment which may cause significant and harmful changes thereto. The last case refers to the experimental or commercial use of modern technologies for the exploration and exploitation of natural resources or the introduction into the marine environment of species, alien or new, which may upset the normal functioning of the ecological system and cause adverse effects to the marine environment.

This broad concept of the regime for protection and preservation of the marine environment is comprehensively applied to the various jurisdictional regimes, particularly in the maritime spaces under the jurisdiction of the coastal state. In this respect the main effort during the negotiating and codification process was to seek to accommodate national legislation and enforcement measures, on the one hand, with international rules, standards and regulations, on the other. It may also be pointed out that there were manifest trends towards the establishment of a double standard based either on economic and technological considerations or on a zonal approach with regard to national laws, regulations and enforcement measures. These trends could have led to a kind of legal dichotomy within the global system of navigation and protection of the marine environment. In this connection the Conference also had to find the best possible reconciliation of ecological concerns with the pressing demands of expanding international navigation, the magnitude of land-based pollution, and the impact of the imminent large-scale exploitation of the sea-bed and its subsoil, especially deep-sea mining.

The concept of protection and preservation of the marine environment as set forth in Part XII of the Convention goes much further than the traditional notion of measures to combat pollution once it has already occurred. It is not confined to measures to reduce or control marine pollution, but to prevent its occurrence -- if possible -- by applying national and international measures regarding the various sources of pollution, higher standards regarding the design, construction and manning of vessels and installations, and other safety measures. Protection and preservation of the marine environment also includes scientific and technological methods and procedures which are designed not only to abate marine pollution or check the further deterioration of the marine environment, but also to provide the conditions for the protection and preservation of existing ecological conditions and, wherever possible, to promote conservation measures which may lead to certain improvements in one or another part of the ecological system.

All provisions of the Convention dealing with the quality of the marine environment refer to the protection and preservation of the marine environment, except for article 145. That article refers only to the protection of the marine environment, and omits the reference to preservation, since it was assumed that deep-sea mining activities in the international sea-bed area by definition could not purport to preserve the mineral resources which are the object of exploitation and management. However, the same article provides that the Authority must adopt appropriate rules, regulations and procedures 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."

The broad conceptual basis of the provisions of the Convention pertaining to the protection and preservation of the marine environment is also evident in the comprehensive scope of the appropriate legislative, administrative and technical rules, standards and procedures which are employed for the prevention or control of marine pollution. In this connection, yet another important feature of the regime may be added, namely, the recourse to various measures of a preventive and punitive character, including physical inspection of a vessel in connection with an alleged violation of the rules; institution of proceedings, which may include detaining the vessel or requiring information from it; or imposition of monetary penalties.

The multifaceted and comprehensive concept of the protection and preservation of the marine environment underlies the general principles governing the activities of states in this field, the establishment of national legislation and international rules and standards, the scope of the enforcement measures, and the other provisions of the Convention relating to the protection and preservation of the marine environment. This concept may be considered as one of the codification achievements of the new Convention, providing a broad legal framework for international action for the protection and preservation of the marine environment.

GENERAL PRINCIPLES REGARDING THE PROTECTION AND PRESERVATION OF THE MARINE ENVIRONMENT

The general principles enunciating the basic rights and obligations of states in respect of the protection and preservation of the marine environment are contained in articles 192 to 206 and in article 237 of the Convention. Article 192 sets forth the general obligation of states to protect and preserve the marine environment. This rule was inspired by the 1972 Stockholm Declaration on the Human Environment and more specifically by its principle 7. It is the first time that a legal rule of this kind has been incorporated in a multilateral treaty of a universal character.

There is no comparable provision in the 1958 Geneva Conventions on the Law of the Sea nor in any other international

treaty concluded thereafter. Articles 24 and 25 of the 1958 Convention on the High Seas and article 5, paragraph 7 of the 1958 Convention on the Continental Shelf contain some references to the prevention of marine pollution resulting from the discharge of oil from ships or pipelines or from the exploitation and exploration of the sea-bed and its subsoil, to the dumping of radioactive waste in the seas or the airspace above, and to the protection of the living resources of the sea from harmful agents resulting from the exploitation of the continental shelf. This fragmentary approach was inherent in the perceptions prevailing in 1958 of the vulnerability of the marine environment and reflected the priorities assigned at the time to environmental protection measures. Its scope was basically confined to oil pollution and radioactive contamination of the marine environment in areas averaging about 50 miles off the coastline. These legislative and enforcement measures were not adequate to the increasing ecological risks.

Therefore, the establishment of the general legal obligation of all states to protect and preserve the marine environment should be considered as an important step in the codification and progressive development of the law of the sea. The general obligation under article 192 of the Convention is augmented by the more specific measures to be undertaken by states -- individually or jointly -- to prevent, reduce and control pollution of the marine environment from any given source. Furthermore, in conformity with the general obligation, states are bound not to transfer damage or hazards from one area to another, directly or indirectly, or to transform one type of pollution into another. Other important implications of the general obligation to protect and preserve the marine environment are elaborated in the articles relating to international cooperation and technical assistance in various fields of research, training of personnel, monitoring of the risks or effects of pollution, and the assessment of acquired data. Thus, article 192 -- when taken in conjuction with related provisions -- should not be considered as a general exhortation without substantive legal weight, but rather as a general principle entailing certain legal obligations.

The general principles governing the activities of states in respect of the protection and preservation of the marine environment emphasize the practical significance of international cooperation on a regional or global basis covering all major areas of such activities. In this connection, a special role is assigned to international organizations and institutions involved in environmental and maritime matters. In this way, the legal framework could acquire its most extensive scope both in terms of subject-matter and participating entities.

LEGISLATIVE AND ENFORCEMENT MEASURES RELATING TO THE PROTECTION AND PRESERVATION OF THE MARINE ENVIRONMENT

Most of the provisions of the Convention in Part XII are devoted to the establishment of international rules and national legislation with respect to sources of pollution (articles 207-212), enforcement measures (articles 213-222), and safeguards relating to the exercise of enforcement powers (articles 223-233).

It should be recalled that the legislative and standard-setting provisions of the Convention in relation to the protection and preservation of the marine environment are based on a comprehensive approach regarding the sources of pollution. Consequently, they apply to all major sources of pollution listed in article 194 of the Convention. Specific international rules and the corresponding national legislation are then addressed in the context of specific sources of pollution.

In the case of land-based pollution, it is obvious that national laws and regulations have a primary role, the main requirement being that such laws and regulations should take into consideration internationally agreed rules, standards and recommended practices and procedures. States are also called upon to harmonize their policies in this connection at the regional level and to try to establish, through the competent international organizations or diplomatic conferences, global and regional rules designed to minimize the release of pollutants into the marine environment.

Sea-bed activities in areas under coastal state jurisdiction, i.e., with the exclusive economic zone and on the continental shelf, are another important source of pollution that poses increasing ecological risks in the near future. In respect of these activities, states are also under the obligation to adopt laws and regulations to prevent, reduce and control pollution of the marine environment arising from, or in connection with, the exploration or exploitation of the sea-bed and its subsoil and the use of artificial islands, installations or structures under their jurisdiction. It is provided that such laws, regulations and measures may not be less effective than international rules, standards and recommended practices and procedures. Because such international rules and regulations are still not established on a large scale, the provision requiring states to harmonize their policies in this field and to establish international global or regional rules and standards is of great practical significance.

Since all activities in the international sea-bed area are governed by the special regime provided for in Part XI of the Convention, the international rules, standards and recommended practices and procedures regarding the pollution of the marine environment arising from "activities in the Area" must be adopted by the Authority. However, states are also under the obligation to adopt laws and regulations to prevent, reduce and control pollution of the marine environment from activities in

the "Area" undertaken by vessels, installations, structures or other devices flying their flag or of their registry or operating under their authority.

Pursuant to its comprehensive approach to all sources of marine pollution, the Convention also provides for the obligation of states to adopt appropriate laws and regulations to prevent, reduce and control pollution of the marine environment by dumping. The scope and legal implications of the provisions on dumping are in conformity with the 1972 London Convention on Dumping. States, acting through competent international organizations or diplomatic conferences, are under an obligation to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution by dumping. It is further provided that dumping within the areas under the jurisdiction of a coastal state shall not be carried out without the express consent or approval of that coastal state. That state has the exclusive right to permit, regulate and control such dumping after due consideration of the matter with other neighboring states which may be adversely affected by the dumping.

The 1982 Convention establishes an elaborate set of rules relating to pollution from vessels. In conformity with its comprehensive approach, these provisions specify the rights and duties of the flag state, the port state where a foreign vessel is admitted, and the coastal state within its territorial sea and exclusive economic zone to adopt and enforce national and international rules and regulations against pollution of the marine environment from vessels, including the establishment of routing systems designed to minimize the occurrence of accidents which may cause pollution.

The Convention also provides that states are under an obligation to adopt national laws and regulations, and must undertake to establish international rules and standards to prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to the airspace under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry.

These rights and obligations of states to adopt national laws and regulations and establish international rules, standards and practices and procedures entail corresponding rights and duties to undertake appropriate enforcement measures. The provisions of the Convention regarding enforcement measures, particularly in respect of vessel source pollution, are marked by their detailed character. The comprehensive character of these rules is evident both <u>ratione personae</u> and <u>ratione materiae</u>. They provide for specific measures to be undertaken by the flag state, the port state and the coastal state with regard to all sources of pollution. In conformity with these rules, the flag state is under obligation to ensure the compliance by vessels flying its flag, or of its registry, with the applicable international rules and standards, established through the competent international organizations, such as IMO, or through general diplomatic conferences. In this respect, it must be

noted that there are already a significant number of conventions, such as the 1954 London Convention on the Prevention of Pollution by Oil (with the amendments of 1962, 1969 and 1971), the 1973 London Convention on the Prevention of Pollution by Vessels, and the 1972 London Convention on Dumping, etc. The flag state is also under the obligation to ensure the seaworthiness of vessels flying its flag and to provide its vessels with certificates as evidence of the technical condition of the vessel. If a vessel commits a violation of the international rules and standards, the flag state is bound to undertake immediate investigation and, where appropriate, institute proceedings in respect of the alleged violation, including the imposition of sanctions as provided for by its national laws and regulations.

The port state also is entitled to undertake enforcement measures in respect of a foreign vessel which is voluntarily within its port or at an offshore terminal. These enforcement measures include investigations and, where appropriate, the institution of proceedings in respect of a foreign vessel which has committed discharges in violation of the applicable international rules and regulations within or beyond the territorial sea or the exclusive economic zone of another state.

The Convention contains a set of provisions relating to the enforcement measures that may be undertaken by a coastal state in respect of a foreign vessel which has violated its domestic laws and regulations or applicable international rules and standards concerning pollution from vessels, when the violation occurs within its territorial sea or exclusive economic zone. Such enforcement measures may include physical inspection, the institution of proceedings, including detention of the vessel, and monetary penalties. At the same time, the Convention provides for certain safeguards for the orderly administration of the proceedings, including the admission of evidence, the attendance at such proceedings, the safety of navigation, the avoidance of unnecessary delays and other adverse consequences, and the prompt release of vessels and crews upon the posting of reasonable bond or other financial security.

OTHER PROVISIONS RELATING TO THE PROTECTION AND PRESERVATION OF THE MARINE ENVIRONMENT

In conformity with its comprehensive character, the 1982 Convention contains other important provisions on the protection of the marine environment. Here, reference could be made to the measures which the coastal state may undertake -- pursuant to international customary and conventional law -- beyond its territorial sea in case of an actual or imminent threat of pollution as a result of a maritime casualty, such as a collision of vessels, stranding or other navigational incidents, which may cause damage to its coastline or related interests. Furthermore, there are provisions relating to the rights of coastal states to adopt special measures for the prevention, reduction and control of marine pollution from vessels in ice-

covered areas within their exclusive economic zones. The Convention also contains special provisions on responsibility and liability for damage caused by pollution of the marine environment. One of the main features of the Convention is its flexible and comprehensive system for the settlement of disputes relating to the protection and preservation of the marine environment.

It is obvious that the viability of these comprehensive rules of the Convention on the protection and preservation of the marine environment should be assessed in the course of their application once the Convention enters into force. Nevertheless, it is worth noting that these rules have already had a certain impact on the treaty practice and the national legislation of a number of states, which in itself constitutes an indication of the contribution of the Third United Nations Conference on the Law of the Sea to the promotion of a legal order conducive to the protection and preservation of the marine environment.

THE NEW INTERNATIONAL REGIME FOR THE CONDUCT OF MARINE SCIENTIFIC RESEARCH AND THE DEVELOPMENT AND TRANSFER OF MARINE TECHNOLOGY

The Significance of Marine Science and Technology within the Framework of the Convention

The conduct of marine scientific research has, for the first time in the history of the codification of the law of the sea, acquired a prominent place within the comprehensive set of legal rules constituting the new regime of the seas. This is a reflection of the ever-increasing role of oceanic science and technology in all activities relating to the uses of the seas and the exploitation of their resources. Throughout the negotiating process on the new Convention, marine science and technology problems have been considered as an important and indispensable component of the overall "package" constituting the comprehensive legal regime of the oceans.

The importance of marine scientific research and its application, including the development and transfer of technology, is evidenced by the fact that there are two parts of the Convention specially devoted to these matters, i.e., Part XIII - Marine Scientific Research, and Part XIV - Development and Transfer of Marine Technology. Out of 320 articles of the Convention, about 100 deal with the conduct of oceanic research; the use of scientific methods and means in the exploration, exploitation, conservation and management of the resources of the sea; the training of personnel in these fields; and the application of science in the protection and preservation of the marine environment. These provisions constitute a relatively complete set of general legal guidelines and model rules and principles. They form the legal regime for international cooperation in marine science and provide the basis for relevant regional, sub-regional or other international instruments in this field.

The 1982 Convention should in no way be praised as an ideal accomplishment. It is an expression of the best possible compromise which was attainable in the existing circumstances. As elsewhere, this is also evident in the provisions relating to the regime for the conduct of marine scientific research. These provisions also reflect the prevailing trends in the negotiations on the scope and content of national jurisdiction over maritime areas and the interplay between differing positions regarding shared interests in the uses of the sea and its natural resources. A general review of the Convention's approach to oceanic research and its application would reveal the impact of the new concepts and attitudes of states with regard to the conduct of marine scientific research.

THE NEW CONCEPTS UNDERLYING THE REGIME OF MARINE SCIENTIFIC RESEARCH EMERGING FROM THE NEGOTIATIONS AT THE THIRD UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA

It has generally been recognized that UNCLOS III was the first attempt to develop a more detailed set of general rules of international law governing the activities of states and international institutions in the field of oceanographic research. Precedents in the history of the codification of the law of the sea at best reveal only some sporadic efforts resulting in the adoption of isolated provisions on this matter, as embodied in a few multilateral treaties adopted prior to the 1982 Convention.

This state of customary and conventional international law was, to a great extent, an expression of the general policy in respect of marine scientific research and the application of oceanic science and technology in the uses of the seas. Marine science and technology were not considered among the major components of maritime affairs. The prevalent feature of marine scientific activities was their relatively modest scope of exploratory surveys, confined mainly to oceanographic studies of a general nature and carried out in limited areas of ocean space. In most instances, marine scientific investigations were undertaken within, or adjacent to, the territorial sea. The economic and military implications of marine science and its applications had not acquired the significance which has been attached to them particularly in the course of the last two decades.

These facts can perhaps explain the rudimentary and incomplete legal regime for the conduct of marine scientific research, the ad hoc character of the arrangements, and the informal way of obtaining consent, when required, for carrying out such activity by a foreign researcher in maritime areas under the jurisdiction of a coastal state. The situation prevailing in the past should not, however, lead to any unwarranted eulogy of the liberal nature of an otherwise fragmentary regime regulating scientific activities that were limited in scope, intensity and field of application, nor should it lead to pessimistic, and thus self-defeating,

prognostications about the impediments imposed by the new regime and its adverse effects on marine science.

It is well known that among the 73 draft articles on the law of the sea adopted by the International Law Commission in 1956 there was not a single provision relating to marine scientific research. Although during the consideration of the draft articles on the freedom of the high seas (draft article 27), reference was made to freedom of scientific research, there was no agreement to include a provision in the text. Draft article 27 stipulated that the freedom of the high seas comprised, inter alia, freedom of navigation, freedom of fishing, freedom to lay cables and pipelines, and freedom to fly over the high seas. The International Law Commission, nevertheless, pointed out in its commentary that "the list of freedoms of the high seas contained in this article is not restrictive." It was clarified further that "the Commission has merely specified four of the main freedoms (emphasis added), but it is aware that there are other freedoms, such as freedom to undertake scientific research on the high seas." As far as the freedom to explore or exploit the subsoil of the high seas was concerned, it was further explained that no specific mention was made of this freedom, because "such exploitation had not yet assumed sufficient practical importance to justify special regulation."

The fact that the freedom of marine scientific research was not explicitly listed among the freedoms of the high seas did not affect the interpretation of the International Law Commission. The overwhelming majority of states and competent international organizations have generally agreed that freedom of scientific research is one of the recognized freedoms of the high seas.

In this connection, UNCLOS III did remove the grounds for some incorrect interpretations of the scope of the freedom of the high seas, including the freedom of research, by the adoption of article 87 of the new Convention which explicitly states that freedom of the high seas "comprises, inter alia,...freedom of scientific research, subject to Parts VI and XIII," i.e., the regimes of the continental shelf and marine scientific research, respectively.

The 1982 Convention reflects the great advances in oceanic science and technology which have taken place during the last two decades. There has been a general acknowledgement of the need to update the law of the sea in order to meet adequately the new requirements brought about by the remarkable development of marine science and its application to the multiple uses of the seas and the protection and preservation of the marine environment.

The evolving process of the negotiations on the whole complex of maritime problems extended significantly the scope of matters relating to marine scientific research. Undoubtedly, the development of new law of the sea concepts with a profound effect on the legal order of the oceans in general also had a significant impact on the shaping of the new regime for the

conduct of marine scientific research. Some established rules of customary and conventional law were regarded as outdated or insufficient to meet the new economic, security and ecological perceptions of the coastal states and their growing assertions of rights over the natural resources of areas adjacent to their coasts. Also, since the very beginning of the work of the Sea-bed Committee, the principles and rules of the existing law of the sea were deemed inadequate to regulate problems of global magnitude such as the rational and equitable exploration and exploitation of the deep sea-bed beyond the limits of national jurisdiction for the benefit of mankind as a whole.

Most prominent among these new concepts was the entirely novel principle that the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction are the common heritage of mankind. This principle became one of the foundation stones of the regime for the deep sea-bed, i.e., an international area of the oceans outside national jurisdiction. The legal status of this area and its resources create a new situation in the law of the sea: no state may claim or exercise sovereign rights over the international sea-bed area or its resources, nor appropriate any part thereof. The rights pertaining to the resources of this area are to be exercised by the International Sea-bed Authority, which has the power to carry out mining operations through its Enterprise or through joint ventures with states or private persons and which also is empowered to control and coordinate all activities relating to the exploration and exploitation of deep-sea mineral resources. This new regime also bears on marine scientific research and transfer of technology. Proposals relating to the conduct of marine scientific research in the international sea-bed area were advanced as early as the initial stages of the negotiations in the Sea-bed Committee in 1968 and 1969.

Throughout the long process of negotiations the text of these proposals was modified by new elements. However, there are two essential aspects which should be singled out, namely that all states and international organizations have the right to conduct scientific research in the international sea-bed area, and that the International Seabed Authority may also carry out such research relating to the sea-bed and its resources, directly or through contracts with states, international organizations or scientific institutions.

Another new concept with noteworthy effect on the legal regime of ocean space, including the rules governing marine scientific research, emerged from the marked trend toward the expansion of the geographic and substantive scope of national jurisdiction. This trend was embraced by a large number of coastal states, constituting a highly representative group and exercising formidable pressure on deliberations in both the Sea-bed Committee and UNCLOS III. As a result of lengthy and intensive discussions and negotiations, the entirely novel notion of the exclusive economic zone obtained almost general recognition.

There were other developments reflecting the same trends: the extension of the outer limits of the continental shelf; the enlargement of the contiguous zone; the recognition of the claims of the archipelagic states to draw straight archipelagic baselines, resulting in a considerable extension of the maritime space under their sovereignty; and the acquiescence in other propositions leading to a substantial extension of the scope and content of coastal states' rights over large parts of the ocean space. Thus new areas were added to the traditional maritime zones. Most of them fall under national sovereignty and jurisdiction, while the international sea-bed area comes under a special international regime with its own institutional structure.

This new legal situation gave rise to two major repercussions for the freedom of oceanic research: first, the zonal approach to the regimes for the conduct of marine scientific research and, secondly, the considerable shrinkage of ocean space where such research can be exercised within the framework of the freedom of the high seas. The establishment of distinct regimes for scientific activities in the various parts of ocean space will inevitably affect the integrity of oceanic studies of any natural environment which cannot be compartmentalized in accordance with political considerations and legal criteria.

The legal regime of the exclusive economic zone provides for the sovereign rights of conservation and management of the natural resources of the entire environment within that zone, and with regard to all other activities for economic purposes, including the production of energy from waters, currents and winds. In addition, the coastal state has jurisdiction as provided for in the new Convention regarding the establishment and use of artificial islands, installations and structures; marine scientific research; and the protection and preservation of the marine environment.

The legal regime of the continental shelf -- including the regulation of research activities on it -- is based, in general, upon the rules established by the Geneva Convention on the Continental Shelf of 1958. However, the new definition of the continental shelf and particularly the determination of the outer edge of the continental margin under article 76 are tantamount to a sizable extension of the part of the sea-bed falling under national jurisdiction.

The total area of ocean space comprising exclusive economic zones and continental shelves contains nearly all of the proven offshore deposits of oil and natural gas, other presently exploitable minerals, and over 85 percent of the current catch of fish. The priority assigned to the use of the sea for economic purposes, which was a major policy objective of the coastal states, should not overshadow the vital importance, for them and for the international community, of the promotion of oceanic research. However, during the negotiations in UNCLOS III these two perceptions, reflecting different concerns, were seemingly contradictory. They gave rise to complex and

difficult negotiations that were of crucial importance not only to the outcome of the work of UNCLOS III on marine scientific research, but to the success of the Conference itself.

The conflicting positions were polarized on two interrelated issues bearing upon the requirements for the conduct of scientific research in the exclusive economic zone and on the continental shelf. One of them was about the need for, and feasibility of, drawing a distinction between "fundamental" or "pure" research on the one hand, and "applied" or "resource-related" research on the other. The other critical issue was about the consent of the coastal state as a mandatory requirement for research activities in the exclusive economic zone and on the continental shelf of that state. The proponents of the distinction between the two categories of research maintained that, while fundamental research should be carried out in accordance with the principle of the freedom of the high seas or with advance notification to the coastal state concerned, resource-related or applied research should be carried out only with the consent of the coastal state.

The opposing view was that there was little merit in drawing a line between pure research and research more closely identified with commercial prospecting since the end result might be to restrict research to the detriment of the international community and, in any event, it would be extremely difficult to make such distinctions because most scientific information could in reality be used for commercial or military purposes.

The prevailing reaction was to adopt a broad and comprehensive notion of marine research comprising any oceanic investigation and related activity designed to increase knowledge about the marine environment and its resources. There were some views that the real distinction should be drawn between oceanic research, whatever its aim and however it might be carried out, on the one hand, and the exploration of marine resources on the other.

The most contentious issue in the debate on marine scientific research was the problem of coastal state consent and the modalities for granting consent.

The outcome of negotiations in the Sea-bed Committee was reflected in two opposing sets of draft articles. One of them stipulated that the coastal state has the right to authorize marine scientific research in areas under national jurisdiction, while the other provided that all states, whether coastal or not, enjoy the right to undertake scientific research in national ocean space, with 30 days' advance notification if required by the coastal state. The rule of authorization derived from the principle of express prior consent of the coastal state by virtue of its sovereign rights and jurisdiction. The notification regime was derived from the principle of freedom of scientific research.

In the course of the negotiations at UNCLOS III, three main trends emerged on consent and its modalities. Most developing countries and some other states insisted on a requirement of

"explicit consent." Some West European and certain developing land-locked states were in favor of a notification regime based on the freedom of research. A group of Socialist countries advanced the idea of a qualified consent regime, requiring consent for marine scientific research related to the exploration and exploitation of the living and non-living resources of the exclusive economic zone, and advance notification for research unrelated to the exploration and exploitation of these resources. Within these main trends were proposals containing certain modifications of the basic concepts.

Intensive negotiations provided some grounds for a compromise. Accordingly, marine scientific research activities in the economic zone or on the continental shelf were to be conducted with the consent of the coastal state applied with specific exceptions. It was stipulated further that the coastal state should not withhold its consent, unless the research project bears substantially upon the exploration and exploitation of the living and non-living resources; involves drilling or the use of explosives; involves the construction, operation or use of artificial islands, installations and structures; or unduly interferes with economic activities of the coastal state.

There were also some other requirements, such as a description of the purposes and nature of the research project and the right of the coastal state to participate in the conduct of the research program and receive information on the results derived therefrom, including samples taken during investigations carried out on the continental shelf.

However, despite the efforts to reach consensus on the basis of a compromise, it was stated in a report of the Third Committee that "it became clearly apparent that the positions were moving further away from the revised single negotiating text in divergent directions, furthering the division between existing trends instead of moving to a compromise." At this critical moment of the negotiations the chairman of the Committee took the initiative to submit a "test proposal," which was an attempt at compromise taking into consideration the various concerns of different interest groups and an effort to avoid a deadlock on the subject.

The new proposal submitted by the chairman was based on the previous text. It contained in addition some new substantive elements. The proposal stated that coastal states must "normally grant their consent" and "to this end, coastal States shall establish rules and procedures ensuring that such consent will not be delayed or denied unreasonably." The new provision concerning rules and procedures was designed to provide certain guarantees against undue delays and impediments to states undertaking research activities; it was proposed as a safeguard clause to meet, to some extent, the legitimate concerns of those states. The text, as a whole, contained some ambiguities such as the determination of the objectives and character of a project which "bears upon the exploration and exploitation of

the living and non-living resources," or the interpretation of the term "normally" in the provision specifying that "coastal States shall normally grant their consent." These and other aspects were critically scrutinized; but, as was pointed out in a Report of the Third Committee to the Plenary of the Conference, the new proposal was considered by a majority of delegations as a basis for negotiations, although a number of states actively involved in oceanographic research opposed the proposal. Nevertheless, the "test proposal" by the Chairman served as a basis for the present article 246 of the Convention.

This survey of the making of the research regime highlights the critical issues engendered by new developments relating to the uses of the sea. The rules and principles embodied in the Convention regarding oceanic science and technology reflect compromise solutions on these issues achievable in the given circumstances.

General Principles of the Regime of Marine Scientific Research

The general principles governing the conduct of marine scientific research are formulated in article 240 and some other provisions of the Convention.

Article 240, paragraph (a) provides that "marine scientific research shall be conducted exclusively for peaceful purposes" (emphasis added). A similar provision is contained in article 143 which states that "marine scientific research in the Area shall be carried out exclusively for peaceful purposes..." This article reiterates one of the principles laid down in the Declaration on the Sea-bed adopted by the General Assembly in 1970. That marine scientific research must be conducted for peaceful purposes constitutes one aspect only of the more general rule on the peaceful uses of the seas provided for in article 301 of the Convention.

Another important general principle underlying the new regime of scientific research is the principle of cooperation. The duty of states to cooperate with each other was enunciated as a fundamental rule of conduct in international relations by the Declaration on Principles of International Law concerning Friendly Relations and Cooperation among States in accordance with the Charter of the United Nations. In accordance with this principle, "States have the duty to cooperate with one another, irrespective of the differences in their political, economic and social systems, in the various spheres of international relations, in order to maintain international peace and security and to promote international economic stability and security, the general welfare of nations and international cooperation free from discrimination based on such differences." One of the substantive components of the principle of cooperation is the duty of states to "conduct their international relations in the economic, social, cultural, technical and trade fields in accordance with the principles of sovereign equality and non-intervention."

These fundamental rules of international conduct are applicable to any activities relating to the oceans and the

marine environment, including marine scientific research. Part XIII of the Convention on Marine Scientific Research and Part XIV on Development and Transfer of Technology contain a considerable number of provisions on the promotion of international cooperation in oceanic science and its application. Section 3 of Part XIII (articles 242-244) and Section 2 of Part XIV (articles 270-272) are entitled "International Cooperation."

These are not the only provisions pertaining to the duty of states and competent international organizations to undertake cooperative actions in marine science and technology. In fact, the whole regime on scientific research is designed to promote international cooperation in this field. Nevertheless, it may be appropriate to single out some of the provisions dealing directly with the duty of states and international organizations to promote cooperation on an international scale. In this connection article 242 is of special relevance: it contains not only a general provision on the obligation of states and international organizations to promote international cooperation, but also the duty to provide, as appropriate, other states with a reasonable opportunity to benefit from research activities. Furthermore, articles 243 and 244 provide for international assistance and cooperative measures to create favorable conditions for the conduct of research, for the integration of the efforts of scientists, and for the exchange and dissemination of scientific data and information. There are also other provisions in various parts of the Convention on international cooperation in general or in relation to oceanic science and technology in particular.

The principle of coordination and harmony between the various uses of the sea is another general rule underlying the regime of scientific research. It is embodied in article 240, which provides that marine scientific research may not "unjustifiably interfere with other legitimate uses of the sea." The provision in article 241 that "marine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment or its resources" is also among the general rules for the conduct of oceanic research. As was pointed out, article 240 contains several general principles, such as the requirement of carrying out scientific research "with appropriate scientific methods and means" and in compliance with the relevant regulations for the protection and preservation of the marine environment.

There are some fundamental principles of general international law which are also applicable to the research regime, such as liability and responsibility for damage to the marine environment resulting from oceanic research, including damage caused by pollution arising out of it, and the peaceful settlement of disputes concerning the interpretation or application of the relevant provisions of the Convention. In addition, it should be pointed out that most of the general rules of the law of the sea relating to the exploitation, conservation, and management of marine resources; safety of

navigation; protection and preservation of the marine environment; the prevention of damage to the health of persons; and the status of installations or equipment in the marine environment, etc. are very relevant to the regime for the conduct of marine scientific research. Most of these matters are also affected by specific provisions regulating marine scientific research activities.

The general principles which were identified briefly should not be viewed as an exhaustive code for the regulation of marine scientific research. The principle of the freedom of the high seas, particularly paragraph (f) of article 87 and article 257 on the freedom of scientific research in the high seas, is also absolutely pertinent to the regime of oceanic research. Important general rules of the overall regime of scientific research are provided for in article 245 on research in the territorial sea, in articles 246 and 255 (implied consent) and related provisions concerning marine scientific research in the exclusive economic zone and on the continental shelf, and in articles 143, 144 and 256 on scientific research in the international sea-bed area.

For the first time in the history of international law the Convention sets forth, as a general principle in article 238, the right of all states and competent international organizations to conduct marine scientific research. The significance of this principle can also be illustrated by the fact that most of the provisions in Parts XIII and XIV place states and international organizations on an equal footing in the field of international cooperation. These provisions usually start with the expression, "States and competent international organizations," when defining rights and obligations, or use the expression, "States, directly or through competent international organizations..." Furthermore, there is a special provision, article 247, on marine scientific research projects undertaken by, or under the auspices of, international organizations. This is an important aspect of the regime of scientific research; it emphasizes the advantages of coordinated research efforts through projects undertaken or sponsored by international organizations. Article 278 of the Convention provides for closer cooperation among the competent international organizations themselves for "the effective discharge of their functions and responsibilities" in the field of marine science and technology.

Although most of these provisions are formulated as general principles or guidelines, their implementation could provide favorable conditions for the conduct of research and for the promotion of broad international programs.

The Practical Significance of the Provisions Relating to Marine Science and Technology for the Uses of the Seas and the Exploitation of their Natural Resources

The basic objective of the regimes of marine scientific research and the development and transfer of technology is to provide a legal framework for the acquisition of knowledge about

the marine environment and its natural resources. Scientific understanding of the characteristics and phenomena of the oceans and of their physical, geological, chemical, biological and other features would make the evaluation of oceanic processes and resources more accurate. To this end, article 243 of the Convention stipulates that states and international organizations, through bilateral and multilateral agreements, must create favorable conditions for research and "integrate the efforts of scientists in studying the essence of phenomena and processes occurrring in the marine environment and the interrelations between them."

However, it is generally admitted that the present level of scientific knowledge is quite inadequate to accomplish these tasks. Among the missions of marine science is the improvement of the possibilities for reliable predictions as to the quality of resources. Consequently, it has been emphasized that scientific investigation should precede industrial exploration, for it is obvious that without adequate scientific knowledge, oceanic science and technology would not be able to offer appropriate services in the exploration, exploitation, management and conservation of the natural resources of the sea and in the protection and preservation of the marine environment.

The provisions of the 1982 Convention attach particular importance to marine science and its application to the exploration, exploitation, management and conservation of the living and non-living resources of the marine environment. In addition to the articles in Parts XIII and XIV -- which contain a set of rules applicable to any facet of scientific research and also to the development and transfer of technology for all purposes in the uses of the sea -- there are several other articles relating to marine science and its application in various fields of maritime activities. Thus, references to the function of marine science in the exploration, exploitation, management and conservation of marine resources can be found throughout the Convention.

As was already pointed out, the regime of scientific research is based upon a comprehensive notion of scientific research comprising both fundamental and applied studies. The general rule for the conduct of marine scientific research in areas under national jurisdiction is the requirement of consent of the coastal state. Article 246 provides that, although coastal states must in normal circumstances grant consent, they may in their discretion withhold consent to the conduct of marine scientific research in their exclusive economic zone or on their continental shelf if the research project is "of direct significance for the exploration and exploitation of natural resources, whether living or non-living."

This system of qualified consent thus entails -- as an exception -- a two-tier regime depending upon the objective and character of the research project. The determination as to whether the research is of direct significance for the exploration and exploitation of natural resources should be made

by the coastal state on the basis of data at its disposal and its capability to assess the project. In order to avoid abuses in the operation of the regime of qualified consent the coastal state needs an adequate scientific understanding of the nature of the research project. The Convention provides that the coastal state must establish rules and procedures ensuring that consent is not delayed or denied unreasonably. These considerations further underline the need to achieve a level of scientific knowledge necessary for a sound, objective and accurate assessment of the characteristics of a research project.

The application of marine science and technology to the study of the biological characteristics of the oceans with a view to promoting the rational exploration, management and conservation of the living resources constitutes an important part of the new legal regime of ocean space. The same conclusion applies to the application of science and technology in the exploration, exploitation and management of the mineral resources of the seas and of new and renewable sources of energy. As a matter of fact, the Convention establishes an uniform legal regime for the conduct of marine scientific research relating to all natural resources within the exclusive economic zone and on the continental shelf.

The conduct of oceanic research on the sea-bed and ocean floor beyond national jurisdiction, i.e., the international sea-bed area, is also governed by the relevant provisions relating to marine scientific research. As that area and its resources have a special legal status as the common heritage of mankind, the rules on scientific research are, of course, subject to the international regime for the Area and the powers of the International Sea-bed Authority. Article 150 of the Convention envisages as one of the tasks of the Authority "the development of the resources of the Area and their management." The Assembly, under article 160 the principal organ of the Authority, is entitled to consider and approve rules, regulations and procedures relating to prospecting, exploration, exploitation, and management. The contribution of marine science and technology will be indispensable on these matters. Therefore, article 143 on marine scientific research in the international sea-bed area, while explicitly referring to Part XIII, provides at the same time that the International Sea-bed Authority may conduct scientific research concerning the international sea-bed area and its resources. The Authority may conduct such scientific research itself, but it may also enter into contracts for that purpose. It may participate in international programs for the promotion of scientific research, training of personnel, dissemination of the results of the research, etc. Furthermore, the Authority is competent to promote and encourage the conduct of marine scientific research and coordinate and disseminate the results of such research.

This regime, however, does not affect the rights of any state to carry out marine scientific research in the international sea-bed area on the basis of the freedom of

scientific research. The requirements of consent provided for in article 246 are not applicable in the international sea-bed area, which is beyond the jurisdiction of any state. Nevertheless, it should be borne in mind that the exploration and exploitation of the sea-bed in the International Area could involve large mining sites. Therefore, some limitations on scientific research may be expected in the case of conflicting uses within the same area of the sea-bed.

The International Sea-bed Authority has certain other powers relating to marine science and technology. Article 144 provides that the Authority has the right to acquire technology and scientific knowledge relating to "activities in the Area," i.e., the exploration, exploitation and management of the mineral resources of the sea-bed and ocean floor and the subsoil thereof; to promote and encourage the transfer to developing states of such technology and scientific knowledge; and to initiate and promote programs for the transfer of technology to the Enterprise, the Authority's organ for the exploration and exploitation of the mineral resources of the sea-bed. The Authority may also take part in international programs of technical assistance to developing countries aimed at strengthening their research capabilities in the field of marine science and its application.

The exercise of such broad powers by the International Sea-bed Authority in the exploration, exploitation and management of the mineral resources requires a level of scientific knowledge to make its activities economically viable. To this end, the Convention contains certain provisions for the promotion of international cooperative efforts to be undertaken jointly with states or competent international organizations. They refer not only to the principal organs of the Authority, but also to its Economic Planning Commission; the Legal and Technical Commission, and other subsidiary bodies. Thus, article 163, paragraph 13 of the Convention states that "In the exercise of its functions, each Commission may, where appropriate, consult another commission, any competent organ of the United Nations or of its specialized agencies or any international organizations with competence in the subject matter of such consultation."

Part XIV of the Convention also contains some provisions on cooperation between the Authority and competent international organizations. According to article 273 the objective of such cooperation is "to encourage and facilitate the transfer to developing states, their nationals and to the Enterprise, of skills and marine technology with regard to activities in the Area." Since such cooperation involves important considerations of a financial, technological and legal character, article 274 defines the obligations of the Authority on this matter in specific terms.

The provisions of the Convention on marine science and its application to natural resources basically refer to the exploration, exploitation, development and management of living resources and minerals. However, one should not exclude other, more unconventional resources such as ocean thermal energy

conversion, ocean waves energy potential, ocean tides, and other new and renewable sources of energy. As was pointed out, a general reference to these resources is contained in article 56, paragraph 1 of the Convention, which defines the sovereign rights of coastal states in the exclusive economic zone. This is a new frontier in the uses of the seas which requires a great deal of scientific study and sophisticated technology.

The provisions of the Convention referring to oceanographic research as including multidisciplinary studies and related experimental work may apply to some other uses of the sea, such as navigation, communications, weather forecasting, archaeological exploration, and recreational and other activities. Some articles refer in more specific terms to these matters, while in other instances only general rules governing marine science and technology are given. The provisions on passage through the territorial sea, through archipelagic waters and through straits used for international navigation contain specific references to marine scientific research activities of any kind, including research related to natural resources. Article 149 deals with the legal situation of archeological and historic projects found in the international sea-bed area. It is submitted that some research activities have to be undertaken in connection with the discovery and restoration of these objects.

Marine science and technology have also acquired a prominent place in the complex of measures relating to the protection and preservation of the marine environment. The efficiency of such measures depends greatly upon the level of understanding of oceanic processes and phenomena, the application of scientific methods for monitoring, assessing and analyzing the harmful effect of pollutants, the predictability of potential dangers, and the forecasting of ecological hazards. To this end, article 200 of the Convention outlines the duty of states and international organizations to undertake studies, scientific research programs and exchange of information on the pollution of the marine environment in order to "acquire knowledge for the assessment of the nature and extent of the pollution, its pathways, risks and remedies." There are a number of other specific provisions in the Convention referring to the application of marine science and technology in relation to the protection and preservation of the marine environment.

The Main Provisions Relating to the Development and Transfer of Marine Technology

Part XIV of the Convention is entirely devoted to the development and transfer of marine technology. It sets out the basic objectives, the guiding principles, and the main operational and institutional measures in this field. This Part of the Convention should be considered as a general legal framework for the promotion of international cooperation in the development and transfer of marine technology, distinct from certain provisions within the framework of the regime of the international sea-bed area. In the latter case, articles 150,

151, and 153, including the relevant provisions of Annex III, particularly article 5, provide for specific terms for the transfer of technology to the Authority as one of the basic conditions of undertaking "activities in the Area."

The provisions in Part XIV could be considered as legal guidelines for the promotion of international cooperation between states, with the active participation of international organizations, for enhancing the scientific and technological capacity of states, particularly the developing states. The basic objectives of these activities, as provided for in article 268, are the acquisition and evaluation of knowledge, the development of an appropriate scientific and technological infrastructure, the training of research personnel, and the establishment of national, regional and international marine scientific and technological centers. There is also provision for states to undertake international programs, jointly or through competent international institutions such as the Intergovernmental Oceanographic Commission of UNESCO and other competent international organizations.

These provisions must be read in close connection with the regime for the conduct and promotion of marine science and technology in relation to the uses of the seas and the exploration and exploitation of their resources.

CONCLUDING REMARKS

In conclusion, this review of the Third Committee issues on the protection and preservation of the marine environment and the promotion of marine science and technology, within the overall framework of the 1982 Convention on the Law of the Sea, reveals the problems addressed and the opportunities created by the new Convention. It is evident that one of the main objectives of the international community should be to make the provisions of the new Convention effective and generally agreed upon by as large a part of the international community as possible. The integration of the efforts of scientists from all over the world for the promotion of scientific methods in the peaceful uses of the seas and the protection and preservation of the marine environment requires widespread recognition of the regime established by the Convention. The advancement of science and technology would give the necessary degree of credibility and viability to the new legal order for the world's ocean. Perhaps now is the crucial moment for the scientific community and those who are genuinely concerned about the protection and preservation of the marine environment to fulfill their mission to promote the noble objectives of the Convention of the United Nations on the Law of the Sea in the interests of international cooperation and social progress.

DISCUSSION AND QUESTIONS

JENS EVENSEN: Distinguished delegates:

I propose that we now commence our discussion. I suggest that each person try to limit his comments or questions to five minutes. There are four names on my list at present. The first is Ambassador Richardson.

ELLIOT RICHARDSON: Thank you very much, Mr. Chairman.

Distinguished committee chairmen, ladies and gentlemen:

For a while after I had been requested by the management of this meeting to be prepared to comment, I began to feel that I knew exactly what was meant by the term "fifth wheel." Then it occurred to me that there really was a good reason why I could appropriately be asked to comment first, and that is that I have had the pleasure and privilege of serving under the chairmanship of each of the gentlemen on my right, with the exception of Professor Fleischer, but he represents a fourth chairman under whom I served. In fact, my introduction to the Law of the Sea Conference came in the winter of 1977 at a meeting in Geneva under the chairmanship of Jens Evensen. It was there that I saw a model of constructive and resourceful chairmanship, while also being introduced, to my then considerable dismay, to the enormous complexity of the task the Conference had undertaken.

As you heard this morning from Professor Oxman, I had by then served in a number of government posts, but none in which I had ever served proved so daunting as the Law of the Sea Conference. I think it is also fair to say that, for reasons you have already heard touched upon, it may well be true that none was as important.

My service under the leadership of Ambassador Evensen was soon followed, at the regular session of the Conference that began later that year, by service under the chairmanship of Paul Engo in the First Committee and under Ambassador Aguilar and Ambassador Yankov as well. Paul Engo had under his aegis some of the most complex issues of all. Without his steady commitment to the purposes of the Conference and to the achievement of a constructive result, we certainly would not be here today. Ambassador Aguilar had under his jurisdiction the issues that were most closely associated with the traditional subjects of the international law of the sea. It would, however, be a great mistake to regard the charge of his committee merely as one of codification. Rather he was required to address the requirements of inventing wholly new concepts and adapting them to older principles of international law. Ambassador Yankov has given us this afternoon a clear and comprehensive overview of the work of his Committee. It is fair to say that he had to preside over divisions between the Conference majority, on the one hand, and the research and environmentally-oriented states on the other, that were sharper perhaps than even the divisions within the First Committee. In his case, as he observed, the Conference was also charged with far more than the task of codification.

I think it is accurate to say that the work of each committee was affected by a fundamental tension between the resource interests of coastal states, on the one hand, and the maritime interests of naval powers and states with interests in commercial shipping, on the other. Of course, it was this combination of interests that underlay the recognition from the outset that only through a package deal would it be possible to arrive at accommodations that would give significant incentives to large numbers of states to join in supporting the ultimate result. Each committee also faced the tension between more specific interests.

In the case of the sea-beds, there existed a set of concerns with the management and control, on behalf of the international community as a whole, of resources declared to be the common heritage of mankind, and with participation in their exploitation as well as in the proceeds of that exploitation. That set of interests had to be balanced against a set of concerns which had to do with the assurance of access: the opportunity for state corporations and private companies to engage in deep sea-bed mining and their opportunity to receive a reasonable return on the very large investments involved in the light of the considerable risks of a wholly new form of mining.

In the Second Committee, the tension lay between jurisdiction over coastal resources and due regard for coastal states' security, on the one hand, and, on the other, some means of accommodating the continued protection of the freedoms of navigation and overflight with these coastal state interests.

In the Third Committee, the indivisibility of the ocean environment worldwide, coastal state concerns with the activities of scientific researchers in areas adjacent to their coasts, and the potential implications of research of direct significance for coastal state resources had to be balanced against the importance of maintaining freedom for scientific research and publication, the need for uniformity in the regulations applicable to the protection of the environment, and assurances that the enforcement of such regulations would not prove to be a means of impeding freedom of navigation and overflight.

In each case, a balanced and workable result was achieved: that is certainly the conviction of most of us who participated in the effort. As to its effectiveness, I would agree with Professor Fleischer that only time will tell. And, of course, only time will tell the extent to which such effectiveness can be achieved in the absence of the Convention's entry into force. I hope that we do not have the opportunity to learn the outcome of that experiment, because it seems inevitable that there will be friction arising out of a situation in which most of the world has ratified the Convention and a few countries have not. In any case, a loss to the process of strengthening the rule of law could come about if we are forced to emphasize the value of the Convention in its influence on customary law notwithstanding the fact that it has not entered into force. Nevertheless, I agree with Professor Fleischer that the achievements of the

Conference were significant and the impact of the Convention will be far-reaching no matter what may be the process of ratification.

I was grateful to Paul Engo for the glimpses he gave us of the difficulty of creating mechanisms for the achievement of consensus. This is something on which Jens Evensen has also written in the past. The necessity for face-to-face negotiation was something that endlessly taxed the ingenuity and resourcefulness of the Conference. There was a constant requirement for improvising processes that enabled the most interested states to negotiate solutions to specific issues of concern to them in small groups. The chairmen had to preside, therefore, not only over the plenary meetings of their committees, but at any given time had to supervise the work of anywhere from two to four or more separate groups charged with particular problems that could only be dealt with in some smaller forum. The groups established in 1978 to deal with the hard-core issues illuminated the necessity for reliance upon such devices, as did the contribution of the Conference to the utilization of negotiating texts.

Looking back over this experience from an historical perspective, I think it may well be found that the Law of the Sea Conference pioneered a whole series of approaches to the potential success of very large conferences that will have to be drawn upon again and again in the future. I hope that this experience will not only be applied, but also refined, since -- for reasons I touched on this morning -- the world will have increasing need as time goes on to invent comparably resourceful approaches to coping with the realities of its own interdependence.

JENS EVENSEN: Thank you very much, Ambassador Richardson. Dr. Ruivo, will you take the floor?

MARIO RUIVO: I am pleased to be associated again with the group of people with whom I was deeply involved in the past when I was head of the Portuguese delegation to the Law of the Sea Conference. I would like to make some remarks and then address one question to the speakers.

The remarks that I would like to make are related to the fact that in the different assessments made of the relation between the codification of traditional law and the innovative aspect of the Convention, only occasionally, and particularly in some detail by Professor Yankov, is reference made to the institutional aspects relating to the implementation of the new Convention, especially in connection with new demands for international cooperation. I believe, and have believed for many years, and in fact I negotiated with some of you on possible actions in this area, that the mechanisms and the institutional aspects are as important now as during the negotiations. The same imagination and creativeness are needed now that characterized the process of negotiation and which led to a number of very, let me say, heterodox mechanisms to

facilitate the reaching of consensus. This is especially so because it is very difficult to foresee what the trends will be. Will the Convention be ratified soon and how will it, or at least some of its principles, be put into force?

I would like to recall that throughout the negotiations the system of the United Nations as a whole was operating. Much of the documentation and information made available to the Conference, including some of the maps and other studies, was in fact the result of cooperation between the different specialized agencies and the Secretariat of the Conference. This was done to provide member states with facts, because the technological aspects of scientific progress and expertise play a very important role in this Convention; a role clearly much more important than in the negotiations of 1958 and 1960.

I believe that in the present situation existing institutions are to a great degree obsolete, particularly in the areas dealing with marine science, pollution, protection of the marine environment, and transfer of technology. Traditionally, national governments are organized on a sectoral basis: ministries of fisheries, ministries of shipping, and so on. This was projected to the international level, where organization is also sectoral. However, the Convention was negotiated on the basis of an integrated treatment of ocean space. It was negotiated as a package deal, which means that many interdisciplinary aspects and intersectoral aspects appear everywhere. Neither national institutions nor the United Nations in its present structure are oriented in that direction.

We can detect now not only this kind of conflict, but also a certain process of readjustment. That process is now awaiting the establishment of the Sea-bed Authority or the Commission on the outer limits of the continental shelf. If we look now at the national level we see, for example, a trend to establish ministries of the sea in an attempt to have an integrated approach to the new ocean space regimes which is the case in France or a trend to have at the national level a cooperative effort, as is the case of India's Department of Ocean Development. When we look at the United Nations, there are also indications of a certain growth of faith among the institutions in meeting the demands of cooperation.

I would like to encourage participants, in the discussions in the coming days, to address institutional problems and the question of necessary adjustments. I believe that many problems pending the entry into force of the Convention can be solved only by using existing fora or some new fora. Thus my questions to the speakers are: How do they assess the institutional trends for their respective areas? What are their expectations? How do they visualize the role international institutions can play in facilitating international cooperation for the peaceful use of the oceans?

JENS EVENSEN: Thank you very much, Dr. Ruivo, for your comments. I wonder whether Ambassador Engo or Ambassador Yankov has any comments to make. Ambassador Engo?

PAUL ENGO: I think that the point raised by Dr. Ruivo is a very important, very critical one. It goes well beyond what he has said. If you go into the developing countries you find perhaps that there are no existing institutions at all.

Some years ago, I had the privilege of carrying out a survey with regard to environmental legislation in sister African countries. I was alarmed to find a common problem that existed among all of them. In the seminar that we held subsequently, we found that all we had done up to that point was to take the legislation of the original metropolitan country and just change the name, for instance, Great Britain or France, into the name of whatever the country was.

What I am trying to say is that the problem is more serious than merely adjusting to the novelties of the Convention and to the complexity brought about by the type of packages that have been worked out. In the young countries, we have to work at reorganizing ourselves in such a way that we create effective institutions. We cannot be doing this in a very productive atmosphere while we observe, as Dr. Ruivo has pointed out, that even at the international level, where we are supposed to get our inspiration, there is conflict and interagency confrontation. This does not give good leadership to these young countries.

As far as the First Committee is concerned, I think that what one can try to do at this stage is to encourage enough dissemination of information to supplement what the representatives of countries have done with respect to their countries, to draw attention to the new order that exists, and to try to analyze the scope of the influence of this new institutional framework for exploiting the deep sea-bed in the light of our general idea that it should be a new international economic order. This is something easier said than done. You will find we have a problem in our young countries -- I do not know if it exists in some of the older countries -- that there has been a tendency to associate the law of the sea with the individual who represents the country. I am trying to change that in my country right now by campaign by radio and all possible means. But in many countries when you talk about law of the sea, you talk about the person who represents that country; you talk about Warioba who represents Tanzania or you talk about someone else.

How do we draw the attention of governments to the importance of the law of the sea? Take pollution. How do you draw the attention of nations to the advantages of scientific research and to the avenues that are open at the international level for cooperation? How do you convince a nation to abandon an aspect of its industrial development that is likely, in the long term, to affect its economy through the introduction of pollutants? For instance, we know that pollutants get into our system by being transported as well as through the establishment of industry. Yet we still live with the illusion that developing countries do not suffer from pollution of any type. We tend to forget that pollution has no territory: it can be

conveyed by air or by the sea. How do we draw the attention of governments to this? I think that it will take the cooperation of the international community, working side by side with institutions within the respective countries.

With regard to the deep sea-bed area we have in fact established an institution, the International Sea-bed Authority, which will administer the common heritage of mankind, and we have set up a Preparatory Commission, which met recently for the first time in Kingston. To assure that the whole system works, I think it will need the cooperation of all those who are convinced that this effort is worth promoting for the peace and security of the world. In one of my reports I pointed out that the decision-making system adopted will need the political will of all to succeed, because the decision-making procedures of the Council will make it very difficult to take any decision if some countries want to block that decision. I sincerely hope that the fact that we have identified pioneer investors, and that we have virtually cordoned off a certain area of the ocean floor for exploitation by a limited and identified number of actors over the next 25 years, would diminish the chances of blockage through the decision-making process.

In summary, I think that there is a great need for rethinking as to the methods by which we can attain the very important and the very critical decisions that we have taken and that are represented in the Convention.

JENS EVENSEN: Thank you very much, Mr. Engo. Dr. Kolodkin, you have the floor.

ANATOLI KOLODKIN: Thank you, Mr. Chairman.

Mr. Chairman, ladies and gentlemen:

Allow me to join Ambassador Kolosovsky on behalf of myself and other Soviet participants in expressing our appreciation to the Law of the Sea Institute of the United States of America and the Nansen Institute of Norway for the invitation to attend and participate in this conference.

My first comment relates to the problem of customary law. Professor Yankov said that he does not agree with the view that everything in Chapter XI is customary law of the sea, and he pointed out that the economic zone provision is new, as are some other provisions relating to the regime of the high seas and environmental problems. I would like to stress that with regard to the economic zone, we can say not only that it is a new concept, but that the legal basis for this new institution is the Convention and not customary law or law based on unilateral actions. Article 55 of the Convention says that the exclusive economic zone is an area beyond and adjacent to the territorial sea subject to the specific legal regime established in this part under which the rights and jurisdictions of the coastal state and the rights and freedoms of other states are governed by the relevant provisions of the Convention. This means that in this zone a coastal state has specific rights and

jurisdiction and that it cannot exercise other rights. The scope of these rights and jurisdiction is set forth exclusively in a multilateral treaty, i.e., in the Convention as adopted. This is why it seems to me that we cannot consider the economic zone to be a rule of customary law. It is based on a rule of treaty law. When the Convention has entered into force, we can refer, of course, to customary as well as to treaty law.

My second remark refers to the concept of the common heritage of mankind and the interpretation of the regime of the sea-bed. The argument of Mr. Breaux was, and I know from the literature that some American authors insist on the same view, that activities on the sea-bed are based on the freedom of the seas and on a freedom of exploitation of the sea-bed beyond national jurisdiction. However, I would like to point out that the 1970 Declaration and its 15 principles as stressed by you, Mr. Chairman, indicate that the sea-bed is the common heritage of mankind, and that this is so not only for the sea-bed but for its resources as well. It is not enough to say that article 137 states a principle of non-appropriation and that the scope of the principle of the common heritage of mankind is restricted to this requirement of non-appropriation. If this were the case, we would have nothing new because in the 1958 Geneva Convention on the High Seas we already have the principle that the high seas may not be appropriated by any state. In my opinion, the concept of the common heritage of mankind with regard to the sea-bed means that we create a new international regime and international authority and that no state now has a right to explore and exploit the sea-bed beyond national jurisdiction without the supervision and control of the international authority.

I would like to recall article 8 of the 1979 Moon Treaty. Paragraph 1 states that the moon and its resources are the common heritage of mankind, and paragraph 5 links this principle to the new international regime for the moon and its resources. Professor Ping Xiang of London University says that the pioneers of the concept of the common heritage of mankind are not the lawyers dealing with the sea, but space lawyers. I do not know who the pioneers are, but I am convinced that the principle of the common heritage in relation to the sea-bed means that there is a close connection between the declaration of the area as the common heritage of mankind and the establishment of the International Authority.

Thus, it seems to me that we cannot say now that there is a freedom of exploration and exploitation of the sea-bed beyond national jurisdiction.

My last point refers to what has been said on the package deal approach. It seems to me that this is not only a procedural principle in relation to third countries. It is a very important principle of the law of treaties. In this connection I would like to recall article 44 of the Vienna Convention on the Law of Treaties, which provides that states may not divide a treaty into different parts and accept only those provisions of concern to them without the agreement of the

other parties to the treaty. Thus, all the provisions of our Convention should be accepted as a package with no exclusions, because at the beginning of the Conference all participants agreed to accept these provisions as a whole in an undivided package. This approach has been confirmed by a statement of the Government of the USSR on April 24 of this year.

JENS EVENSEN: Thank you very much, Dr. Kolodkin. I now recognize Professor Lammers from Leyden.

JOHAN LAMMERS: Many important issues have been raised this afternoon by the distinguished speakers. It is, alas, the fate of the participants that they can take issue only with one or two of them. There is one issue which I would like to raise. It concerns the importance of conventions in general, and of the Law of the Sea Convention in particular, as evidence of customary international law.

This point has been raised specifically by Professor Fleischer. If I understood him correctly, it is his opinion that the Convention would be an important source of customary law, or at least an important indication of what the customary law is. I should take the opposite position, although I do not like to take that position. I think that broad participation in a general convention will make it rather more difficult to prove what general international law is or will be in the future than the opposite. In the case of states having become a party to an international convention, it will always be easy to say in the future that they adhere to certain practices because they are obliged or permitted to do so by the convention.

The case law mentioned this afternoon is not fully convincing with respect to the proposition proof of customary law. It is true that in the Fisheries Jurisdiction cases the International Court of Justice referred to some unratified conventions as supporting the existence of a new rule of customary international law, but this was done in a very incidental way, and there were other factors mentioned by the Court to support its view that a certain rule had already become a rule of customary international law. In the Continental Shelf cases the Court delved much more thoroughly into this question. The famous phrase used by the Court in that judgment was that wide participation in a certain convention, especially by the most important states involved in a field of international interaction, might after some time be proof of a new rule of customary international law. The court did not say that it would be proof, but only that it might be proof. It went on to stress, and I think this is the most important element, that it is not so much the practice of states which are party to the convention, but the practice of states which are not party to the convention, that provides the real test of whether a certain rule has become a rule of customary international law.

It may be that many states will ratify the new Convention on the law of the sea, but some important states may very well remain outside the Convention. If we apply the criterion used

by the court in the Continental Shelf cases, it will not be easy to say that the Convention will be proof of customary international law.

JENS EVENSEN: Thank you very much, Professor Lammers. Professor Fleischer would like to comment on this intervention.

CARL AUGUST FLEISCHER: I think it is correct, as Professor Lammers stated, that there are views on the 1969 decision in the North Sea Continental Shelf cases that are contrary to what I just said, or which may be invoked in support of his position. However, the way I see it, the 1969 decision clearly states that it is possible to have concepts developed on the basis of a conference or convention followed by acceptance of these concepts in customary law. The 1974 judgments also accept this. I would like to quote a passage which is not directly relevant to the judgments, but which concerned the acceptance of the 12-mile limit supported by a majority at the 1960 Conference. There is also a passage concerning the acceptance of the idea of preferential rights beyond the 12-mile limit which is part of the ratio decidendi of the judgments. Concerning the acceptance of the system of 12-mile fisheries jurisdiction in the 1960's, which is very similar to the acceptance of the 200-mile system on the basis of the Convention or the Conference and subsequent or consonant state practice, the Court said, "The 1960 Conference failed by one vote to adopt the text governing the two questions of the breadth of the territorial sea and the extent of fishery rights. However, after that Conference the law evolved through the practice of States on the basis of the debates and near-agreements at the Conference. Two concepts have crystallized as customary law in recent years arising out of the general consensus revealed at that Conference."

JENS EVENSEN: Thank you very much. Ambassador Beesley, you have the floor.

J. ALAN BEESLEY: There is one problem running through a discussion such as this, and that which I think will ensue during the rest of this week. It is not an academic issue we are addressing today when we consider what is and what is not customary law. It is a very practical issue. It is the kind of question that some of us have had to address when we occupied positions as government legal advisors. It is well known that in such matters decisions by governments can turn on legal opinions.

It seems to me that it is evident, and in saying this I am not speaking personally but on the basis of my experience as Chairman of the Drafting Committee, that a large part of the Convention does represent codification because much of it was drawn, for example, from the Geneva Conventions. On this we do not find very much difference of views. It is equally clear that there was also very much progressive development. I do not think that anyone will deny that there was law reform and law

creation. The difficulty I find, and many others find, is that when we are looking at new concepts in international law, it is not easy to say which concept has already attained the status of customary international law and which has not. But it is important, I think, to be very frank with one another when we consider which are and which are not new concepts.

Amongst the new concepts we must, of course, include the economic zone. Most of us would agree that some aspects have probably attained the status of customary law, such as, for example, the fisheries provisions in the Convention. I am not sure how many of us would say after a good deal of thought that all the environmental provisions are on the same footing. When we talk about marine scientific research, we might again find difficulties, because the coastal state incurs obligations vis-a-vis developing countries, for example, in addition to the rights that it asserts. We do not hear much discussion as to whether or not the sea-bed beneath the economic zone appertains to the coastal state under customary international law as it does under the Convention. One tends to assume that because there is no argument on this, it probably is customary law, even in the absence of a lot of state practice.

Thus far I have addressed merely one concept, the economic zone. We obviously have heard enough today to know that there are differences of views as to whether the common heritage concept has already been accepted as customary international law. Thus we now have two concepts that arose at virtually the same time: let us at least take that into account in making our judgment.

Now what about some of the other new concepts?

I am sure that representatives of land-locked states would argue that the new provisions giving land-locked states new rights are already existing customary law, but I do not propose to address that question. I would hope that they would be proven right.

What about the archipelagic state concept? It is another new concept, even though various archipelagic states and some coastal states with off-lying archipelagos have argued this thesis for decades. I think most of us would agree that the archipelagic concept in its totality is another one of the new principles that emerged from the Conference and the Convention. Whether a state can benefit from the provisions allowing it to claim sovereignty over the waters within islands without accepting the obligations relating to sea lanes is another matter. But taken together we would probably at least agree that it is a new concept and many of us might even agree that it is accepted as customary law.

My point, though, is that there are other concepts such as transit passage which are equally new. We have to admit to ourselves, much as we want to say that this also is received customary law, as I believe Jens Evensen did this morning, that we have here a combination of an emerging rule which most of us would take as now reflecting customary law, the right to extend the territorial sea to twelve miles, but not much state practice

insofar as international straits are concerned. Some practice, but perhaps not enough to make the issue free from doubt. So I assume we have to have an exercise of rights of transit including, for example, overflight or navigation by submerged submarines, where a strait is wholly territorial by virtue of these new provisions in order to say that on the basis of state practice this too is customary law. I do not wish to address this issue. I would expect that the majority, perhaps all of us, would like to argue that the right of transit passage is equally customary international law because it is included in the Convention and because state practice has shown it to be acceptable. I tend to agree with those who would look to the Convention as very indicative, a highly persuasive source as to what is and what is not customary international law. But I do not think we can ignore state practice, which, in the final analysis, is the test that will be utilized by legal advisors and perhaps the Court, at least until the Convention comes into force.

The difficulty is, of course, greatest for those who wish to argue that all of these principles except the common heritage represent customary law. That is a very difficult position. It is for them to argue it, but I have yet to hear an argument that is persuasive. They say that all these other new principles are, if you wish, instant customary law, but the common heritage is not. I am not posing a question so much as making a comment, but I would welcome comments by any of the panelists that would prove to my satisfaction, or even their own, that the common heritage concept is on a different legal footing, whether by virtue of its newness or its radical nature or because it is certainly not the same concept as the high seas. Why is that concept not customary international law if the other equally new concepts are?

I would remind everyone of one point. Addressing a somewhat analogous issue, the 1958 Conference made a very clear distinction between the regime applicable to the continental shelf and the regime applicable to the superjacent waters. The international community has dealt with this issue and has seen fit to develop two different regimes, even if this were not accepted in a particular case as customary law. As Jens Evensen so eloquently noted this morning, I do not think one can simply argue by analogy that because the high seas regime applies to the waters beyond the continental shelf, it therefore applies to the sea-bed, particularly in the case of an exclusive appropriation over a long period of time.

JENS EVENSEN: Thank you very much, Ambassador Beesley. It is time to conclude this meeting. I would like to thank all of you for contributing so wonderfully to a successful opening day.

PART III

THE DEEP SEA-BED

INTRODUCTORY REMARKS

Renate Platzoeder
Institute of International Affairs
Munich-Ebenhausen

Ladies and Gentlemen:

The third panel of this conference is devoted to the deep sea-bed, the obvious problem child of the law of the sea. Deep sea-bed mining issues are still in stormy weather, but my crew of five outstanding experts will try its best to navigate safely through these troubled waters.

As members of this panel, I welcome Ms. Betzy Tunold of the Fridtjof Nansen Institute and Ambassador Peter Bruckner from Denmark. I am also happy to introduce Mr. Mati Pal from the United Nations Secretariat and Mr. Leigh Ratiner from the United States. Last but not least, I welcome on this panel Professor Guenther Jaenicke from the University of Frankfurt.

I now give the floor to our first speaker, Ms. Tunold.

THE DEEP SEA-BED REGIME: AN INTRODUCTION TO MAJOR PROBLEMS. INNOVATION OR A PERPETUATION OF THE STATUS QUO?

Betzy Ellingsen Tunold
The Fridtjof Nansen Institute

This paper is a summary version of part II of a considerably more comprehensive study: The UNCLOS III negotiations on the deep sea-bed regime: Institutionalization of the common heritage of mankind for the benefit of mankind as a whole? and it summarizes some of that study's findings on the character of the final outcome of the deep sea-bed negotiations.

AN INTRODUCTION TO THE MAJOR PROBLEMS OF THE DEEP SEA-BED REGIME

Although the majority vote at the end of the 11th session of UNCLOS III did not fulfill the aim of adopting the Convention by consensus, this result by no means represents a failure of UNCLOS III. Whether the final verdict will be "success" or "failure" depends on the answers to a large number of questions. Who will sign and ratify or accede to the Convention, and how long will it take? Is the Convention ever going to enter into force? If it does, will it be supported by enough "important" parties to make it effective? What are the likely consequences of global acceptance, acceptance by a few, non-acceptance, or undue delay in the ratification and accession procedure? What impact will the Convention have on future deep sea mining activities? What will be the distributive effects of the deep sea-bed regime? Are national legislation and regional agreements likely to be adapted to the provisions in the global Convention about the status of, and activities in, the "Area?" Or is it likely that accelerating national claims for parts of the international area will nullify the global deep sea-bed regime? What will be the governing effect of the Convention? Will behavior of states and private entities differ from what it would have been without the Law of the Sea Convention? Will norms, rules, regulations, and procedures be complied with or violated by those who become parties to the Convention and those who do not? How will the Preparatory Commission function? How are rules and regulations likely to be adapted in the interim period before the establishment of the International Sea-Bed Authority? Are compromises possible in the post-negotiation phase? How will ambiguities in the deep sea-bed provisions be interpreted and considered in the future implementation of the regime [1]?

On the basis of all these questions and uncertainties, the following problems can be singled out:

- ambiguities and interpretations;
- the degree of acceptance of the deep sea-bed regime;

- the degree of compliance; and
- the governing effect of the regime.

This paper does not concentrate on these uncertainties, nor on the conditions for state or private enterprises to engage in deep sea mining. A number of factors indicate that the resources on the deep sea-bed are not likely to remain untouched. Time, energy and financial resources have been devoted to the development of relevant technology, and even if all technological obstacles may not have been eradicated, it is or will become technologically possible to carry out deep sea mining.

The current financial conditions for deep sea mining may not be satisfactory and these activities may appear not to be profitable, but this may very well be offset by other considerations, e.g., concerning the supply situation. Subsidies, grants, or other financial support can reduce, perhaps eliminate, the importance of the profit requirement, and such support can (and has been) provided by governments, either in order to secure supplies or to secure development of competence within a new and prestigious industry, or both. The prestige argument is probably more relevant for the superpowers than for other states. As the USSR apparently has concrete plans for deep sea mining, and has already agreed with India on non-overlapping claims [2], I would be very surprised if the United States -- or rather US companies engaged in preparations for deep sea mining -- gave up altogether or if US companies were to incorporate in countries that intend to become parties to the Convention. If the US insists on remaining outside the Convention, one solution for US companies may be to rely on US government guarantees for company investment and on gunboat support in order to be able to conduct their business. If so, for all their free enterprise rhetoric, the opponents of the global Convention may have to resort to government intervention.

Consequently, even though the current supply situation may be satisfactory and the present economic incentives for deep sea mining not very convincing, technological, prestige, competence and long-term supply arguments may prove stronger, with the effect that deep sea mining becomes a reality, either within the global framework or outside. If so, the main problem with the deep sea-bed regime is not that the political and juridical framework is claimed to be unsatisfactory for a small number of technologically and economically powerful states and companies. On the contrary, the main problem is that deep sea mining activities may be carried out for the benefit of a handful of powerful states or companies only and not for the benefit of mankind as a whole. Thus, uncertainty prevails as to whether or not activities will be carried out in accordance with the basic principles that the area and its resources are the common heritage of mankind, and that "activities in the Area" must be carried out for the benefit of mankind as a whole. The main problem is that it is not certain that deep sea mining will be of benefit to the developing states. This in spite of the fact

that the deep sea-bed regime includes provisions on special considerations for, and reverse discrimination in favor of, developing states so as to enable them to participate actively at all levels (decision-making, on-site activities, and "equitable" distribution of benefits).

The reasons for my concern that the deep sea-bed regime may turn out to benefit a small number of industrialized states and their companies only, are, first, the dual character of the regime, and second, factors at the structural, actor and institutional level at work in the formation and the implementation process. This paper concentrates on the former.

THE DUAL CHARACTER OF THE REGIME: THE OLD VS. THE NEW ORDER

The components of the regime can be categorized as representing the old order or a new order, or a neutral order that favors neither of the other two orders in particular. The new order elements emphasize the rights, ownership and benefit of mankind as a whole in general, and that of the disadvantaged in particular. Of primary importance is the effective participation by developing states -- the disadvantaged -- in deep sea mining and related activities either individually, in joint ventures, or (mainly) through the Enterprise of the International Sea-Bed Authority (ISA).

In order to make this effective participation possible, the industrialized participants (states and enterprises) in deep sea mining are required to transfer financial and technological resources to the Enterprise and to developing states. Other new order elements include: protection of the adversely affected developing countries, and an equitable distribution or sharing of benefits that discriminates in favor of the disadvantaged. A necessary condition for the implementation of these non-free-market provisions is believed to be a strong International Sea-Bed Authority of a large functional scope and with the power to co-ordinate, regulate, supervise, control, sanction and enforce.

The new order proponents favour an ISA in which each state has one representative and one vote, and in which enforceable decisions are made by a simple or a qualified majority.

The old order elements, in contrast, emphasize the rights, ownership and benefit of states and enterprises possessing the financial and technological resources relevant for deep sea mining and related activities. In particular, the interests and needs of industrial consumers and importers of the minerals in question are given high priority. In the old order view paramount ingredients are: participation by these states and other entities sponsored or controlled by them, efficiency considerations, and a free enterprise system. Also, private property rights and comparative technological advantages shall not be curtailed by provisions about mandatory transfers to developing states and the Enterprise. Furthermore, the old order proponents stress the irreconcilability of free enterprise and production limitations, and conclude that the deep sea-bed regime ought to be a production-oriented system. Compensation

may be provided, preferably by the ISA, to the adversely affected, but the overriding principle is that those who have the necessary capabilities, ingenuity, stamina and courage to engage in deep sea mining must also have the right to reap the benefits. Quite consistent with the above-mentioned elements of an old order regime, the advocates of this view favor a weak ISA with clearly defined, very limited powers and functions (mainly a co-ordination function), representation based on special interests and qualification criteria, veto rights for small minorities, and non-binding decisions.

Whereas the new order approach supports the idea of supranational management of the area and its resources, the old order approach agrees with international co-ordination of state and private activities. The former opposes the doctrines of the "freedom of the (high) seas" (res communis) and "res nullius" [3], whereas the latter conforms to one or both of them, especially the "freedom of the (high) seas" doctrine. The new order approach has, generally, been advocated by the Group of 77 (G-77) and the old order approach by the Group of 5 (G-5) (the big industrialized states) [4].

ELEMENTS OF THE REGIME: PRINCIPLES, NORMS, RULES AND REGULATIONS

Principles

Principles may be defined as beliefs regarding facts, causation, and rectitude [5]. The UN Convention on the Law of the Sea, Part XI, contains fourteen principles governing the deep sea-bed area. Of the fourteen principles only six seem to be controversial in the sense that they deviate significantly from the established order. These principles declare that: the area and its resources are the common heritage of mankind (article 136) [6]; all rights in the resources of the area are vested in mankind as a whole (article 137); activities in the area shall be carried out for the benefit of mankind as a whole (article 140); and to this end the Authority shall take measures to acquire technology and scientific knowledge (article 144); and participation of developing states in the activities in the area shall be promoted (article 148). In addition, marine scientific research in the area must be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole (article 143).

These principles imply that geographical location and technological and economic level of development may not be qualification criteria for obtaining legal and legitimate rights to engage in deep sea mining and reap the benefits. Mankind as a whole has exclusive rights to the area and its resources, and activities in the area must benefit mankind as a whole, not only a few transnational companies, state and private enterprises and a handful of the biggest industrial powers. The principles are inconsistent with the old, prevailing tendency of "first come, first served," "those who buy the wheat shall have the right to eat the cake" and "might makes right." On the contrary, the

implication is that the Convention embodies the rights, responsibilities, powers and functions relevant to the management of the area and its resources.

Although some of the new-order principles are vague and ambiguous, the principles governing the international sea-bed area seem to have a rather clear new-order direction. Some of the problems with these principles are the following:

- the crucial principle that "activities in the Area shall, as specifically provided for in this Part, be carried out for the benefit of mankind as a whole" has been a very controversial issue during the negotiation process; it has undergone several changes over the years, and the final version lacks precision.
- what benefits shall be equitably distributed and shared?
- what is an equitable distribution?
- who shall benefit? all or some states, peoples, people?
- who shall be responsible for the transfer of technology for the benefit of whom?
- the developing states have been granted the right to participate in deep sea-bed activities, but the principles do not specify entities to be responsible for the realization of this right.

These, and other ambiguities and uncertainties are aggravated by the fact that throughout the negotiating process the main participants have interpreted the principles in different ways and have accorded them different status. Some regard them as de facto international law, whereas others see them as non-binding and are unwilling to admit that they have any legal status at all.

Norms [7]

The norms of the regime do not provide any clear answers to the questions raised about the interpretation of the principles. They do not supply elaborations and definitions of the prevailing new order principles. On the contrary, these norms point in at least two different directions: towards the old and towards an alternative order, and it is difficult to know which part of the duality will be emphasized on the level of implementation. New order principles are reflected in the following: "activities in the Area" must promote international co-operation for the over-all development of all countries, especially developing states, and with a view to ensuring the expansion of opportunities for participation in such activities; participation in revenues by the Authority and the transfer of technology to the Enterprise and developing states; the protection of developing countries from adverse effects on their economies or on their export earnings caused by "activities in the Area;" and the development of the common heritage for the benefit of mankind as a whole.

The norms particularly emphasize the importance of participation in activities in the area. In addition to that, the norms also conform to the principles about transfer of technology and about reverse discrimination in favor of developing states. Moreover, protection of developing states from adverse effects resulting from "activities in the Area" must be provided for. In spite of this alternative order approach, the text -- as a result of increasing vagueness in the course of negotiations -- fails to specify who is responsible for ensuring the fulfillment of these norms. Also, uncertainty prevails about the status of norms and principles, about the order of importance of norms, and about whether or not cumulativity or priorities apply. For example, the inclusion of "the benefit of mankind" principle as a norm may be interpreted this way: rather than being superior to all other principles and norms, it is either equal to all other norms of the regime, or inferior to all preceding norms, i.e., inferior to all but the norm on "equal conditions of access to markets." The text gives the impression that the "benefit of mankind" principle/norm is merely one of several sub-norms under the more general norm of fostering "healthy development of the world economy," "balanced growth of international trade" and "promotion of international cooperation for the over-all development of all countries, especially developing states." Also, the text does not specify who is responsible for the fulfillment of this good wish, neither does it specify what it actually means, how it can be measured, and how it can become a reality.

The ambiguities and lack of specificity may have attracted broader support than a well-defined, specific text might ever have done, but the problem is that the ambiguities allow room for interpretation that may deviate from the new order character of the principles and norms. The chance that an old order interpretation may prevail is increased by the inclusion of another set of norms that conform to an old order approach.

The old order norms emphasize the production-oriented nature of the regime, as well as efficiency, rationality and security of supplies to consumers (mainly industrialized states). These norms are not necessarily inconsistent with the norms attributed to an alternative order, but in spite of this possibility for reconciliation, it is far from self-evident that the production-oriented nature of the regime does not contradict the norm on protection of developing land-based producers of sea-bed minerals. Equally doubtful is the consistency between efficiency considerations and the norms about universal participation and special considerations for developing states in general, and the most disadvantaged in particular. How can special considerations for industrialized consumers/importers be reconciled with the production ceiling and the norm about equal conditions of access to markets? The point is not that efficiency considerations, for example, are inimical to an alternative order, but that priorities under an alternative order might be different in the sense that the advantages of

participation, protection and sharing of benefits are accorded higher priority than maximum financial profit.

The duality of the norms indicates that the old order advocates have succeeded in their attempts to include provisions reducing the predominantly new-order direction of the principles. On the one hand, some norms concern economy, trade, growth, prices, producers, consumers, supply and demand, on the other hand, the new order norms emphasize participation by the disadvantaged, protection of land-based producers, and development of developing countries. In short: special considerations for those who are unlikely to benefit if deep sea mining is carried out in accordance with the traditions of the old order. Consequently, the norms reflect at least two different interpretations of the principles governing the area, and the internal consistency of these norms is not convincingly high. The norms have no clearcut direction, and it is unclear which norms will be given highest priority. The principles governing the area foreshadow a list of norms, rules and regulations that would all contribute to the elaborization of "developing the common heritage of mankind for the benefit of mankind as a whole," but the norms point in two directions. If cumulativity is not required, as it is not likely to be, the norms of article 150 indicate that the regime has a predominantly pro old order direction. During the negotiation process, the introductory new order direction of the norms has been steadily undermined by modifications, expansions, reductions, specifications, precisions, deletions, or additions. The development of the norms illustrates the "compromise syndrome" [8] characterized by a new order initiative, a status quo response, a compromise which was soon identified by the old order proponents as equal to the initial G-77 initiative, and a final compromise between the first compromise and the pro old order/status quo response to the initial G-77 proposal. The final output is thus much closer to the status quo response than to the new order initiative.

Rules and Regulations

The duality of the norms is reflected in the rules and regulations of the deep sea-bed regime. The substantive component of the regime apparently includes provisions for the fulfillment of the new order principles, but the new order framework of these rules and regulations has mainly an old order content.

Production policies

The provisions for an interim, nickel-based production ceiling is an illustrative example of the divergence between framework and contents. Originally the production ceiling was intended to protect developing land-based producers, but the final version of it is not likely to fulfill this intention. The second protective device, compensation and adjustment assistance, may prove more useful to land-based producers than the production ceiling, but uncertainty prevails about the

rights of these countries and who will carry out the responsibilities for ameliorating the adverse effects of deep sea mining on land-based producers. As it is, preventive measures are subordinated to (old order) compensatory and adjustment measures after damage has been done.

The number, frequency, and nature of changes in the negotiating texts on this issue indicate that the "production policies" have constituted a controversial topic in the negotiations on the deep sea-bed regime. The texts have steadily moved in the direction of the old order to the effect that the new order concepts are preserved, but the purpose of protecting the developing country land-based producers has largely been defeated by a multitude of old order concessions.

System of exploration and exploitation

The parallel system of exploration and exploitation confers sea-bed mining rights to the Enterprise as well as to state and private companies. This duality is apparently designed to satisfy the advocates of an alternative order as well as those of the old order. Several provisions give extensive powers and functions to the Authority, in accordance with the new order ideology and principles. However, the compromise link between the parallel system on the one hand and financial and technological transfers on the other is broken. Even though provisions on transfers are included elsewhere in the text, the absence of them in provisions about the system of exploration and exploitation indicates a reduced emphasis on the importance of such transfers as a very crucial condition for the Enterprise to become a viable operator in deep sea mining, equal to other entities.

Basic conditions of prospecting, exploration and exploitation

To some extent, the lack of precision and specification in principles and norms is counterweighed in Annex III on basic conditions of prospecting, exploration and exploitation. These basic conditions provide operational details for all phases of activities related to the area and its resources. Thus Annex III clarifies the relationship between the Authority and (potential) sea-bed miners other than the Enterprise. It includes provisions about plans of work, qualification criteria, transfer of technology, production authorizations, and financial terms of contracts (fees, charges and shares of net proceeds). Several of the articles of Annex III illustrate the point that, in spite of the fact that the parallel system is a mixed system embodying elements of the old as well as an alternative order, important powers and functions rest with the Authority. In addition to that, states parties and other entities shall carry certain responsibilities, and non-compliance may have consequences for the approval of plans of work and the issuance of production authorizations by the Authority. However, loopholes for the fulfillment of qualification criteria exist: the provisions on transfer of technology have a rather short,

interim duration; and the rules and regulations about approval of plans of work seem to favor entities presently possessing financial and technological capabilities relevant for deep sea mining. Also, the financial terms of contracts are likely to be adequately flexible to be satisfactory for most parties, even if some industrialized states seem to disagree with that judgement. These concessions to the advocates of the old order balance the new order provisions that the sole recipient of fees, charges and shares of net proceeds is to be the Authority, not states parties, in accordance with the principle that all rights to the resources of the area are vested in mankind as a whole.

The Review Conference (RC)

The main purpose of the RC has remained unchanged since its introduction: review of the system of exploration and exploitation. Those aspects of it singled out for scrutiny have, however, been changed. The general trend has been to exclude some of the essential new order principles, whereas emphasis is added to provisions ensuring the rights and interests of (industrialized) states/potential deep sea miners, e.g., the RC is not explicitly required to consider the fulfillment of the principle of participation by developing states in activities in the area.

The duality of the previously discussed parts of the deep sea-bed regime is maintained in the provisions for the RC, but the tendency is to emphasize the rights of states and economic aspects of sea-bed activities to the disadvantage of new order principles and norms. As for the decision-making procedure -- consensus is required -- the text includes no incentives for quick agreement on amendments. The last changes in the text make prolonged negotiations and extensive use of obstruction highly probable at the RC. In addition to the difficulties of reaching agreement, the 3/4 ratification requirement makes it almost impossible for amendments to enter into force if a small group of states (most likely the industrialized sea-bed miners) oppose them. Also, "amendments adopted by the RC ... shall not affect rights acquired under existing contracts," and this implies that the special rights and privileges granted to the pioneer investors and operators in the PIP Resolution are likely to become permanent. Consequently, the status quo advocates have very little to fear from the RC.

Preparatory Investment Protection (PIP)

The purpose of Resolution II governing preparatory investment in pioneer activities relating to polymetallic nodules is to make provisions for investments by states and other entities in a manner compatible with the deep sea-bed regime prior to the entry into force of the Convention. Preparatory investment protection (PIP) was considered to be necessary for companies to continue their preparations for commercial deep sea mining, and could hardly have been avoided once the parallel system was agreed upon. However, the PIP Resolution represents special arrangements for the advantaged,

to an extent not matched by any special concerns for the disadvantaged. The Preparatory Commission, established in March, 1983, shall administer the arrangements of the PIP Resolution, and a very concerted and conscious effort is needed in the Prep. Comm. to give the principles, norms, rules and regulations a consistent new order interpretation in order for the predominantly old order PIP Resolution not to undermine new order elements of the regime.

Any state signatory of the Convention may apply to the Prep. Comm. on its own behalf or on behalf of any state enterprise or entity or natural or juridical person, specified in the PIP Resolution, for registration as a pioneer investor, and have designated to it a pioneer area. A pioneer investor shall, from the date of registration, have the exclusive right to carry out pioneer activities in the area allocated to him. Pioneer activities include exploration but not exploitation of the nodules. The PIP Resolution identifies state or private enterprises from, or effectively controlled by, France, Japan, India, the USSR, Belgium, Canada, the FRG, Italy, the Netherlands, the UK, and the USA [9] as pioneer investors on the condition that the enterprise concerned has expended an amount equivalent to at least US $30 million in pioneer activities before January 1, 1983 and the certifying state(s) has (have) signed the Convention. In addition, any developing state signatory to the Convention may apply to the Prep. Comm. for registration as a pioneer investor if the amount mentioned is expended on pioneer activities before 1 January 1985. Applications for a plan of work for exploration and exploitation may be submitted by pioneer investors to the ISA after the entry into force of the Convention.

No such plan of work shall be approved unless the certifying state(s) is (are) a party (parties) to the Convention, i.e., has (have) ratified or acceded to it. In the ensuing allocations of production authorizations, the pioneer investors that have obtained approval of plans of work for exploration and exploitation shall have priority over all applicants other than the Enterprise, which shall be entitled to production authorizations for two mine sites, including an initial quantity of 38,000 metric tonnes of nickel from the available production ceiling. The production authorizations may not allow commercial production of sea-bed minerals to exceed the production ceiling.

The most emphatic old order element of the PIP Resolution is the fact that it gives special treatment to the advantaged. It provides special protection for those who have already made investments with a view to engage in deep sea mining. The rationale for this is that investors need juridical protection in order to continue their programs aimed at exploitation of the resources of the deep sea-bed. As the number of mine sites allowed under the production ceiling is limited [10], and as the pioneer investors who have obtained approval of plans of work shall have priority over all applicants other than the Enterprise, deep sea mining is likely to be dominated by the

western industrialized states, possibly together with the USSR and India. If so, the result is, of course, that the technologically and economically advantaged will dominate the exploitation of this new area just as they have dominated other areas before. The PIP Resolution is merely a logical follow up to the parallel system for exploration and exploitation, but the effect may turn out to be a perpetuation of the status quo.

However advantageous for the presently powerful, the PIP Resolution does contain new order elements, the intention of which is to provide the Enterprise with the funds, technology and expertise necessary to enable it to keep pace with the other entities identified in the resolution. In addition to that, only exploration, not exploitation, is permitted before the entry into force of the Convention and the establishment of the ISA. The implication is that exploitation will only be permitted by parties to the Convention. To be allowed to exploit the resources of the deep sea-bed, the applicants are required to ratify the Convention. Also, to be permitted to engage in exploration (pioneer activities), the entities must fulfill certain qualification criteria, and the certifying state must have indicated the intention to ratify and comply with the Convention by having signed it.

The qualification criteria include:

- level of expenditure, and
- conformity with the other provisions of the PIP Resolution, which by implication means that
  - the application must cover a total area sufficiently large and of sufficiently estimated commercial value to allow two mining operations (in the reserved area and the pioneer area);
  - indications of the co-ordinates of the area;
  - all data available to the applicant must be made available to the Prep. Comm.;
  - ensurance that the area does not overlap any other area;
  - and conduct of activities in a manner compatible with the Convention.

These qualification criteria are few and mostly old-order oriented, and they must be ensured by the certifying state(s). As for the requirement that certifying states must have signed the Convention, an old order snag is included: flags of convenience are permitted.

If the application, certified by a signatory to the Convention, meets the criteria (unsystematically and vaguely mentioned in the PIP Resolution), the Preparatory Commission must register the applicant as a pioneer investor with exclusive rights to carry out pioneer activities in the allocated area. However, no pioneer investor may be registered with respect to more than one pioneer area. Another limitation to the rights and privileges of the advantaged is that "In the case of a pioneer investor which is made up of two or more components, none of such components may apply to be registered as a pioneer

investor in its own right" or under the certification of a developing state (article 4). The main problem with this attempted limitation is that these matters cannot easily be controlled.

To Sum Up:

The work of the Preparatory Commission, guided by the PIP resolution, is likely to be decisive for the subsequent functioning of the ISA. One of the main tasks of the Commission is to approve, almost automatically, applications (mainly from industrialized countries) to be registered as pioneer investors. When registered, the investors obtain priorities in the process of approval by the Authority of plans of work and the issuance of production authorizations. In the case of competition for production authorizations under the production ceiling, the pioneer investors (not the Authority) must decide whether and, if so, to what extent they wish to apportion the allowable tonnage among themselves, or, if not, agree on an order of priority for production authorizations. These provisions leave very little room for the ISA to exert influence on crucial decisions within the deep sea-bed regime. It seems -- almost -- that the reciprocating states agreement [11] might suffice for settlement of disputes and that the ISA, in the PIP Resolution, is reduced to a registering body acting in accordance with the decisions of certifying/sponsoring states and other investors. If this is so, the PIP Resolution is a very important old-order element of the regime.

CONCLUSION

Throughout the negotiation process concessions have been made to the effect that the careful balance of the parallel production system and the basic conditions of prospecting, exploration and exploitation have tilted in the direction of special concerns for the advantaged in the PIP Resolution. The developing land-based producers have not obtained a similar protection through the production policies on the interim nickel production ceiling and on compensation. Thus, the rules and regulations may perpetuate the status quo through provisions giving special preferences to potential deep sea miners presently occupying privileged positions within the established order.

However, the rules and regulations also include several alternative-order elements. The Authority is endowed with extensive powers such as the right to: take an active part in all levels of deep sea mining; issue production authorizations; require the fulfillment of qualification criteria, and financial and technology-transfers provisions; control, organize, supervise, and even employ sanctions. Whether this becomes a reality, or merely a paper design, depends to a large extent on the composition of the organs of the Authority, the distribution of powers and functions among them, and their decision-making procedures. The wide scope of the explicitly formulated

criteria for rules and regulations may be interpreted and emphasized differently by different decision-makers. Although these elements of the regime may be characterized as having a high internal consistency, they are sufficiently vague and ambiguous to allow more than one interpretation. However, they are considerably clearer than the principles and norms, which is as can be expected: rules and regulations must be designed to implement the principles. They only moderately succeed in doing so in a consistent way. In this respect the USA, the UK and the FRG, as new order opponents, have several reasons to be satisfied because the substantive component of the regime does not seem to conform to principles emphasizing the special interests and needs of the disadvantaged.

ELEMENTS OF THE REGIME: ORGANIZATIONAL ARRANGEMENTS

Structure

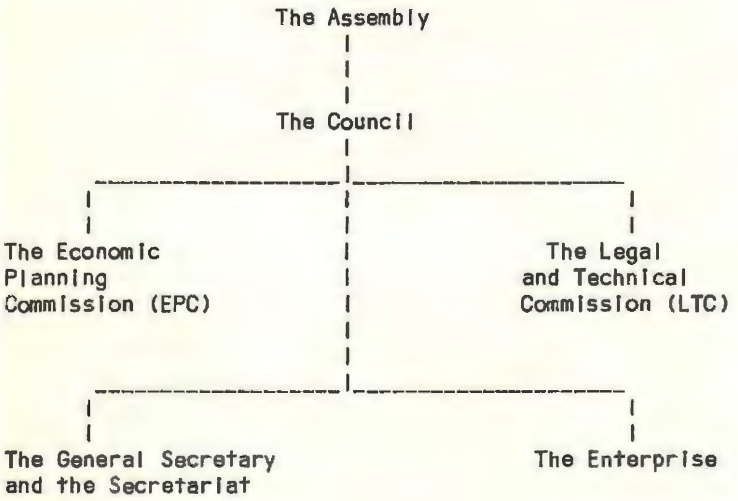
Together with the substantive component -- the rules and regulations -- the procedural component of the Authority ideally must contribute to the fulfillment of the principles of the regime. The question is: which organs have what status, composition, decision-making procedures, powers and functions? If the organizational structure and process imply advantages to certain (groups of) states, the policy of the regime is likely to discriminate in favor of these states. The structure and process of the ISA may in fact have a decisive influence on which part of the dual regime will dominate the other or whether the two shall be equally emphasized.

An examination of the composition, decision-making procedures, powers and functions of the various parts of the Authority reveals that the duality of the norms, rules and regulations reappears in the organizational arrangements and, just as in other parts of the regime, the old order seems to have the upper hand.

The principal organs of the Authority are the Assembly, the Council (with the Economic Planning Commission and the Legal and Technical Commission), and the Secretariat. In addition, the Enterprise will be the operating arm of the Authority, and will carry out "activities in the Area" directly; these activities include prospecting, exploration and exploitation of resources, as well as transport, processing and marketing of minerals recovered from the area.

These organs were introduced in the first negotiating text and have kept their names since then, but their status, composition, voting/decision-making procedures, powers and functions underwent several changes before these issues were settled at the 11th session in 1982. An analysis of the negotiating texts shows that the "powers and functions", especially those of the Council, have been repeatedly renegotiated throughout the entire Conference period from start to finish. "Procedure and voting" and "composition" have also been modified frequently in the texts, whereas "status" was settled relatively early.

The ISA can be illustrated and summarized in the following way:



THE ASSEMBLY:

STATUS: The supreme organ.
COMPOSITION: Each party to the Convention.
PROCEDURE AND VOTING: Each member - one vote.
Questions of procedure: simple majority.
Questions of substance: 2/3 majority.
POWERS AND FUNCTIONS: General policies; elections; consider and approve rules, regulations, procedures recommended by the Council.

THE COUNCIL:

STATUS: The executive organ.
COMPOSITION: 36 members; representation based on interest and geographical criteria; period of office: 4 years (re-election).
PROCEDURE AND VOTING: Each member - one vote.
Questions of procedure: simple majority.
Questions of substance: three tier system; 2/3, 3/4 or consensus depending on the importance of the issue.
POWERS AND FUNCTIONS: Specific policies; guidelines; directives; supervision and coordination of implementation; propose candidates for elections; make recommendations to the Assembly; consider reports; approve plans of work; issue production authorizations; borrow funds.

THE ECONOMIC PLANNING COMMISSION AND THE LEGAL AND TECHNICAL COMMISSION:

STATUS: Organs of the Council; implementing bodies.
COMPOSITION: 15 members each; representation based on criteria of interest, geography and qualifications; period of office: 5 years (re-election).
PROCEDURE AND VOTING: To be established by the rules, regulations and procedures of the Authority.
POWERS AND FUNCTIONS: Formulate rules and regulations; make recommendations and proposals to the Council; make proposals to the Council; supervise "activities in the Area."

THE ENTERPRISE:

STATUS: The Enterprise is the organ of the Authority which carries out "activities in the Area" directly. These activities include prospecting, exploration, exploitation, transportation, processing and marketing of minerals. In developing the resources of the area, the Enterprise must operate on the basis of sound commercial principles. The Enterprise must act in accordance with the general policies of the Assembly and the directives of the Council.

STRUCTURE: THE GOVERNING BOARD
COMPOSITION: 15 members elected by the Assembly. Representation based on geographical and qualification criteria. Period of office is 4 years (re-election).
PROCEDURE AND VOTING: Each member - one vote. Questions of procedure and substance: simple majority.
POWERS AND FUNCTIONS: Direct the business operations of the Enterprise; draw up and submit formal written plans of work to the Council; prepare and submit applications for production authorizations; authorize negotiations on the acquisition of technology; approve the annual budget of the Enterprise; submit reports.

THE DIRECTOR GENERAL AND THE STAFF

The Director-General is the legal representative and the chief executive of the Enterprise. The Director-General and the staff must be international officials responsible only to the Enterprise. Period of office for the Director-General: 5 years (re-election). Recruitment and employment of the staff must be based on qualifications (and geographical) criteria.

THE SECRETARIAT:

STATUS: The administrative organ. Headed by the Secretary-General who is the chief administrative officer of the Authority.

COMPOSITION: Staff appointed by the Secretary-General on the basis of qualification -- and geographical criteria. The Secretary-General and the staff shall be international officials responsible only to the Authority, not to any state(s) or other entity.

PROCEDURE AND VOTING: "The rules, regulations and procedures of the Authority shall contain such provisions as are necessary to implement this article."

POWERS AND FUNCTIONS: Submit annual reports to the Assembly on the work of the Authority; consult and co-operate with international and non-governmental organizations.

In accordance with the principle that "some states are more equal than others" the majority of developing states and their industrialized supporters made concessions to the minority by accepting a progressively larger emphasis on special (economic) interest representation and veto rights in the Council, and by endowing the Council with the most important powers and functions. The minority, in turn, conceded the Assembly the status of "the supreme" organ of the ISA and accepted unrestricted/open-ended representation in this organ. The decision-making system of the Assembly implies the possibility for the majority to exercise powers and functions in accordance with their preferences (the new order elements of the regime) to the extent decisions are to be made in the Assembly. If the Assembly had been endowed with the most important powers and functions, its supreme status, its universal participation and its rules of decision-making might have contributed to the equal viability of both parts of the regime.

As it is, however, the special interest representation and the three tier voting system of the Council impede the possibility of acquiring, e.g., financial and technological transfers necessary for the effective functioning of the Enterprise of the ISA. As the "largest consumer" (the US) and the USSR (either as a large consumer/importer or a large investor) have guaranteed, permanent seats on the Council -- provided they ratify the Convention -- and as consensus is required on crucial decisions in the Council, the implication is, quite traditionally, that the USA and/or the USSR -- again, if they become parties to the Convention -- have been granted the permanent and exclusive right to veto decisions that might have been instrumental for the fulfillment of the "benefit of mankind as a whole" principle. In this way the deep sea-bed regime perpetuates an old tradition of giving special privileges to the most advantaged: the super powers [12].

Powers and Functions

Annex II of this paper outlines the powers and functions of the Assembly, on the one hand, and of the Council, the Economic Planning Commission (EPC) and the Legal and Technical Commission (LTC), on the other. The list reveals overlapping as well as exclusive rights and responsibilities, powers and functions [13].

Clearly, the powers and functions of the supreme organ, the Assembly, have a smaller scope and are less important (from a new order perspective) than the powers and functions of the executive organ, the Council. Whereas the Assembly may engage in organizational housekeeping and establish general policies, initiate studies, consider problems of a general nature and discuss any question or matter within the competence of the Authority, the Council dominates on the other end of the powers-and-functions list. The Council must make decisions about protection of land-based producers (consensus); approve plans of work (approved if not disapproved by consensus or, if not recommended by the LTC, approved by a three-fourths majority); make the selection from among applicants for production authorizations (three-fourths majority); exercise control (three-fourths majority); supervise and co-ordinate (three-fourths majority); and institute proceedings on behalf of the Authority before the SBDC (three-fourths majority). This enumeration reveals that most of the consequential decisions of the Authority will be exclusively decided, or dominated, by the Council-- the most old-order-oriented part of the duality.

In addition to that, some of the most central new order principles are not mentioned at all in the powers and functions of the ISA. One example is transfer of technology. This is supposedly encompassed by the provisions on approval of plans of work, but should such a crucial new order element not have been explicitly provided for? Special provisions for participation by developing states and the production ceiling are two other examples of omissions. The result is uncertainty as to which organ must deal with these issues, if they are dealt with at all. With this organizational set-up and this distribution of powers and functions, there is a very real possibility that the new-order elements of the regime will be subordinated to the advantage of the more traditional half of the Janus face.

The Preparatory Commission

In the interim period until the entry into force of the Convention, the Preparatory Commission for the ISA and the International Tribunal for the Law of the Sea (IT) must prepare the provisional agenda for the first session of the Assembly and of the Council; prepare draft rules of procedure for these organs; make recommendations concerning the budget, the relationship between the Authority and other international organizations, and the Secretariat; undertake studies on the problems which may be encountered by developing land-based producer states likely to be most seriously affected by the production of minerals derived from the area; and establish a special commission on these problems. The purpose of the Preparatory Commission is to ensure the entry into effective operation without undue delay of the Authority and the ITLS, and to make the necessary arrangements for the commencement of their functions. The Preparatory Commission must also establish a special commission which is to take all measures necessary for the early entry into effective operation of the Enterprise.

As more than fifty states signed the Convention in December, 1982 [14], the Preparatory Commission was convened by the Secretary-General of the UN in March, 1983. The Commission consists of representatives of signatory states; representatives of the signatories of the Final Act may participate fully in the deliberations of the Preparatory Commission as observers, but do not have the right to vote [15].

The Preparatory Commission must meet as often as necessary for the expeditious exercise of its functions, and will remain in existence until the conclusion of the first session of the Assembly, scheduled to start on the date of entry into force of the Convention (12 months after the date of the 60th ratification). The Preparatory Commission is devised to ensure the continuity of deep sea-bed related activities in the interim period prior to the establishment of the ISA. In this way it might not be possible for opponents of the regime to obstruct it as long as might have been possible if no Preparatory Commission was provided for. However, the purpose of "effective operation without undue delay" may also satisfy potential sea-bed miners, anxious not to have their plans of progress interrupted.

The preoccupation of the Preparatory Commission with the establishment of the Enterprise and the problems of adversely affected developing land-based producer states points in the direction of the new order, but this is challenged by the Resolution Governing Preparatory Investment in Pioneer Activities relating to Polymetallic Nodules.

The purpose of this PIP Resolution is to make provision for investments by states and other entities before the Convention enters into force. In principle these activities must be carried out in a manner compatible with the provisions of the deep sea-bed regime, but as the regime has a dual character, and as the PIP Resolution outlines special privileges for the advantaged, a fairly safe prediction is that the controversies of UNCLOS III are likely to reappear in the deliberations of the Preparatory Commission, and that time seems to work for the benefit of the advocates of the old order. In fact, as the deep sea-bed issue moves into a progressively more bureaucratic and less monitored stage, chances increase that "practical considerations" of a short-term nature will reduce the emphasis on new order principles, unless the majority of states favoring a new order actively and consciously prevent a perpetuation of the status quo.

Summary and Conclusion

A duality implicitly understood in the principles and explicitly introduced in the norms pervades the organizational arrangements as well as the rules and regulations of the deep sea-bed regime. The old order and an alternative order are both reflected in the composition, procedure and voting, and powers and functions of the Authority, and to some extent also in the Preparatory Commission. As they allow a certain range of interpretations, the provisions of the regime may be acceptable

to a majority of states, but final acceptance depends, inter alia, on the outcome of the deliberations of the Preparatory Commission as far as rule creation, rule interpretation and rule-precision is concerned. Whereas some industrialized states may not accept new order specifications, developing states are likely to challenge significant tilts in the other direction.

The organizational arrangements in themselves represent an alternative order by not recognizing old-order social choice mechanisms such as market forces, law of capture, unilateral action possibly backed by coercion, or organized violence. Decisions must be made through negotiations leading to consensus or voting in the organs of the Authority, and these decisions may in principle touch all aspects of deep sea mining, from information gathering to enforcement and sanctions. The new order direction of this structure -- for which concrete arrangements are being made in Jamaica -- is counterbalanced by the composition of, the decision rules in, and the distribution of powers and functions between, the Assembly and the Council. Also, the medium level of integration (supranationalism + internationalism) testifies to the limited discretionary powers of the Authority. Again, a new-order framework seems to have acquired a predominantly old-order content.

INNOVATION OR A PERPETUATION OF THE STATUS QUO?

The persistent duality, the ambiguities, the inconsistencies and the possibilities of several plausible interpretations may have attracted the support of a large majority of states, but these same characteristics also represent one of the main problems with the deep sea-bed regime as outlined in the Convention. At the heart of the dilemma lies the basic compromise of the parallel system, giving sea-bed mining rights to state and private entities as well as to the Enterprise of the ISA. A large bulk of the other rules and regulations of the regime are merely logical follow-up measures for both parts of the parallel system, and some of the old order concessions could hardly have been avoided once the system of exploration and exploitation was agreed upon. However, the organizational arrangements could have been established differently and could have made the ISA more or less independent of states as far as composition, procedure, voting, powers and functions are concerned.

As it is, the developing states may be satisfied with the establishment of principles that might have precedential effect on future negotiations on other North-South issues. For the G-77 the deep sea-bed regime carries an ideological importance which is unlikely to be matched by actual activities.

On their part, the G-5 seems to have several reasons to be pleased with the fact that the regime deviates far less from the status quo than it would have done if the rules, regulations, and organizational arrangements had been designed in accordance with the predominantly new-order principles. All in all, the deep sea-bed regime provisions constitute a carefully balanced

package which has been gradually modified to meet the claims of the old-order proponents. In this perspective, the opposition of the USA, the UK, the FRG and a few other states is not easily understood.

The final compromises on the deep sea-bed regime can be outlined in terms of the new versus the old order (see the chart on the following pages).

As the international climate for innovations deteriorated, as nodule lobbies increasingly exerted their influence on national decision-makers, and as more and more conservative governments took office in key industrialized countries, the advocates of a new order made large concessions. The result is that the developing states do not have any guarantees that:

- "activities in the Area" will be effectively controlled by the ISA,
- participation by developing countries will be rendered possible through financial, scientific and technological transfers,
- benefits will be equitably (re)distributed.

For their part, the G-5 countries have no guarantee that activities will be carried out in accordance with economic efficiency considerations. However, for them another main concern -- security of supplies -- is more likely to be satisfied within the Convention than outside, because of the stability and predictability of activities and global recognition of claims provided by a universally accepted regime.

Although the compromise nature of the deep sea-bed regime as outlined in the UN Convention on the Law of the Sea might not completely satisfy anybody, a careful analysis of the provisions of the regime indicates that the advocates of the status quo have very few reasons to complain about the outcome of the negotiations. This, of course, does not mean that developing countries would be better off by rejecting the deep sea-bed regime. On the contrary, all parties which give participation and redistribution a higher priority than economic efficiency considerations and security of supplies have the opportunity to promote their priorities in the Preparatory Commission. The representatives in the Preparatory Commission face the double task of securing continued preparatory investment under the Convention and the PIP Resolution -- thereby rendering the Reciprocating States Arrangements a transitory device -- and promoting the possibility that the common heritage of mankind is exploited for the benefit of mankind as a whole.

	NEW ORDER	OLD ORDER	CONVENTION ORDER
Basic doctrine	Common heritage of mankind	Res communis/(res nullius)	Common heritage of mankind
Rights/ ownership	All rights are vested in mankind as a whole.	Emphasis on the rights of states and entities sponsored or controlled by them.	All rights are vested in mankind as a whole, but the rules and regulations heavily emphasize the rights of states and entities sponsored by them.
Beneficiaries	Mankind as a whole; in particular developing states.	Priority of consumer, importer, financial and technological interests (in industrialized states).	Mankind as a whole, in particular developing states, but priority shall also be given to consumer, importer, financial and technological interests.
Production system	Participation by developing states through the Enterprise; ISA monopoly or a parallel system.	Participation by states parties and other entities sponsored or controlled by them. Free enterprise system (efficiency considerations.	Parallel system: participation by developing states through the enterprise, + participation by state and private companies.
Resource transfers	Transfer of financial and technological resources to the Enterprise and developing states.	Emphasis on private property rights and the legitimacy of benefiting from comparative, technological advantages. Very limited financial transfers may be acceptable.	Transfer of financial and technological resources to the Enterprise and developing states, tempered by acceptance of private property rights and the legitimacy of benefiting from comparative, technological advantages. Limited financial transfers are required.

Protection from adverse effects	Production ceiling in order to protect developing land-based producers.	Production oriented system tempered by compensations or adjustment assistance to the adversely affected.	Production ceiling which is likely to protect land-based nickel producers (industrialized states) + a production oriented system tempered by compensations and adjustment assistance to adversely affected states.
Revenue sharing	Equitable sharing/distribution of benefits on a non-discriminatory basis, modified by particu- and needs of developing states.	Those who have the capability to engage in deep sea mining, shall reap the benefit.	Equitable sharing/distribution of benefits on a non-discriminatory basis, modified by particular concerns for the interests and needs of developing states. Financial rules may not leave much to be distributed.
Character of the ISA	Strong ISA with a large functional scope. Residual powers rest with the ISA.	Weak ISA with a small functional scope. Circumscription of the powers and functions of the ISA.	Relatively strong ISA with a relatively large functional scope. Circumscription of the powers and functions of the ISA. Main organ: the Council.
Representation	Each state, one representative.	Representation based on special (material) interests and qualification criteria.	Each state has one representative in the Assembly, whereas representation is mainly based on interest criteria (material and non-material) in the Council. Qualification criteria are also relevant, esp. in the EPC and the LTC.
Voting	Each representative/state -- one vote. No veto rights. Enforceable decisions made by simple (or qualified) majorities. (Supranationalism.)	Preferably weighted voting, veto rights to small minorities. Non-binding, consensus decisions. (Internationalism.)	Each representative -- one vote. Veto rights to small minorities in important decisions. Enforceable (consensus) decisions, in principle (supranationalism + internationalism).

NOTES

1. Uncertainties and future developments are more thoroughly discussed in: Betzy Ellingsen Tunold, The UNCLOS III Negotiations: The 11th Session and Beyond, Study N:051, 1982, Publication no. 5 from the International Regimes Project, the Fridtjof Nansen Institute.
2. LOS/PCN/19, 4 May 1983. Letter dated 3 May 1983, from the permanent representative of the Union of Soviet Socialist Republics to the United Nations addressed to the Chairman of the Preparatory Commission.
   LOS/PCN/7, 26 April 1983. Note verbale dated 24 April 1983, from the permanent representative of India to the United Nations addressed to the Chairman of the Preparatory Commission.
   LOS/PCN/21, 13 May 1983. Note verbale dated 12 May 1983 from the permanent representative of India to the United Nations addressed to the Chairman of the Preparatory Commission: "The USSR intends to apply to the Preparatory Commission for registration and allocation of a pioneer area in the Pacific Ocean and India intends to apply to the Preparatory Commission for registration and allocation of a pioneer area in the Central Indian Ocean."
3. "The high seas are commonly described as res communis omnium. (...) The res communis may not be subjected to the sovereignty of any state, general acquiescence apart, and states are bound to refrain from any acts which might adversely affect the use of the high seas by other states or their nationals. It is now generally accepted that outer space and celestial bodies have the same general character. Legal regimes similar to this may be applied by treaty to other resources, for example an oilfield underlying parts of two or more states."
   Res nullius (terra nullius) "is open to acquisition by any state. ... It is subject to certain rules of law which depend on the two assumptions that such zones are free for the use and exploitation of all and that persons are deprived of the protection of the law merely because of the absence of state sovereignty. ... States may exercise jurisdiction in respect of individuals and companies carrying on activities in terra nullius. Acts in the nature of aggression or breaches of the peace, war crimes, or crimes against peace and humanity, will equally be so in terra nullius. Unjustified interference from agencies of another state with lawful activity will create international responsibility in the ordinary way. It is doubtful whether private interests established prior to the reduction into sovereignty of a terra nullius must be respected by the new sovereign."
   Ian Brownlie, Principles of Public International Law, Clarendon Press, Oxford, 1966, pp. 164-165. See also Jon Van Dyke and Christopher Yuen, ""Common heritage" v.

"Freedom of the High Seas": Which Governs the Sea-bed?" San Diego Law Review, Vol. 19, no. 3, 1982, pp. 514-529 for a thorough discussion about which basic doctrine governs the sea-bed. The authors conclude that the United States is wrong as a matter of law in asserting that sea-bed mining is a freedom of the high seas and is unwise as a matter of policy in thinking that US corporations could profitably mine the polymetallic nodules of the deep sea-bed outside of an internationally recognized sea-bed authority. They state that "all the other high seas freedoms are compatible uses, uses that do not diminish the potential for the same use by others. Polymetallic nodules are a finite resource from an economic perspective. The exploitation of the prime mine sites in the near future by the technologically advanced nations will deny developing nations access to this resource at a later time. Polymetallic nodules do not, therefore, fit into the concept Grotius developed, of things that seem "to have been created by nature for common use."" (p. 514).
As for the "res nullius" argument, the authors write that "since 1967, the international community, including the USA, has emphatically rejected the proposition that the deep sea-bed is a res nullius." The US and the USSR "have steadfastly refused to recognize claims of sovereignty to parts of Antarctica, and the international community was quick to deny the possibility of claims of national sovereignty to outer space or celestial bodies" (p. 519). Also, the res nullius argument implying that first occupation gives exclusive rights, is not applied for the continental shelf either (pp. 516-518).
Finally, the authors claim that "a new treaty is not necessary to confirm the present status of the deep sea-bed as the common heritage. Nations have some freedom to negotiate what the common heritage means and its legal significance, but they cannot deny that the sea-bed is the common heritage of humankind" (p. 529). Cf. also P.B. Engo, "Perspectives on US policy towards the Law of the Sea: An evaluation of the Deep Sea-bed Mining Controversy;" Paper presented at Boalt Hall International Society, University of California, Berkeley, Feb. 20, 1982, p. 8.

4. At the 11th session of UNCLOS III, the main opponents of the Draft Convention were informally called the Group of 5. This group always included the United States and off and on the FRG, the UK, Japan, and France. In the final vote only the US voted against the Convention. France and Japan voted for it and have later signed the Convention, whereas the UK and the FRG abstained. A number of other industrialized states abstained, too; and, among them, at least Belgium and Italy may be considered relatively close supporters of the USA in this matter. Thus the membership of the Group of 5 (G-5) varied from one to approximately seven, depending on which element of the deep sea-bed

regime was discussed. When the term "G-5" is used in this paper -- in order to simplify language by a parallel to the well known "G-77" -- one or more of the states mentioned above is (are) included.

5. S.D. Krasner, "Structural Causes and Regime Consequences: Regimes as Intervening Variables", International Organization, Vol. 36, no. 2, spring 1982, pp. 185-205.
6. Numbers in parentheses refer to articles of Part XI of the United Nations Convention on the Law of the Sea, A/CONF. 62/122. 7 October 1982.
7. The norms of the regime are included in article 150 of the Convention.
8. A syndrome is a group of signs and symptoms that collectively indicate a disease or disorder. The "compromise syndrome" can be illustrated in this way:

New order initiative	Compromise I	Compromise II (output)	Old order response

The deep sea-bed regime in itself, not only the norms of it, seems to have gone through the same process. Compromises were reached and agreement appeared close at hand at the end of the 9th session in 1980. However, opponents of the T-7 version of the text spread the impression that the drafted regime was satisfactory to developing states only, and that it closely resembled the new order initiative put forward by the G-77. Consequently, agreement apparently hinged on the willingness of developing countries to make concessions. Concessions were made, and the final output is considerably closer to the "old order response" than the original compromise. Nevertheless, the US does not accept the Convention because of the provisions on the deep sea-bed regime.

Cf. Tunold, "The 11th Session and Beyond", op.cit.

9. Cf. Resolution II Governing Preparatory Investment in Pioneer Activities Relating to Polymetallic Nodules, article 1. Draft Final Act of the Third United Nations Conferences on the Law of the Sea, A/CONF. 62/121, 21 October 1982.

The pioneer investors are likely to be the following companies: Kennecott Consortium, Ocean Mining Associates; Ocean Management, Inc.; Ocean Minerals Company; and state enterprises in France (Afernod), India and the USSR.

Cf. Jan Magne Markussen, The Status and Perspectives for Commercial Exploitation of Manganese Nodules: Possibilities and Limitations for Norwegian Companies, publication from the Ocean Mining Project, the Fridtjof Nansen Institute (forthcoming).

10. Ten mine-sites are needed in order for the four private companies, four state companies and the Enterprise (two mine-sites) to be issued production authorizations. Ten

mine-sites would probably yield a nickel production which exceeds the production ceiling if the growth rate of nickel consumption does not considerably increase in the near future. However, some of the companies already engaged in deep sea mining research may not proceed to full scale testing and operations. For example, OMA and OMCO are not likely to start production under the protection of the Convention. (Andresen, 1983, pp. 118-120).
Steinar Andresen, Political and Legal Conditions for Deep Sea-bed Mining, R:002, 1983, publication no. 3 from the Ocean Mining Project, the Fridtjof Nansen Institute.

11. This description fits the "Agreement concerning interim arrangements relating to polymetallic nodules of the deep sea bed," negotiated by the US, the FRG, the UK, France, and Japan, and signed by all of them except Japan on September 2, 1982. This agreement does not prohibit signatories from becoming parties to the global Convention on the Law of the Sea. The object of the "mini-treaty" is "to facilitate the identification and resolution of conflicts which may arise from the filing and processing of applications for authorizations made by Pre-Enactment Explorers (PEEs) ... under legislation in respect of deep sea-bed operations enacted by any of the Parties." The parties to the "mini treaty" have agreed to reciprocally recognize deep sea-bed area claims; to consult each other; disseminate information; and to resolve conflicts that may arise for pre-enactment explorers.
Per W. Schive(ed.), Laws and Treaties Regulating Deep Sea Mining, N:058, 1982, publication no. 5 from the Ocean Mining Project, the Fridtjof Nansen Institute.

12. G. Kristensen, "The International Sea-bed Authority," Working paper no. 8, 1981, Institute of Social Science, Odense University, discusses the organizational model of the Council.

13. Powers and functions are listed in the following way:
    1. Organizational housekeeping: elections, reports, etc.
    2. General provisions about i.e., information-gathering, scope of discussions, etc.
    3. More specific provisions about economic and financial issues (ranging from assessed contributions via compensation and protection to equitable sharing).
    4. More specific provisions about those issues that may have the largest importance for the implementation of the new order elements of the regime.

    To some extent the list mirrors criteria of chronology and "importance" tempered by "order." The latter demands, for example, that economic and financial issues are grouped together.

14. On 10 December 1982, 117 states, Cook Islands and the Council for Namibia signed the Convention. The group of 117 includes the Eastern European (Socialist) states, developing countries, the Nordic countries, and some other western industrialized states (inter alia, France,

Australia, Canada, and the Netherlands). The UK, Belgium, Italy, the Holy See, Turkey, Oman, Peru, Venezuela, and some other states declared that they would not sign during the signatory session, but they did not close the door to signature at a later stage. Only the USA has committed itself not to sign the Convention.
Approximately 20 states were not present at the Jamaica signatory session in December 1982.

15. All states present at the Jamaica signatory session, except Israel, signed the Final Act of UNCLOS III.

ANNEX I

LIST OF ACRONYMS

EPC: Economic Planning Commission

ISA: International Sea-Bed Authority

ITLS: International Tribunal for the Law of the Sea

LTC: Legal and Technical Commission

RC: Review Conference

SBDC: Sea-Bed Disputes Chamber

UNCLOS III: The Third United Nations Conference on the Law of the Sea.

ANNEX II

POWERS AND FUNCTIONS OF THE ASSEMBLY AND THE COUNCIL/EPC/LTC.+

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
Establish general policies on any question or matter within the competence of the Authority.	Establish specific policies to be pursued by the Authority on any question or matter within its competence.
Elect the members of the Council. (Representatives nominated by states or groups of states).	Adopt its rules of procedure including the method of selecting its president (3/4).
Elect the Secretary-General.	Propose a list of candidates for the election of the Secretary-General (3/4).
Elect the members of the Governing Board of the Enterprise and the Director-General of the Enterprise.	Recommend candidates for the election of the members of the Governing Board of the Enterprise and the Director-General of the Enterprise (3/4).
	Elect the members of the EPC and the LTC from among the candidates nominated by the states parties (3/4).
Establish subsidiary organs. Composition criteria: geographical interest, qualification.	Establish subsidiary organs with due regard to economy and efficiency). Composition criteria: qualification, geographical interest (3/4).
Examine periodic reports from the Council and from the Enterprise, and examine special reports requested.	Present annual and special reports to the Assembly. Consider the reports of the Enterprise and transmit them to the Assembly with its recommendations (2/3).

+ (2/3), (3/4) and (Consensus): majority required for decisions in the Council.

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
Initiate studies and make recommendations for the purpose of promoting international cooperation and encouraging the progressive development of international law relating thereto and its codification.	
Consider problems of a general nature in connection with activities in the area, arising in particular for developing states.	
Discuss any question or matter within the competence of the Authority, and decide as to which organ of the Authority shall deal with any such question or matter not specifically entrusted to a particular organ.	Make recommendations to the Assembly concerning policies on any question or matter (3/4). The EPC shall, upon request of the Council, propose measures to implement decisions relating to activities in the area. The LTC shall make recommendations with regard to the exercise of the Authority's functions (upon the request of the Council).
Assess the contributions of members to the administrative budget of the Authority.	Review the collection of all payments to be made by or to the Authority (2/3). Establish a subsidiary organ for the elaboration of draft financial rules, regulations and procedures relating to financial management of the Authority and financial arrangements for and between the Authority and contractors (3/4).
Prescribe the limits on the borrowing power of the Authority.	Exercise the borrowing power of the Authority.

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
Conduct and approve the proposed annual budget of the Authority.	Submit the proposed annual budget of the Authority to the Assembly (3/4). The Secretary-General shall draft the proposed annual budget.
Consider and approve the rules, regulations and procedures of the Authority, and any amendments thereto relating to prospecting, exploration and exploitation, financial management and internal administration of the Authority, and transfer of funds from the Enterprise to the Assembly. Decisions on the transfer of funds shall be based on recommendations by the Governing Board of the Enterprise.	Adopt and provisionally apply the rules, regulations and procedures of the Authority, and any amendments thereto (Consensus). The LTC shall formulate and submit to the Council such rules, regulations, etc. and shall review them and recommend amendments.
Establish a system of compensation or other measures of economic adjustment assistance.	Recommend a system of compensation or other measures of economic adjustment assistance (2/3). The EPC shall propose such a system. Take, upon the recommendation of the EPC, necessary and appropriate measures to provide protection from adverse economic effects of deep sea mining (production ceiling) (Consensus). The EPC shall review the trends of and the factors affecting supply, demand and prices of materials which may be derived from the area. The EPC shall also examine any situations likely to lead to adverse effects...and make appropriate recommendations to the Council.

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
Consider and approve the rules, regulations and procedures on the equitable sharing of financial and other economic benefits derived from activities in the area. If the Assembly does not approve the recommendations of the Council, the Assembly shall return them to the Council for reconsideration.	Recommend the rules, regulations and procedures on the equitable sharing of financial and other economic benefits (Consensus). The LTC shall formulate and submit to the Council such rules, regulations, etc. The LTC shall also review them and recommend amendments.
Decide upon the equitable sharing of financial and other economic benefits derived from activities in the area.	
Approve agreements with the UN or other international organization.	Enter into agreements with the UN or other international organization on behalf of the Authority (2/3). Issue directives to the Enterprise (2/3). Approve plans of work. Plans of work shall be submitted to the Council by the LTC. If recommended by the LTC, a plan of work shall be deemed to have been approved by the Council unless a written objection is submitted to the President within 14 days. If, at the end of the required conciliation procedure, the objection is still maintained, the plan of work shall be deemed to have been approved by the Council unless the Council disapproves it by consensus among its members excluding any state or states making the application or sponsoring the applicant. If the LTC recommends the disapproval of a plan of work or does not make a recommendation, the Council may approve

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
	it by a 3/4 majority of the members present and voting.
	The LTC shall review formal written plans of works.
	Make selections from among applicants for production authorizations, if necessary (3/4).
	The LTC shall calculate the production ceiling and issue production authorizations.
	Exercise control over activities in the area (3/4).
	Issue emergency orders to prevent serious harm to the marine environment arising out of activities in the area (3/4).
	The LTC shall make recommendations to the Council to issue emergency orders.
	Disapprove areas for exploitation by contractors or the Enterprise in cases where substantial evidence indicates the risk of serious harm to the marine environment (3/4).
	The LTC shall make recommendations to the Council to disapprove areas for exploitation.
	The LTC shall prepare assessments of the environmental implications of activities in the area and make recommendations to the Council on the protection of the marine environment. The LTC shall also make recommendations to the Council regarding the establishment of a monitoring program to observe, measure,

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
	evaluate and analyze ... the risks or effects of pollution of the marine environment resulting from activities in the area.
	Establish appropriate mechanisms for directing and supervising a staff of inspectors who shall inspect activities in the area, to determine the degree of compliance (3/4).
	The LTC shall make recommendations to the Council regarding the direction and supervision of a staff of inspectors.
	The LTC shall supervise, upon the request of the Council, activities in the area, where appropriate, in consultation and collaboration with any entity carrying out such activities of State or States concerned, and report to the Council.
	("The members of the LTC shall, upon request by any State Party or other party concerned, be accompanied by a representative of such State or other party concerned when carrying out their function of supervision and inspection" (165/3).
	Supervise and coordinate the implementation of the provisions of Part XI ... and invite the attention of the Assembly to cases of non-compliance (3/4).
Suspend the exercise of rights and privileges of membership (upon a finding by the Sea-bed Disputes Chamber (SBDC)).	Make recommendations to the Assembly concerning suspension of the exercise of rights and by privileges of membership (3/4).

THE ASSEMBLY SHALL:	THE COUNCIL SHALL:
	Institute proceedings on behalf of the Authority before the Sea-Bed Disputes Chamber in cases of non-compliance (3/4).
	The LTC shall recommend to the Council that proceedings be instituted...
	Notify the Assembly upon a decision by the SBDC, and make any recommendations which it may find appropriate with respect to measures to be taken (2/3).
	The LTC shall make recommendations to the Council with respect to measures to be taken.

To Sum Up:

The organizational housekeeping is to be shared between the Assembly and the Council. Elections are reserved for the Assembly, but the Council has the right to nominate, recommend or propose candidates for various positions. The Council must adopt its own rules of procedure, and appropriate subsidiary organs may be established by the supreme and the executive organ.

The general policies must be established by the Assembly which has been given the power to initiate studies; consider problems of a general nature; and discuss any questions or matter within the competence of the Authority.

Specific policies, however, will to a large extent be established by the Council. Crucial issues such as: the protection of land-based producers; approval of plans of work; issuance of production authorizations; control; inspection; supervision; and institution of proceedings are reserved for decision by the Council. The Assembly is left with the right to assess contributions, establish a system of compensation or other measures of economic adjustment assistance; and to suspend the exercise of rights and privileges of membership.

PLANNING FOR THE INTERNATIONAL SEA-BED AUTHORITY

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Part XI of the United Nations Convention on the Law of the Sea and the related annexes outline the legal regime under which deep sea-bed minerals beyond national jurisdiction may be developed. Its provisions represent compromises arrived at during over 10 years of negotiations between the industrialized and developing nations. Their goal was to develop a legal framework that would both equitably implement the 1970 Declaration of the United Nations General Assembly [2] that the sea-bed beyond the limits of national jurisdiction (the Area) and its resources are the common heritage of mankind, and devise a governance system that would allow sea-bed minerals to be developed for the benefit of all mankind, and in particular the developing countries.

The Convention establishes an institution representative of the whole of the international community, the International Sea-bed Authority. The Authority is the organization through which States Parties shall organize and control activities in the Area, particularly with a view to administering the resources of the Area in accordance with Part XI of the Convention [3]. Activities in the Area are defined as all activities of exploration for and exploitation of the mineral resources of the area [4]. Thus the Authority is the organization through which exploration for and exploitation of the common heritage of mankind will be organized and controlled [5]. In light of existing legal, political, economic and technological factors, what will the planning exercise for such an organization involve?

RELEVANT FACTORS FOR PLANNING FOR THE AUTHORITY

Legal Factors

Under the Convention, the next step is to draft numerous, more detailed rules, regulations and procedures to flesh out the legal framework set forth in the Convention. This task falls on the Preparatory Commission for the International Sea-bed Authority and for the International Tribunal for the Law of the Sea, which was convened in 1983 after the Convention had been signed by more than 50 states. Once the rules, regulations and procedures are completed, they will, among other things, make more precise both the substantive requirements to be met by

potential mineral resource developers and the procedural steps required to acquire rights to develop sea-bed mineral resources.

Political Factors

The third United Nations Conference on The Law of the Sea (UNCLOS III) sought consensus throughout the 10-year negotiations; in the end, however, at the culmination of its work, while adopting the Convention, consensus eluded the Conference. The United States, which had problems in accepting the Convention's deep sea-bed mining provisions, asked for a vote. The Convention was adopted on April 30, 1982, by a vote of 130 to four, with seventeen abstentions. A number of the countries most active in pioneering sea-bed mineral development also have problems in varying degrees with the deep sea-bed mining provisions and have expressed reservations about adhering to the Convention. States in this category that have signed the Convention include France, the Netherlands and Japan. In addition, Belgium, Italy, the United Kingdom and the Federal Republic of Germany have not yet indicated whether or not they will sign the Convention. All of these countries have explicitly stated that their final decisions on the Convention will depend on the Preparatory Commission's work on drafting regulations and procedures. These industrialized mining states have maintained an interest in an alternative multilateral agreement to govern deep sea-bed mining in the event that the Commission does not produce a workable regulatory system for mining. They would prefer a widely acceptable international mining regime. Participation of these countries is thus critical to the outcome of the Preparatory Commission's work.

Economic Factors

In the last few years, the world economy has witnessed a widespread recession and although there are signs of recovery very recently, there is a considerable debate among the economists as to whether these signs are ushering in a long-term recovery. Mineral demand being of a derived demand nature, the recession in the world economy has affected the mineral market severely. A depressed mineral market for a relatively prolonged period has led to stock build-up and excess capacity in existing mines. Under these circumstances, decisions about development of new mines or new sources of supply are invariably clouded with uncertainties. In the case of sea-bed minerals, these can be characterized as resources at this point of time. Large sums need to be expended for the resources to be converted to the category of proven reserves; investment decisions for the development of mines from the proven reserves have to await a successful completion of this phase. Furthermore, investment funds for sea-bed minerals may have to compete with other potential sources of minerals being investigated recently -- polymetallic sulphides, cobalt-rich manganese encrustation within the exclusive economic zones of some states.

Technological Factors

There was no existing technology for mining sea-bed minerals from a depth of 3,000-6,000 metres; research and development efforts were initiated two decades ago for sea-bed mining technology. Today, the basic technical feasibility of a number of alternative mining systems has been established at a pilot scale. In the next phase, some critical engineering problems have to be solved in each of these systems and the feasibility of the operation of a large-scale system over a relatively long period has to be established before a favorable decision about the commercial scale system can be made. It is estimated in the industry circle that this phase may cost $100-300 million dollars.

Assessment of developments in sea-bed mining technology is relevant for planning for the Authority for additional reasons. The Convention creates an international mining arm for the International Sea-bed Authority, the Enterprise. The Enterprise constitutes one "track" of the two-track, or "parallel" system established by the Convention to meet international objectives. The other half of the parallel system is made up of private or state firms. Unless the Enterprise engages in its own technology research and development [6], the Enterprise is unlikely to be able to commence mining until the states and private firms engaged in technology research and development have further perfected their mining systems.

The pace of technology development will directly affect planning for the establishment of the International Sea-bed Authority and its Functions. For many of the technical regulations for deep sea-bed mining will depend to some extent on technologies utilized to conduct the operations. Thus, while the international regulatory procedures called for under the Convention may be fleshed out in the nearer term, it may not be possible to specify various technical requirements at this time.

GOALS IN PLANNING FOR THE AUTHORITY

The Authority that has evolved from the dynamics of international negotiations reflects a series of compromises to accommodate various geo-political and economic considerations. It can conceivably assume the nature of the following [7]:

- An international bureaucratic organization,
- An international regulatory and enforcement agency,
- An international resource management agency,
- An international resource development agency,
- A sea-bed miners' club,
- A machinery to represent the new international economic order,
- A precedent for international machinery for other "global commons."

Under these various guises, States Members of the Authority can strive to affect any one, or a combination, of the following:

- The timing and extent of sea-bed mining;
- The timing and extent of sea-bed mining by particular groups of sea-bed miners;
- The degree of building up of the Enterprise;
- The effectiveness and the degree of assistance to developing land-based producers;
- The extent of accommodating the interests of mining states;
- The size, effectiveness and efficiency of the international structures governing deep sea-bed mining.

Some of these are complementary while some would necessarily involve trade-offs with the others. The difficulty of the planning exercise, of course, is that there is no agreed goal nor agreed weight given to each individual goal. Thus, in addition to the usual uncertainties involved in a planning exercise, the planner is faced with the basic uncertainty: what is he planning for? In fact, instead of a given goal at the outset, the goal(s) itself will emerge through the dynamics of ongoing negotiations in the Preparatory Commission. In practice, the most probable outcome will be, like the Convention itself, especially Part XI of the Convention, the International Sea-bed Authority will assume a multi-faceted nature achieving a multiple of goals, each to a certain extent. The perception of different analysts as to which goal has been fulfilled or remained unfulfilled and to what extent will vary markedly.

Although we are not in a position to fix a particular goal, because each one of us may have different goal for the International Sea-bed Authority which each of us considers the "right one," it will be interesting to study, <u>given a particular goal</u>, whether it is achievable under the internal and external constraints. The internal constraints arise from the provisions of Part XI and Annexes III and IV of the Convention and Resolutions I and II. The external constraints are numerous, ranging from the state of the world economy and the world mineral markets to attitudes and aspirations of various groups of interested actors (the last-mentioned factors are rather amorphous and can only be dealt with in a speculative fashion). The central hypothesis of this paper is that, given a particular goal, planning for the Authority can be carried out in such a fashion as to achieve it to a considerable extent, and this can be accomplished within the framework of the provisions of Part XI of the Convention and Annexes III and IV, as well as Resolutions I and II [8].

THE PREPARATORY COMMISSION

The Preparatory Commission itself is the most important planning body for the Authority. It is a unique body in that its work goes beyond traditional planning for an international organization, i.e., preparing provisional agenda for the first session of the organs of the Authority, e.g., the Assembly and the Council; making recommendations concerning the budget for the first financial period of the Authority, the relationship

between the Authority and the United Nations and other international organizations and the Secretariat of the Authority; and making recommendations relating to the location of the Authority (establishment of the headquarters of the Authority) [9]. In fact, the most significant contribution of the Commission to the planning for the Authority will comprise its rule-drafting work, the work of the two Special Commissions specifically mentioned in the Resolution I -- one for the Enterprise and the other on the problems which would be encountered by developing land-based producer states likely to be most seriously affected by the production in the Area -- and its implementation of Resolution II governing preparatory investment in pioneer activities relating to polymetallic nodules [10].

The rule-drafting work of the Commission is extensive, ranging from procedural matters to substantive matters. Procedural matters include (a) rules of procedures of the Assembly and the Council; (b) decision-making procedures of the Authority's commissions, the two specifically mentioned in the Convention being the Economic Planning Commission and the Legal Technical Commission; and (c) observer participation in the Authority. Substantive matters include (a) the administrative and operational aspects of prospecting, exploration and exploitation of resources of the Area including some issues of State sponsorship of applicants to explore and exploit these resources, qualification standards of applicants, selection among applicants, joint ventures with the Enterprise, production policies with regard to polymetallic nodules, and matters for arbitration with respect to disputes over contracts and over terms and conditions of technology sale; (b) financial matters, including issues related to the finances of the Authority and Enterprise, and the financial terms of contract between the Authority and the nodule miners; and (c) benefit distribution aspects of exploitation of resources in the Area. Article 17 of Annex III of the Convention specifically lists some of the items on which the Authority will adopt rules, regulations and procedures. Throughout Part XI of the Convention and Annexes III and IV there is specific mention, in various articles, of Authority's rules and/or procedures. Appendix I of this paper presents a comprehensive list of all the items [11]. Drafting these rules, regulations and procedures is the task of the Preparatory Commission.

The work of the Special Commission for the Enterprise will involve taking all measures necessary for the early entry into effective operation of the Enterprise. It has specific functions to arrange for exploration of the reserved area, for training of Enterprise personnel and for transfer of technology to the Enterprise and to receive periodic reports from relevant States on the activities carried out by them, by their entities or natural or juridical persons.

The work of the Special Commission on the developing land-based producer states will involve studying the problems which would be encountered by such states likely to be most seriously

affected by the production of minerals derived from the Area with a view to minimizing their difficulties and helping them to make necessary adjustments including studies on the establishment of a compensation fund, and making recommendations to the Authority on the matter.

Resolution II was designed to provide a legal framework which, in some respects, would protect the investments of those entities which have already been involved in developmental work with respect to polymetallic nodules or are in the process of getting involved -- work of the nature of prospecting leading to identification of target areas where economic deposits may be found, research and development of technology, preliminary assessment of commercial prospects, etc. Resolution II was also designed to create a legal environment conducive to further activities by these entities leading ultimately to commercial exploitation of nodules. These entities include those from industrialized as well as developing countries. At the same time, the Resolution has provisions intended to pre-position the Enterprise so as to be able to carry out activities in the Area in such a manner as to remain in step with the potential non-Enterprise sea-bed miners.

The Work of the Preparatory Commission Viewed as Planning for the Authority

A major contention of this paper is that the work of the Preparatory Commission can be accomplished in such a manner as to achieve any among a number of goals. Once it is decided what the goal of the Authority will be, the Commission's work can be a potent planning mechanism. Of course, the extent to which one goal is fulfilled will have affects on the extent to which other goals can be achieved. In this context, an initial step in the planning process may be to conceptualize alternative packages consisting of various levels of achievement of given goals. The complimentarities and trade-offs among goals are worth studying by themselves. For the purpose of this paper, however, one goal at a time will be taken as given and the analysis will concentrate on how the Preparatory Commission can design its work to achieve that goal. The exercise will be carried out with respect to three goals:

- To accommodate the concern of the sea-bed miners,
- To accommodate the concerns of the developing land-based producers,
- To build up the Enterprise, and to promote developing country participation in sea-bed mining through training programs and programs to promote transfer of technology.

Accommodate Concerns of Sea-bed Miners

The sea-bed mining industry at present is at a stage where it has to make important decisions about pre-production activities. As is evident from our discussion of the relevant factors, the pre-production activities will have two sequential phases: pre-mine development and mine development. The tasks

in the pre-mine development phase, which may cost on the order of $100-300 million, are as follows:

- Carry out further exploration work in order to prove reserves and delineate mine sites, and develop an operating plan for mining for the initial period of operation,
- Complete economic analyses about the potential profitability of a deep sea mining venture on a comparative basis with alternative investment opportunities, and
- Make initial arrangements for obtaining financial resources for the mine development phase.

With respect to the legal regime, the sea-bed mining pioneers face the question of choosing among (a) the regime of the Convention, (b) a regime set up by reciprocal state agreements and (c) national legislative regimes. Each has associated implications for the future security of tenure, possibilities of attracting pre-mine development and mine development funds from lenders, and financial and other obligations. Above all, from their point of view, the miners are uncertain at this time as to which regime has the "staying power."

With respect to market conditions they also face some crucial questions. (a) Is the current status of the world economy and the depressed state of mineral markets going to improve enough in the future to justify commitment of large amounts of pre-production funds? (b) What are the intra-consortium dynamics? Is the perception about the future minerals markets the same among various partners of a consortium? Are the incentive structures the same for all the partners? What sort of legal arrangements currently govern intra-consortium obligations? Will it be difficult to modify or re-draft these arrangements? May some partners break out of the consortium and proceed individually with pre-mine development activities at this time? How may this affect the other partners' technological advantage and potential market share? (c) Are the public and semi-public sea-bed miners going ahead? At what rate? Why? How may this affect the private consortia's technological advantage and potential market share? (d) Is it possible (considering technology, markets) to shift the focus of deep sea mining to other marine minerals, e.g., polymetallic sulfides? How may this affect the consortia? Will these activities take place initially within or beyond national jurisdiction?

Under these uncertain circumstances, the most plausible scenario would be for the consortia to "put a foot in every door" and then watch how the legal factors, demand conditions and the market structure develop. The Preparatory Commission can encourage the consortia by (a) keeping the "Convention door" open, (b) creating a favorable pre-mine development climate, (c) laying the ground-work for a favorable mine development climate.

Provisions under the Convention with regard to sea-bed mining can be divided into three groups: (a) those that will

apply during the period before the Convention comes into force (essentially the provisions of Resolutions I and II); (b) those that will apply after the Convention comes into force (the provisions of Part XI and Annexes III and IV); and (c) those that set up direct operational links between (a) and (b), e.g., provisions in Resolutions II regarding registration of pioneer investors, allocation of pioneer area, pioneer activities in pioneer area, certificates of compliance to pioneer investors and allocation of production authorizations among pioneer investors. Rules, regulations and procedures can be viewed as imparting concrete shape to the provisions under the Convention in order for them to be operational.

From the sea-bed miner's point of view, these can be seen as regulatory conditions related to the pre-mine development phase, the mine development and the commercial operation phases and the transition from the former to the latter. When he is at the point of making a "go/no go" decision: (a) he would like to have an idea if the pre-mine development regulatory conditions give him security of tenure in the sea-bed area in which he has already carried out early developmental work which, in turn, influences his mine development project; (b) he would prefer a pre-mine development climate matching his commercial conditions; (c) he would like to be sure that his pre-mine development activities will smoothly move into a mine development phase; (d) he would like to have a favorable mine development climate matching his commercial considerations; and finally, (e) he would like to manage his commercial mining project without being unduly interfered with by non-commercial factors. He, therefore, needs to know or at least needs to have an idea about the nature of the whole gamut of regulatory conditions before he commits $100-300 million for the next phase, the pre-mine development phase. (These considerations are crucial in shaping the position of the potential sponsoring States that have indicated that they will assess the directions the sea-bed mining rules are taking before ratification of the Convention).

In practice, of course, the rule-drafting exercise of the Preparatory Commission will take some time and it is expected that the rules, regulations and procedures related to Resolution II will emerge first [12]. (These are in many cases identical to the sea-bed mining rules called for in Part XI and Annexes III and may be dealt with in an inter-connected fashion.) In this connection, it should be pointed out that contrary to the assessments of some analysts, Resolution II is <u>not</u> immediately and automatically operable. A number of issues need to be dealt with in order to make the Resolution operational. Appendix II of this paper presents a list of such items [13].

What is important for the purpose of sea-bed miners is to have a "feel" for the regulations related to Resolution II <u>as well as</u> to Part XI and Annex III. For example, if a miner finds the former attractive but the latter prohibitive, he will be deterred from taking a "go" decision. Similarly, if he finds the former prohibitive, he may decide against proceeding with sea-bed mineral development -- at least, under the Convention regime -- no matter how attractive the latter.

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In practice, however, it is very likely that the regulations related to Resolution II will set the "tone" for the regulations related to Part XI and Annex III. There is no reason to differentiate between the regulatory approach to the pre-mine development phase and the regulatory approach to subsequent mine development and commercial operation phases. The miners need continuity as they proceed with a sequentially-developed mining project. In this connection, it is worth mentioning that some analysts contend that before even applying for registration as a pioneer investor, a sea-bed miner and his certifying state would like to know the precise nature of the obligations they have to fulfill under Resolution II [14].

All this points to the potentially predominant role the regulations related to Resolution II can play. Consequently, in planning for the Authority, the crucial contribution of the Preparatory Commission may be represented by its implementation of Resolution II.

With respect to keeping the "Convention door" open, Resolution II provides that a private consortium may apply for registration as a "pioneer investor" under the certification of only one sponsoring state that has signed the Convention. Three of the four consortia have at least one component firm that is from a state that has already signed the Convention.

In this connection, however, it will be necessary to deal with the deadlines regarding resolution of the overlap questions, as specified in Article 5 of Resolution II. According to that article, any state signatory which is a prospective certifying state shall ensure, before making an application for registration of a pioneer investor, that areas in respect of which applications are made do not overlap with one another. In case there are overlap conflicts, in carrying out the conflict resolution procedure the prospective certifying states, including all potential claimants, shall resolve their conflicts by negotiations within a reasonable period. If such conflicts have not been resolved by 1 March 1983, the prospective certifying states shall arrange for the submission of all such claims to binding arbitration in accordance with UNCITRAL Arbitration Rules to commence not later than 1 May 1983 and to be completed by 1 December 1984. But the question is, how is a state to know if there is a conflict in the first place? The U.S.S.R. and India have notified the Preparatory Commission that they intend to apply and have invited any prospective certifying state to exchange coordinates of areas; they have also notified the Commission that they have conducted negotiations among themselves before 1 May 1983 and there is no overlap between their areas [15]. However, France, Federal Republic of Germany, Italy, Japan, the United Kingdom, Belgium, Canada, and the Netherlands (all the four private consortia have components which are from one or more of the latter seven states) maintain that a procedure for conflict identification and negotiation regarding conflict resolution must be established first [16]. Informal efforts by Canada to establish such a procedure have been unsuccessful to date [17].

Problems will arise if there is a tendency to interpret article 5 to the effect that those states which either have not resolved overlap conflicts, or, in the event of conflict, have not submitted claims to binding arbitration by 1 May 1983, could not be certifying states at all. The key is that no real deadline exists by which time the Commission must proceed with consideration of the applications for registration before it, whether or not all potential pioneers identified in Resolution II have submitted them.

The Preparatory Commission itself could take measures to ensure that the door is not shut to the sea-bed miners by facilitating the establishment of conflict identification and subsequent negotiation procedures that are expected to be completed by early 1984. They would then need to identify a procedure to consult with the Soviet Union on overlaps. (India's application area in the Indian Ocean presents no overlap difficulties.)

The Preparatory Commission can contribute to a favorable pre-mine development and mine development climate through the formulation of the "right" kind of rules, regulations and procedures. These should neither follow the extreme notion that good regulation is no regulation nor should they overdo it with excessive and stringent regulations that may be counter-productive to sea-bed mineral development by vitiating the investment climate itself. What, then, are the "right" kind of regulations?

To start with, during the pre-mine development period, because of the uncertainties regarding geological factors, technology development and future market conditions, whatever measures are taken with respect to the implementation of Resolution II must provide a flexible approach. For example, a pioneer investor is required to incur periodic expenditures with the intention of bringing the area allocated to it (pioneer area) into commercial production within a reasonable time. If the Commission is too rigid in determining what constitutes a "reasonable period of time," or an amount to be spent periodically, it is very unlikely to match the commercial considerations faced by the mining industry under certain market and other conditions.

The pioneer investors would prefer unambiguous and predictable obligations determined on the basis of economic and commercial realities. One advantage the Commission may have as compared to the United Nations Conference on the Law of the Sea is that while the Conference had to rely almost exclusively on Western countries and the private consortia for technical information, the Commission may be able to draw upon the technical experience of other pioneer investors from developing countries and centrally-planned economies.

It may also be able to concentrate more on practical technical and economic considerations than was possible during the necessarily more political negotiating process in the Conference. For example, the qualifications of an applicant for the approval of a plan of work and the sponsorship requirements

can be specified in technical terms. In drafting the administrative procedures for prospecting, exploration and exploitation, the procedural steps can be spelled out on the basis of technical criteria. Rules, regulations and procedures drafted in this manner will go a long way in accommodating the concerns of the sea-bed miners regarding security of tenure and approval of plan of work.

On the subjects identified by the mining states as problematic in the Convention, the Preparatory Commission can contribute by giving precision to some of the Convention's provisions. For instance, in the area of transfer of technology, it can do the following:

- Refine and clarify the definition of technology;
- Elaborate principles and guarantees which constitute "fair and reasonable" commercial terms and conditions;
- Clearly specify the obligations and limitations with regard to third-party suppliers; and
- Spell out the penalties and liabilities for possible staff violations with respect to treatment of confidential or proprietary data on technology in connection with drafting the rules, regulations and procedures related to the staffing of the Authority and the Enterprise.

In the area of institutions and decision-making, it can work on more explicit decision-making procedures in the regulatory institutions for sea-bed mining, clearer definition of the scope of various decisions, and identification of the specific criteria upon which these decisions will be based.

In elaborating the rules of procedure of the Assembly and the Council, the Preparatory Commission could address the respective roles of these two bodies on, for instance, consideration of the Authority's budget along the lines of the amendment proposed by the seven mining countries during the Eleventh Session of UNCLOS III [18]. (This amendment supported return of the budget to the Council if the Assembly recommended changes, rather than modification by the Assembly itself.)

The group of mining states also proposed a 120-day limit on consideration of applications for the approval of a plan of work in the Legal and Technical Commission. This could also be taken up as part of the decision-making procedures of the commissions of the Council.

So, too, could a time limit on the Authority's selection of one of the two proposed mine sites submitted by an applicant -- another mining states' group amendment.

The Preparatory Commission could determine rules, regulations and procedures for repayment of national interest-free loans to the Enterprise. This could incorporate rules on procedures to be followed in the event of Enterprise default on national loans, as called for in mining states' amendments. The Commission could also proceed with a schedule for the magnitude and timing of the Enterprise funding obligations which could incorporate mining states' amendments that no more than one-third of national obligations could fall due in any one year.

In order to remove any doubt that the U.S. is guaranteed a seat on the Council of the Authority as the "largest consumer" of minerals produced from the sea-bed, the Preparatory Commission could specify criteria to strictly define "largest consumer."

Accommodate Concerns of Land-based Producers

The Special Commission will be the central body planning for the amelioration of the problems of developing land-based producer states. It can organize its work in such a fashion as to complete any groundwork for the measures to be taken by the Authority. A suggested work program may run along the following lines. In all of its work, the cooperation and active participation of the states that could be affected is absolutely essential. In fact, there may be a great advantage to carry out the work on a country-by-country basis.

Identification of Developing Land-based States

In identifying these states, current production of the minerals contained in polymetallic nodules, e.g., cobalt, copper, manganese and nickel (and possibly molybdenum, titanium and vanadium) in developing states may be used as a criterion. Production in the most recent year or an average of production in the most recent "x" years may be considered. Current production may fail to indicate the level of production in the future years. For the latter purpose, planned future production inferred from expansion plans for the existing mines and plans for development of mines can be taken into account. In a longer term perspective, reserves of these minerals in developing states as well as exploration efforts and long-term plans for mine development based on resource estimates may be considered. Attempts need to be made to identify the "potential producers" also.

Identification and Measurement of Effects

Precise definition needs to be given to the phrases, "affected," "seriously affected," and "most seriously affected." In identifying the effects on economies of the developing land-based producer states, the Special Commission may wish to take account of several indicators, for example, gross domestic product (GDP), gross national product (GNP), national income, employment, government revenues, savings and investments, effects on infrastructure as well as tied-up capital may need to be considered. These indicators may relate not only to the mining sector itself, but also to the downstream sectors, sectors with forward and backward linkages with the mining sector and more broadly to the multiplier effects through the interaction between the mining sector and all the other sectors of an economy.

Regarding the effects on foreign exchange earnings, both gross and net foreign exchange earnings (retained earnings) may be considered. Again, these may have to be related not only to the mining sector, but also to the downstream sectors, linked

sectors and broadly to all other sectors through multiplier effects. In considering sectors other than the mining sector, in some cases foreign exchange savings rather than earnings may be relevant.

Although the provisions in the Convention and Resolution I mention effects caused by production of minerals from the Area, some effects may be felt even before actual production from the Area begins. In anticipation of production from the Area, expansion plans, mine development plans and exploration plans may be affected. flow of investment to land-based exploration and mine development activities may be affected. Viewed from the other end, effects may be felt not only as a one-shot affair, but over a span of time in the future and the cumulative effects over the whole span need to be considered.

The Special Commission may wish to establish the units of measurement of effects in all the above areas.

Finally, in view of the fact that there are a number of effects, measurement of effects in one area may not be adequate; some sort of composite index or ordering of the effects in various areas may be needed. The Special Commission may wish to deliberate on this issue.

Measurement of Price and Volume of Exports

There are, usually, several prices relevant for mineral markets. For its purpose, the Special Commission may focus on the price at which the developing land-based producer states can sell the minerals. If the mining activity is part of an integrated operation of a multi-national corporation, the issues of transfer pricing may have to be addressed. Also, the cases of products of downstream activities produced from the minerals need to be dealt with. Price comparison may need to be made between expected price with and without production from the Area rather than current prices.

In dealing with the volume of exports, exports of mineral ore as well as semi-processed and processed commodities may need to be considered. In some cases, there may not be any existing downstream activities, but plans and potentials for downstream activities may be important.

Price and volume of exports may sometimes be maintained at pre-sea-bed production level if stockpiling by producers and/or consumers absorbs the excess. However, this is only a temporary phenomenon and sooner or later price and/or volume of exports will be affected. This fact needs to be taken into account.

Determination that Reduction in Price or Volume of Exports is Caused by Activities in the Area

This may be the most complex task the Special Commission will face. Methodologies will need to be devised to determine the cause-and-effect relationship. Price or volume of exports can be affected by various factors; suitable methodologies to sort out the effects of factors other than activities in the Area may be required. On the other hand, the effects of activities in the Area may be hidden under various public and

private policies and practices. Protectionism, stockpiling, preferential trade arrangements, differential supply agreements, international ownership ties are some of the factors under which the cause-and-effect relationship may be hidden. Methodologiess to take these phenomena into account may need to be devised.

Modeling exercises incorporating econometric analysis and engineering cost studies and integrating the supply and the demand sides plus commodity analysis and macroeconomic analysis may be found useful. The interactive process between demand and land-based and sea-bed supply as well as between mineral markets and national and international economies need to be taken into account. In this connection, reference can be made to the document A/CONF. 62/L.84, and in particular to Section III of that report [19].

Survey and Review of Measures to Minimize the Difficulties of Developing Land-based Producer States

There are several measures which may be relevant for the purpose of the Special Commission, for example, diversification and structural adjustment measures, trade agreement, commodity agreement, buffer stock arrangement, etc. The advantages and disadvantages of each of these measures need to be examined. The applicability of the measures in the case of deep sea mining needs to be examined. In this connection, cooperation with Specialized Agencies and other international organizations needs to be explored.

Compensation Fund

The possibility of establishing a compensation fund needs to be studied. The financial arrangements and operational funds need to be dealt with. The Special Commission may wish to look into the resource needs of the fund and their relationship with levels of assistance to developing land-based producer states, on one hand, and with the potential for mobilization, on the other. The arrangements for distribution of funds to particular developing states need to be worked out.

Data Management

As is evident, various sorts of data and information will be required. The Special Commission may wish to look into the availability of the required data, their sources, their verifiability and their applicability for its own purpose. The Special Commission may have to make arrangements for filling the data gaps. Cooperation with the states involved may be required in this context.

All the data and information and the methodologies to deal with all these data and information may require the establishment of an integrated management system, readily accessible and operative for the purpose of the Authority.

(One of the crucial factors that will influence the work of the Special Commission is the timing and extent of sea-bed production. Each of the above items may need to be viewed from a different perspective, depending on whether sea-bed production

is imminent or will take place in the distant future, or whether sea-bed production will be large or small.)

Build Up the Enterprise

The Special Commission for the Enterprise will be the primary body for planning for the Enterprise, but other international organizations and States can also contribute to planning. The Special Commission can take measures so that the Enterprise can launch its project(s) as soon as the Convention comes into force. It could set up a "proto-Enterprise" to carry out some of the pre-mine development activities (costing about $50 million). Financing will be the crux of the matter, but some analysts believe that if organized along a commercial line there are possibilities of obtaining funds from private as well as public sectors against the reserved sites and the finance guarantees of the Convention [20]. The Special Commission can take advantage of the provisions of Resolution II related to exploration, training and transfer of technology. There will be constraints on technology availability until the firms that have developed the technology further test and perfect their mining systems.

On the other hand, the Special Commission can undertake a number of preliminary activities necessary for the effective establishment of the Enterprise. Following are a few suggestions:

Project Formulation

Assess potentials for various ways of formulating Enterprise projects: integrated four-metal operation, integrated three-metal operation, mining only, processing only -- each of these with or without joint ventures.

Develop model joint venture agreement with attendant advantages/disadvantages. (If the Preparatory Commission were to take up immediately the requirements for joint ventures with the Enterprise which fall within its mandate, it could facilitate an early Enterprise joint venture which might reduce national funding obligations and dispense with the possibility that private mining companies would be obligated to sell their technology to the Enterprise. However, this has to be weighed against the option of an independent operation.) A phased call-up of the interest-free loans would also help.

Manpower Requirements

Estimate personnel requirements and develop alternative organizational structures for the Enterprise. Identify personnel requirements which can be met by hiring and those where training programs would be required. Explore possibilities of training programs in practical/technical skills and in administrative/management skills beyond those in Resolution II.

Technology

Compile information on equipment and services required for sea-bed mining, their availability, and costs. (Some of this could be supplied by mining companies, some by national governments.) Devise alternate technology purchase agreements. Compile a list of consulting/engineering firms available to help structure a sea-bed mining and/or processing system.

Financing

Determine alternative financial structures for Enterprise operations. Analyze market for securities of Enterprise, including possible sources of funds, nature of obligations which might be sold, and effects on other financial transactions of the Enterprise.

Processing Plant Location

Devise criteria to evaluate alternative sites. Explore possible locations and assess advantages/disadvantages (labour costs, material and energy costs, infrastructure availability, etc.).

Marketing

Study markets for each of the minerals involved. Prepare optimal marketing program suitable to special requirements of the Enterprise.

PLANNING BODIES: STATES

It goes without saying, but still is worth mentioning, that the bodies involved in planning for the Authority extend beyond the Preparatory Commission and include other international organizations within and without the UN system, states -- both public and private sectors -- and in the broadest sense the international community itself.

States can plan for the International Sea-Bed Authority by formulating an integrated, balanced, and long-term position vis-a-vis the Authority and the Convention itself in the context of its overall socio-economic development policy, resource policy, foreign policy and ocean policy. Too often, coordination among these various areas is lacking, and also there are inconsistencies between the short-run and the long-run policies. It is no secret that various governmental ministries or departments hold opposing positions; and, depending on the primacy of one department or another at one particular time, the position vis-a-vis the Authority changes. Particular interest groups, through lobbying power or through monopoly of information, may sometimes sway the state's position in a direction which has the potential of running counter to the state's overall position. For example, it is the contention of some analysts that the US position over time has been characterized by a lack of consistent ocean policy and resource policy, primacy of particular branches of government as well as domination by particular interest groups [21].

The state's planning exercise will include an objective assessment of the costs and benefits, both economic and extra-economic, associated with the ratification of the Convention and the membership in the International Sea-bed Authority. (In this context, the tools of "multi-attribute decision analysis" may be helpful.) A number of states have completed or are in the process of making such an assessment. Independent analysis of the interests proclaimed by and of the information provided by particular interest groups can be a part of the state's planning exercise. The role of the MIT analysis on the cost and profitability of sea-bed mining [22], independent of the consortia, is well-known. Studies are under way on the import dependency of the US and other Western countries and the potential for cushioning possible supply instability through substitution and stockpiling [23]. Finally, states can play a role in promoting public awareness about the Convention and the International Sea-Bed Authority.

Two special cases of planning by states are worth noting: the case of the US and that of the developing land-based producer states. With regard to the question of US participation in the Preparatory Commission, construction of an option frontier can be a useful part of the planning exercise. Some analysts have attempted such construction and come to the conclusion that the US has a wider option frontier with respect to acceptance or rejection of the Convention and the Authority by being a party to the Preparatory Commission, and the availability of additional choices is worth the cost to the US [24].

In the case of the developing land-based producer states, the planning exercise will involve, in addition to their efforts in the Special Commission, *inter alia*, studying the possibilities of (a) diversifying their economies, (b) expanding in down-stream activities, (c) retaining market share through engagement in sea-bed mining, (d) making commodity arrangements, (e) making long-term supply arrangements with consuming countries, (f) promoting efforts at reduction in import restrictions in potential sea-bed mining countries, (g) expanding markets in countries other than the traditional trading partners, (h) promoting R&D activities for new uses of the relevant metals or substitution by these metals, and (i) promoting R&D activities for technological improvement in land-based mining, etc.

A THEORETICAL DIGRESSION: INTER-NATIONAL INTER-GENERATIONAL PLANNING FOR THE DEVELOPMENT OF EXHAUSTIBLE RESOURCES

It may be worthwhile to stand back from the political and legal issues centered around the expression "common heritage of mankind" and the interpretations and Convention provisions related to the words "organization" and "control" to see what economics has to say about the development of these mineral resources. After all, the heart of the matter is resource exploitation, and there is a respectable body of literature

about resource economics which may shed some fresh insight on the question at hand.

According to pure theory of resource economics, the market for mineral ore is in equilibrium only when the annual percentage change in scarcity rent, i.e., the difference between the market price for the mineral and the marginal cost of extracting a unit of the mineral, is equal to the rate of interest. The decision to develop and produce from a particular deposit, whether on land or in the sea-bed, requires a current market price sufficient to cover extraction costs plus a required compensation for risk, and an expected time path of future price which broadly satisfies the above equilibrium condition. As long as the rate of interest is positive, this theory would have an upward movement of scarcity rent over time and this in turn would guarantee that society successively develops and exhausts its mineral deposits, beginning with the high-grade ones and moving down to progressively lower-grade deposits [25]. Decisions to develop sea-bed mineral deposits will be taken bearing in mind the costs of developing alternative deposits elsewhere.

All this would be achieved in case of any exhaustible resource, common heritage or not, and by the "invisible" hands of the market. Also, theoretically, it does not matter whether the economy is a market economy or a centrally planned economy; in this world, the central planner will merely be the visible manifestation of the invisible forces of market and the outcomes will be identical.

In the real world, however, three fundamental differences may arise: (1) divergence between private and social considerations; (2) divergence between national and international considerations; (3) divergence between considerations of present and future generations. From the resource economist's point of view, the emphasis on "common heritage of mankind" and the establishment of an organization through which resource exploitation will be organized and controlled arises from the need to align the real world with the market world of pure theory by eliminating the divergences mentioned above. "Common heritage" would also imply that if part of the scarcity rent is economic rent, i.e., the excess over the required compensation for risk, it should accrue to mankind as the resource-owner.

Viewed from this perspective, the International Sea-Bed Authority would be the organization representing the visible machinery of the working of the invisible forces of market in the sea-bed resource sector -- its task would be to eliminate the divergences in the most efficient manner and oversee that economic rent, if any, accrues to mankind. The planning exercise will include, first, to establish if any divergences exist and, if so, of what nature and to what extent, than to assess the possible measures to eliminate the divergences with a view to determining the most efficient ones, and finally to make arrangements for putting those measures in effect.

The major thrust of the planning process would be to collect and assess data. On the supply side, this would include data on costs of production from various deposits of nickel, copper, cobalt, manganese, both on land and in the sea-bed worldwide, data on posssibly distortions in the supply curve, e.g., related to international mobility of capital, entrepreneurship, managerial and skilled labour, cartelization, balance of payments considerations, etc. On the demand side, this would include data on revenues, data on possible distortions in the demand curve, e.g., related to transfer pricing among units of vertically integrated mining companies, consumer leverage on producer, collusion among consumers vis-a-vis producers, security and strategic considerations, etc.

For example, after eliminating the imperfections and the extra-economic considerations on both the supply and the demand sides it may so happen that one comes to the conclusion that, at the present time, the rate of change in scarcity rent earned from the sea-bed resource sector is lower than the rate of interest; in this case, it behooves the Authority to hold sea-bed resources in situ up until the time when they are equal. Planning for the Authority, in this case, will involve formulating measures to monitor when in the future sea-bed resource exploitation will fulfill the equilibrium condition and to trigger the resource development process -- both the pre-mine development and mine development activities -- taking into account the appropriate lead times for mine development as well as technology development.

On the other hand, if the rate of change in scarcity rent is higher than the rate of interest, the Authority would encourage sea-bed production and attempt to mobilize economic rent for the resource-owner, i.e., mankind.

CONCLUDING REMARKS

In conclusion, it must be reiterated that the above discussion is not intended to impose any value judgment or to suggest any particular goal for the Authority or the Preparatory Commission. What the exercise is aimed at is, given a goal, to analyze if that goal is achieveable; of course, achieving one goal will necessarily involve trade-offs with other goals.

What can be said about planning for the Authority, devoid of any value judgment, is that collection and analysis of information and data are absolutely essential for the exercise. Use of the services of independent objective technical experts in addition to the experts in the delegations can also be helpful. Discussion among the interested parties, not in structured formal fora but in informal settings, can contribute immensely in determining the "bottom lines" of the various groups. Small group negotiations that were very effectively utilized in the Conference should also be maintained.

The planning exercise could also address the respective responsibilities of states and the Authority in organizing and controlling activities in the Area without detracting from the

powers and responsibilities vested on the Authority. A successful planning exercise is one that can achieve an optimal allocation of resources -- financial, institutional and others -- in carrying out given tasks.

NOTES

1. United Nations, Law of the Sea: United Nations Convention on the Law of the Sea (hereafter referred to as the Convention), 1983 (United Nations Publication Sales No. E.83.V.5).
2. United Nations, General Assembly Official Records, 1970, Vol. 25, Supplement 280, p.24 (General Assembly Resolution 2749) (United Nations Document A/8028).
3. Convention, article 157, paragraph 1.
4. Convention, art. 1(3).
5. Convention, art. 136, in conjunction with Notes 3 and 4.
6. An interesting proposal to this effect is contained in United Nations, Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for The Law of the Sea, Austria: Proposal for a Joint Enterprise for Exploration Research and Development in Ocean Mining (Jeferad) (Document LOS/PCN/SCN.2/L.2).
7. There is an abundant literature on the projected nature of the Authority. For an illuminating synopsis, see Kurt Michael Schusterich, Resource Management and the Oceans: The Political Economy of Deep Sea-bed Mining, Westview Press, Boulder, Colorado, 1982.
8. Part XI of the Convention is entitled "The Area." Annexes III and IV are entitled "Basic Conditions of Prospecting, Exploration and Exploitation" and "Statute of the Enterprise" respectively. Resolution I "Establishment of the Preparatory Commission for the International Sea-bed Authority and for the International Tribunal for the Law of the Sea" and Resolution II "Governing Preparatory Investment in Pioneer Activities Relating to Polymetallic Nodules" are contained in Unived Nations, Law of the Sea: United Nations Convention on the Law of the Sea, op. cit.
9. Resolution I, paras. 5(a) to 5 (f).
10. Resolution I, paras. 5(g) to 5 (i) and 7, 8, 9. During the Resumed First Session of the Preparatory Commission, two additional Special Commissions were formed, one for the preparation of rules, regulations and procedures for the exploration and exploitation of the Area (Sea-bed mining code) and the other for the International Tribunal for the Law of the Sea.
11. After this paper was presented, a similar comprehensive list was published in United Nations, Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea. Suggested tables of contents for the preparation of draft

rules, regulations and procedures by the Preparatory Commission Document LOS/PCN/WP.14).

12. After this paper was presented, the Preparatory Commission in its Resumed First Session decided to give priority to the formulation of rules, regulations and procedures related to Resolution II.
13. After this paper was presented, a similar list was published in United Nations, Preparatory Commission for the International Sea-Bed Authority and the International Tribunal for the Law of the Sea. Draft rules for the registration of pioneer investors and draft rules on confidentiality of the data and information. (Document LOS/PCN/WP.16).
14. Leigh S. Ratiner, "The Implemention of Resolution II of the Third United Nations Conference on the Law of the Sea," Consultant report for the United Nations, mimeo.
15. United Nations Conference on the Law of the Sea, Documents LOS/PCN/4 of 8 April 1983, LOS/PCN/7 of 26 April 1983, LOS/PCN/19 of 4 May 1983 and LOS/PCN/21 of 13 May 1983.
16. United Nations Conference on the Law of the Sea, Document LOS/PCN/8 of 27 April 1983, LOS/PCN/11 of 28 April 1983, LOS/PCN/13 of 29 April 1983, LOS/PCN/14 of 29 April 1983, LOS/PCN/15 of 29 April 1983, LOS/PCN/18 of 3 May 1983.
17. However, the Chairman of the Preparatory Commission has carried out intensive consultations during the Second Session and will continue consultations during the next Session.
18. Formal Amendments to Part XI of L. 78 and Resolution I of L. 94 Proposed by the Delegations of Belgium, France, the Federal Republic of Germany, Italy, Japan, United Kingdom and the United States of America, 13 April 1982.
19. Third United Nations Conference on the Law of the Sea, Possible Impact of the Convention, with special reference to article 151, on developing countries which are producers and exporters of minerals to be extracted from the area: preliminary report of the Secretary-General, Document A/CONF. 62/L.84 of 2 March 1982.
20. James Sebenius, Presentation at a discussion on Interim Measures to Promote Agreement on the Development of Reserved and non-reserved Areas of the Deep Sea-bed under an International Regime, New York, 14 March 1981, organized by United Methodist Law of the Sea Project, Ocean Education Project and Graduate School of Business of Columbia University. Report of the Discussion, mimeo.
21. Kurt Michael Schusterich, op.cit., Chapter 2, "United States Government: political and institutional responses."
22. J.D. Nyhart, et. al., A Cost Model of Deep Ocean Mining and Associated Regulatory Issues, MIT Sea Grant Report MITSG 78-4. Massachusetts Institute of Technology, Cambridge, Massachusetts, 1978.
23. Congress of the United States, Office of Technology Assessment, Materials Program, Washington, D.C. 29510 has initiated a project for the US.

24. Lance N. Antrim and James K. Sebenius, "Outlook for the domestic ocean mining industry in absence of U.S. participation in the Law of the Sea Convention," unpublished (mimeo).
25. Robert M. Solow, "The economics of resources or the resources of economics," American Economic Review, May 1974, pp. 1-21; Orris C. Herfindahl, "Depletion and Economic Theory" in David B. Brooks, ed., Resource Economics: Selected Works of Orris C. Herfindahl, University of Wisconsin Press, Madison, Wisconsin, 1967; Harold Hotelling, "The economics of exhaustible resources," Journal of Political Economy, April 1931, pp. 137-175.

(For the discussion on "building up the Enterprise," the author drew on the paper prepared for the discussion mentioned in Footnote 20. The authors acknowledge their indebtedness to the organizations and persons involved.)

APPENDIX I

ITEMS ON WHICH THE AUTHORITY WILL ADOPT RULES, REGULATIONS AND PROCEDURES

I. PROSPECTING, EXPLORATION AND EXPLOITATION

A. Basic Conditions

1. Rules, regulations and procedures regarding the criteria and procedures for implementation of the sponsorship requirements (III, 4(2)).
2. After the end of the interim period, rules, regulations and procedures regarding other procedures and criteria for deciding which applicants shall have plans of work approved in cases of selection among applicants for a proposed area (III, 6(5)).
3. Rules, regulations (and procedures) regarding the selection for production authorization on the basis of objective and non-discriminatory standards (III, 7(2)).
4. Rules, regulations and procedures prescribing procedural and substantive requirements and conditions with respect to contracts and joint ventures of the Enterprise (III, 9(3)).
   - Analysis of different forms of contracts and joint ventures.
5. Rules, regulations and procedures prescribing arbitration rules in accordance with which arbitration shall be conducted, in the absence of a provision in the contract on the arbitration procedure to be applied in a dispute (188(a)(c)).
6. Rules, regulations and procedures regarding arbitration rules with respect to fair and reasonable commercial terms of technology acquisition (III, 5(4)).
7. Rules, regulations and procedures regarding administrative procedures relating to prospecting, exploration and exploitation in the Area (III, 17(1)(a)).
8. Rules, regulations and procedures regarding operations (III, 17(1)(b)):
   (i) size of area;
   (ii) duration of operations;
   (iii) performance requirements including assurances pursuant to article 4, paragraph 6(c) of Annex III;
   (iv) categories of resources;
   (v) renunciation of areas;
   (vi) progress reports;
   (vii) submission of data;

(viii) inspection and supervision of operations;
(ix) prevention of interference with other activities in the marine environment;
- Rules, regulations and procedures for erection, emplacement and removal of installations used for carrying out activities in the Area (147(2)(a)).
(x) transfer of rights and obligations by a contractor;
(xi) procedures for transfer of technology to developing states in accordance with article 144 and for their direct participation;
(xii) mining standards and practices including those relating to operational safety, conservation of the resources and the protection of the marine environment;
(xiii) definition of commercial production;
(xiv) qualification standards for applicants.

B. Production Policies

1. Rules, regulations and procedures prescribing a period (other than five years) prior to the planned commencement of commercial production under a plan of work during which production authorization may be applied for (151(2)(a)).
2. Rules, regulations and procedures regarding levels of production of other metals such as copper, cobalt and manganese extracted from the polymetallic nodules that are recovered pursuant to a production authorization (151(7)).
3. (Rules), regulations (and procedures) for limiting the level of production of minerals from the area, other than minerals from nodules (151(9)).

II. FINANCIAL MATTERS

A. Finances of the Authority

1. (Rules), regulations (and procedures) concerning the financial management of the Authority (Res.I, 5(g)).
2. (Rules), regulations (and procedures) prescribing the limits on the borrowing power of the Authority (174(2)).
3. Rules, regulations and procedures regarding transfer of funds from the Enterprise to the Authority (160(2)(5)(ii)).

B. Financial Terms of Contract

1. Rules, regulations and procedures regarding the amount of the funds necessary to explore and

exploit one mine site and to transport, process and market the metals recovered therefrom, namely nickel, copper, cobalt and manganese, and to meet the initial administrative expenses or the Enterprise and regarding the criteria and factors for the adjustment of the amount (IV, 11(3)(a)).

- Definition of mine site.

2. Rules, regulations and procedures regarding the repayment of interest-free loans (IV, 11(f)).
3. Rules, regulations and procedures defining the currencies in which funds will be made available to the Enterprise (IV, 11(g)).
4. Rules, regulations and procedures regarding procedures for payments of the financial obligations, in case of a default by the Enterprise (IV, 11(h)).

- Clarification of pro rata payment of the financial obligations of the Enterprise, in case of a default by the Enterprise.

C. Finances of the Enterprise

1. (Rules) regulations (and procedures) regarding appropriate floors for attributable net proceeds in cases other than the three-metal case (III, 13(6)(e)).
2. Rules, regulations and procedures regarding monies deemed to be reasonably attributable to the operation of the contract (III, 13(6)(g)(i) and (ii), and (n) (iii)).
3. Rules, regulations and procedures regarding development costs of the mining sector (III, 13(6)(2)).

- Determination of costs of prospecting and exploration of the contract area and a portion of research and development costs.

4. Rules, regulations and procedures regarding the relevant international terminal markets (III, 13(7)(a)).

- Definition of metals in the most basic form in which they are customarily traded on international terminal market.

5. Rules, regulations and procedures regarding the quantity of the processed metals produced from the nodules extracted from the contract area (III, 13(7)(b)).
6. Rules, regulations (and procedures) specifying uniform and internationally acceptable accounting rules and procedures regarding free market or arm's length transactions and specifying the means of selection by the contractor of certified independent accountants acceptable to the Authority for the purpose of auditing in compliance with the said rules and regulations (III, 9(b)).

- Determination of free market transactions; monitoring of principles adopted for, and the interpretation given to arm's length transactions in various specified fora.

7. Rules, regulations and procedures regarding the contractor making available required financial data to the accountants (III, 13(10)).
8. Rules, regulations and procedures regarding costs, expenditures, proceeds and revenues, and prices and values (III, 13(11)).
9. Rules, regulations and procedures defining the freely usable currencies and currencies which are freely available and effectively usable in the major foreign exchange markets (III, 13(12)).
   - Monitoring of prevailing international monetary practice in this regard.
10. Rules, regulations (and procedures) that provide for incentives, on a uniform and non-discriminatory basis, to contractors to further the objectives behind financial terms of contracts (III, 13(14)).

III. OTHER MATTERS

1. Rules of procedures of the Council (162(2)(e)), Res.I 5(b).
2. Rules of procedures of Assembly (Res.I 5(b)).
3. Regulations concerning the internal administration of the Authority (Res.I 5(g)).
   - Terms and conditions of appointment, renumeration and dismissal of the staff of the Authority (167(3)).
   - Provision of appropriate administrative tribunal on staff violations of responsibilities (168(1)) and of obligations regarding industrial secret, proprietary data or any other confidential information (168(2)).
   - International character of the Secretariat.
4. Regulations on decision-making procedures of the Commissions of the Authority (162(11)).
5. Rules, regulations and procedures regarding the protection of human life.
6. Rules, regulations and procedures regarding the participation in the Authority as observers by the observers at the Third UNCLOS who have signed the Final Act (156(3)).
7. Rules, regulations and procedures regarding the equitable sharing of financial and other economic benefits derived from activities in the Area and the payments and contributions made pursuant to article 82 (162(2)(o)(i)).
   - Definition of equitable sharing.

APPENDIX II

ITEMS THAT MAY REQUIRE TO BE DEALT WITH BY THE PREPARATORY COMMISSION WITH RESPECT TO RESOLUTION II AND APPROPRIATE RULES, REGULATIONS AND PROCEDURES THAT MAY NEED TO BE FORMULATED

A. BEFORE APPLICATIONS FOR REGISTRATION AS PIONEER INVESTORS CAN BE MADE TO THE COMMISSION

1. Definition/identification of "prospective certifying State" (para. 5(a)).
2. Rules and/or regulations and/or procedures regarding how to determine whether any state which has signed the Convention and which is a prospective certifying state has ensured, before making applications to the Commission under paragraph 2 of Resolution II, that areas in respect of which applications are made do not overlap one another or areas previously allocated as pioneer areas (para. 5(a)).
   [NOTE: The paragraph is silent about any possible overlap with areas reserved for the Enterprise.]
3. Rules and/or regulations and/or procedures regarding how, in the event of overlapping claims, the states concerned shall keep the Commission currently and fully informed of any efforts to resolve conflicts with respect to overlapping claims and of the results thereof (para. 5(a)).
4. Rules and/or regulations and/or procedures regarding how to determine whether conflicts have been resolved by March 1, 1983 (para. 5(c)).
5. Rules and/or regulations and/or procedures regarding how to monitor, if such conflicts have not been resolved by March 1, 1983, whether prospective certifying states have arrranged for the submission of all such claims to binding arbitration in accordance with UNCITRAL Arbitration Rules to commence not later than May 1, 1983, and to be completed by December 1, 1984 (para. 5(c)).
   [NOTE: In view of the fact that the deadlines may be difficult to adhere to because of shortness of time, the Commission may wish to formulate provisions incorporating new deadlines. Additional note: the Commission may wish to investigate legal issues that may be involved in changing the provisions of a Resolution of the Conference.]
   [NOTE: The Commission may wish to address the issue whether it has a role in the formation and working of the arbitral tribunal.]

B. APPLICATION FOR REGISTRATION AS PIONEER INVESTORS AND REGISTRATION AS PIONEER INVESTORS

1. Delimitation of the Area (1(f)). **
   [NOTE: Res. II para. 1(f) states: "Area ... (and other terms) ... have the meanings assigned to those terms in the Convention." Article 1(1) of the Convention states "Area means the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction."]
2. Definition of when the Commission "begins to function" (2).
3. Rules, regulations and procedures regarding the criteria and procedures for implementation of the sponsorship requirements.*
   [NOTE: Res. II para. 1(c) states: "certifying State means a State which signs the Convention standing in the same relation to a pioneer investor as would a sponsoring State pursuant to Annex III, article 6." Annex III, article 4, paragraph 3 states "the criteria and procedures for implementation of the sponsorship requirements shall be set forth in the rules, regulations and procedures of the Authority."]
4. Rules and/or regulations and/or procedures regarding payment by every applicant for registration as a pioneer investor to the Commission of a fee of $US 250,000 (7(a)).
   [NOTE: Annex III, article 13, paragraph 13 states "all financial obligations of the contractor to the Authority (which includes the application fee of $US 500,000 that will be reduced by $US 250,000 for a pioneer investor) ... shall be adjusted by expressing them in constant terms relative to a base year." The Commission may wish to apply a similar adjustment method for the payment by an applicant for registration as a pioneer investor.
5. Rules and/or regulations and/or procedures regarding registering the applicant.
   [NOTE: In registering the applicant, the Commission has to check if the application is accompanied, in the case of a state which has signed the Convention, by a statement certifying the level of expenditure made in accordance with paragraph 1(a), and, in all other cases, a certificate concerning such level of expenditure issued by a certifying state or states (2(a)). In registering the applicant, the Commission has also to determine if the application is in conformity with the other provisions of Resolution II, including paragraph 5. This necessitates rules and/or regulations and/or procedures regarding how to determine if the application is in conformity with the other provisions of Resolution II, including paragraph 5. This, in turn, necessitates rules, regulations and

procedures relevant to the other provisions of Resolution II, including paragraph 5].

C. ALLOCATION OF PIONEER AREA

1. Rules and/or regulations and/or procedures regarding how to determine if an application covers a total area, which need not be a single continuous area, sufficiently large and of sufficient estimated commercial value to allow two mining operations (para. 3(a)).
2. Rules and/or regulations and/or procedures regarding how to indicate in the application the co-ordinates of the area defining the total area (para. 3(a)).
3. Rules and/or regulations and/or procedure regarding how to divide, in the application, the area defining the total area into two parts of equal estimated commercial value (para. 3(a)).
4. Specification of any other items of data to be included in the application (para. 3(a)).
   [NOTE: Para. 3(a) states, "such data shall include, inter alia ...]
5. Rules and/or regulations and/or procedures regarding dealing with data by the Commission and its staff, who shall act in accordance with the provisions of the Convention and its Annexes covering the confidentiality of data (para. 3(a)).
   [NOTE: Annex III, article 14 deals, implicitly, with the issue of confidentiality of data. If the provisions therein are not self-executory, the Commission may need to formulate rules and/or regulations and/or procedures regarding confidentiality of data].*
6. Rules and/or regulations and/or procedures regarding designation of the part of the area which is to be reserved in accordance with the Convention for the conduct of activities in the Area by the Authority through the Enterprise or in association with developing states (para. 3(b)).
7. Rules and/or regulations and/or procedures regarding the allocation of pioneer area by the Commission.
   [NOTE: While paragraph 1(e) states that a pioneer area may not exceed 150,000 square kilometres, Resolution II is silent about the size of the area which is to be reserved for the conduct of activities in the Area by the Authority through the Enterprise or in association with developing states].
8. Definition of "components of a pioneer investor" (4).
9. Rules and/or regulations and/or procedures regarding how to ensure that a pioneer investor registered pursuant to Resolution II has, from the date of registration, the exclusive right to carry out pioneer activities in the pioneer area allocated to it (6).

[NOTE: Date of registration and date of allocation of pioneer area may be different].

10. Rules and/or regulations and/or procedures regarding how certifying states shall ensure, before the entry into force of the Convention, that pioneer activities are conducted in a manner compatible with the Convention (para. 5(b)).
11. Inclusion by the Commission in its final report required by paragraph 11 of Resolution I of details of all registration of pioneer investors and allocations of pioneer areas pursuant to Resolution II (para. 11(b)).
12. Specification of such details.

D. RELINQUISHMENT OF PORTIONS OF THE PIONEER AREA

1. Rules and/or regulations and/or procedures regarding the relinquishment of portions of the pioneer area to revert to the Area, in accordance with the schedule in paragraph 1, sub-paragraph (3) (para. 1(e)).
2. Rules, regulations and procedures regarding the exploitation area (Res. II< para. 1(e)(iii) and Annex III, art. 17 (1)(b)(i), (2)(a).*

E. PAYMENT OF FEE AND INCURRING PERIODIC EXPENDITURES BY REGISTERED INVESTORS

1. Rules and/or regulations and/or procedures regarding payment by every registered pioneer investor to the Authority of an annual fixed fee of $US 1 million commencing from the date of the allocation of the pioneer area (para. 7(b)).*
2. Rules and/or regulations and/or procedures regarding adjustment of the financial arrangements undertaken pursuant to a plan of work to take account of the payment made pursuant to paragraph 7(b) ((7(b)).*
3. Rules and/or regulations and/or procedures regarding the agreement by every registered pioneer investor to incur periodic expenditures, with respect to the pioneer area allocated to it until approval of its plan of work pursuant to paragraph 8, of the amount determined by the Commission (para. 7(c)).
4. Rules and/or regulations and/or procedures regarding the determination of the amount which should be reasonably related to the size of the pioneer area and the expenditures which would be expected of a bona fide operator who intends to bring that area into commercial production within reasonable time (para. 7(c)).

F. PROVISIONS RELATING TO THE ENTERPRISE

1. Rules and/or regulations and/or procedures regarding a request to a pioneer investor by the Commission to carry out exploration in the reserved area (12(a)(i)).
2. Definition of "exploration."**
3. Rules and/or regulations and/or procedures regarding carrying out activities in the Area by the Authority through the Enterprise or in association with developing states (12(a)(i)).*
4. Rules and/or regulations and/or procedures regarding reimbursement of the costs incurred in carrying out exploration in the reserved area plus interest on those costs at the rate of 10 percent per annum (12(a)(i)).*
5. Rules and/or regulations and/or procedures regarding provision by a registered pioneer investor of training at all levels for personnel designated by the Commission (12(a)(ii)).
6. Rules and/or regulations and/or procedures regarding designation by the Commission of personnel at all levels for training (12(a)(ii)).
7. Specification of "at all levels" (12(a)(ii)).
8. Rules and/or regulations and/or procedures regarding undertaking by a registered pioneer investor, before the entry into force of the Convention, to perform the obligations prescribed in the Convention relating to transfer of technology.
   [NOTE: Any rules, regulations and procedures of the Authority related to transfer of technology may be relevant here.]*
9. Rules and/or regulations and/or procedures regarding how a certifying state shall ensure that the necessary funds are made available to the Enterprise in a timely manner in accordance with the Convention upon its entry into force (12(b)(i)).
10. Rules and/or regulations and/or procedures regarding the determination of the necessary funds (Res. II., para. 2(b)(i) and Annex IV, art. 11, para. 3).*
11. Rules and/or regulations and/or procedures regarding reporting periodically by a certifying state to the Commission on the activities carried out by it, by its entities, or natural or juridical persons (12(b)(ii))>
12. Specification of such activities (12(b)(ii)).

G. CERTIFICATE OF COMPLIANCE

1. Rules and/or regulations and/or procedures regarding certification by the Commission of compliance by the pioneer investor with Resolution II (11(a) and 8(a)).

H. APPROVAL OF PLAN OF WORK AND ALLOCATION OF PRODUCTION AUTHORIZATION

[NOTE: Provisions in paragraphs 8, 9 and 10 dealing with the above issues can be implemented only by the Authority.

Thus, the applicable rules, regulations and procedures will be those of the Authority and will be logically dealt with in connection with the work of the Commission under para. 5(g) of Res. I. However, it may be worthwhile to list the items here in view of certain special features of the applications for approval of plans of work and for production authorizations by pioneer investors].

1. Rules and/or regulations and/or procedures regarding application by the pioneer investor to the Authority for approval of a plan of work for exploration and exploitation (para. 8(a)).*
2. Rules, regulations and procedures of the Authority regarding the plan of work (para. 8(a)).*
3. Rules and/or regulations and/or procedures regarding giving priority in the allocation of production authorizations to pioneer investors who have obtained approval of plans of work for exploration and exploitation over all applicants other than the Enterprise which shall be entitled to production authorizations for two mine sites (para. 9(a)).*
4. Definition of "exploitation" (para. 9(a)).*
5. Definition of "mine site" (para. 9(a)).*
6. Rules, regulations and procedures regarding definition of commercial production (Res. II, para. 9(b) and Annex III, art. 17, para. 1(b)(xiii)).*
7. Definition of "economically viable basis" (para. 9(b)).*
8. Calculation of production ceiling (para. 9(c) and art. 151, paras. 2-7).*
9. Rules and/or regulations and/or procedures regarding notification by the Authority to pioneer investor concerned if two or more pioneer investors apply for production authorizations to begin commercial production at the same time and article 151, paragraphs 2 to 7 would not permit all such production to commence simultaneously (para. 9(d)).*
10. Rules and/or regulations and/or procedures regarding notifying the Authority about apportionment of the allowable tonnage among the pioneer investors mentioned above (para. 9(d)).*
11. Rules and/or regulations and/or procedures regarding notifying the Authority about the agreement among the pioneer investors on an order of priority for production authorization if the pioneer investors mentioned above decided not to apportion the available production among themselves (para. 9(e)).

[NOTE: Although the wording is clear, the Commission may wish to make some drafting changes in these sub-paragraphs in order to have uniformity in the phrases "production ceiling," "production permitted by article 151, paragraphs 2 to 7," "allowable tonnage," "available production."]*

12. Rules and/or regulations and/or procedures regarding how to determine whether the status of a state as certifying state has been terminated (paragraph 10 a)).**

13. Rules and/or regulations and/or procedures regarding how to determine whether a pioneer investor has changed its nationality and sponsorship from that existing at the time of registration as a pioneer investor to that of any state party to the Convention which has effective control over the pioneer investor in terms of paragraph 1(a) of Resolution II (para. 10(b)).**

14. Definition of the pioneer investor's "successor in interest" (para. 1(a)).**

I. ANTI-MONOPOLY PROVISION

1. Rules and/or regulations and/or procedures regarding the determination that nothing in Resolution II has derogated from Annex III, article 6, paragraph 3(c) of the Convention (15).
[NOTE: Annex III, article 6, para. 3(c) may require rules and/or procedures].*

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*These items fall under the Authority's rules and/or regulations and/or procedures.

**These items may fall under the Authority's rules and/or regulations and/or procedures, or may require operational rules and/or regulations and/or procedures to be provisionally applied by the Preparatory Commission.

SECRETARIAL MATTERS

Check whether a certifying state has signed the Convention (1(c)).

Check whether a certifying state has certified the levels of expenditure specified in subparagraph (a) of paragraph 1 (1(c)).

Check whether pioneer area is less than 150,000 square kilometres (1(e)).

Check whether 20 percent of the pioneer area has been relinquished by the end of the third year from the date of allocation.

Check whether an additional 10 percent of the pioneer area has been relinquished by the end of the fifth year from the date of allocation.

Check whether an additional 20 percent of the pioneer area or such larger amount as would exceed the exploitation area decided upon by the Authority in its rules, regulations and procedures had been relinquished after eight years from the date of allocation of the area or the date of the award of a production authorization, whichever is earlier ((1)(e)(i), (ii), (iii)).

Log in the date of the allocation of pioneer area (1(e)).

Log in the application for registration as a pioneer investor and the date (2).

Log in the registration of the applicant (2).

Log in the date of receiving the data (3(b)).

Check whether a pioneer investor has been registered in respect of only one pioneer area (4).

Check, in case of a pioneer investor which is made up of two or more components, that none of such components has applied to be registered as a pioneer investor in its own right or under paragraph 1(a)(iii) (4).

Monitor UNCITRAL Arbitration Rules (5(c)).

Check whether the list of relevant co-ordinates have been deposited with the prospective certifying state or states not later than the date of adoption of the Final Act (10 December 1982, 5(d)(i)).

Record payment of fee of $US 250,000 (7(a)).

Record amount of periodic expenditures determined by the Commission (7(c)).

Log in the date of entry into force of the Convention (8(c)).

Check if a certifying state is a Party to the Convention (8(c)).

In the case of entities referred to in para. 1 (a)(ii), check if all the states whose natural or juridical persons comprise those entitites are Parties to the Convention (8(c)).

Log in the date when the status of a certifying state has been terminated (8(c) and 10(a)).

Check if each of the pioneer investors has obtained production authorization for its first mine site ((9)(a)).

Log in the date of notification by the pioneer investor that it will commence commercial production within five years (9(b)).

Record calculated production ceilings (9(c)).

Record apportionment of allowable tonnage decided by competing applicants (9(d)).

Record order of priority agreed on by competing applicants (9(e)).

Record awards of production authorization (9(a) and (f)).

Record states production requirements by a competing applicant (9(f)).

Record changes of nationality and sponsorship of pioneer investors (9(b)).

Record costs of exploration for the Enterprise (12(a)(i)).

Keep list of personnel designated by the Commission (12(a)(ii)).

Log in the periodic reports of the certifying states (12(b)(ii)).

PREPARATORY INVESTMENT UNDER THE CONVENTION AND THE PIP RESOLUTION

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INTRODUCTION

In Danish "pip" is a common slang word meaning "crazy". However, in the Law of the Sea context I do not believe that PIP means crazy. On the contrary, I share the judgment of many and much wiser colleagues that under the circumstances the PIP Resolution is perhaps one of the wisest and most sensible devices negotiated during the last rounds of the Conference.

HISTORY OF PREPARATORY INVESTMENT PROTECTION (PIP)

The subject of interim protection of investment was first brought up by the United States in an informal working paper of April 2, 1980, during the first part of the 9th session of UNCLOS [1]. The main thrust of this paper was to highlight the fact that sea-bed mining investments become site specific at a relatively early stage and that further investments in exploration require a legally secure exclusive right to a mine site. The fundamental US objective was to create a priority for the pre-convention investors -- the four existing mining consortia -- in parallel with a similar priority for the Enterprise.

However, the matter was not discussed on that occasion or at subsequent meetings, even if the topic figured on the agenda as one of the four main outstanding issues. During the second part of the 10th session the US paper was withdrawn pending the outcome of the US review process, and none of the other directly-involved countries wanted to submit any contributions of their own. The question was raised in general terms during the consultations preceding the 11th session in 1982, but no concrete proposals were submitted on that occasion either.

Genuine negotiations on protection of preparatory investments did not commence until well after the opening of the 11th session. Conversely, it should be noted that the major part of negotiations on substance during that last session was devoted to this question, that it was gradually to be considered the key-opener to a possible success of the Conference, and that, in fact, the agreement reached on the PIP Resolution constituted by far the most important result of substance of the last session of the Conference.

PIP NEGOTIATIONS

In his article in Foreign Affairs Leigh Ratiner [2] paints a very accurate picture of the situation. On the one hand, the

developing countries sensed that the one issue on which they were prepared to make concessions and where they could lure the US and its allies into the treaty was the PIP issue. On the other hand, the US delegation, paralyzed by the rigidity of its instructions, had no choice but to play into the hands of the G-77. This was so because the "grandfather rights" were considered by the entire Conference to be an outstanding issue. Moreover, in this field significant progress could be made, while the US issues concerning Part XI were among the most difficult. The G-77 hoped that with meaningful concessions on "grandfather rights" the US mining industry would be pacified and would reduce its pressure on the US government. In turn, they assumed the US would reduce its demands.

Negotiations took place in the Group of 21 on the basis of four informal working papers submitted by the US, UK, FRG and Japan on March 15, 1982; by the G-77 on March 19; by France on March 22; and by the 11 Samaritans (Friends of the Conference: FOC) on March 25 respectively.

The US, negotiating in the so-called Group of 5 (US, UK, FRG, France and Japan, later joined by Italy and Belgium) wanted guaranteed access for the consortia concerned to produce sea-bed minerals related to specific areas. Without such a guarantee the consortia would not enter the next phase of exploration. Exploration of this kind required investments of more than one billion US dollars, which had to be collected through subsequent mineral production. For this reason the consortia concerned needed absolute security that they would obtain production permits.

The G-77 basic position was that a PIP regime should not limit the competence of the Authority after the entry into force of the Convention. Special protection of acquired rights to exploit the resources of the deep sea bed before this moment would violate the fundamental parallel system of Chapter XI and reduce the powers of the Authority radically. Any rights conferred on the mining companies of the industrialized countries would represent concessions on their part.

On this basis, they specified that PIP protections should be restricted to the exploration phase; that the parallel system should be maintained by requiring each pioneer to submit two mine sites, one to be retained by the Authority according to the Convention (the system "you cut the cake, I choose my piece); that each pioneer was entitled to one mine site (limited in size); and that the benefits of PIP should be preserved after entry into force only for entities whose sponsoring states became party to the Convention.

The coordinators of the Group of 21 summarized the rationale for this exercise in their report of March 29, 1982, recommending Resolution II [3]:

> It is a demonstrable reality that six consortia and one State have been investing funds in the development of sea-bed mining technology, equipment and expertise. The programme of their research and development has

> arrived at a point when they must invest substantial amounts of funds in site-specific activities. The industrialized countries representing these consortia have been demanding that the Conference and the Convention on the Law of the Sea should recognize these preparatory investments. We feel that this is a legitimate request provided that the preparatory investments of these pioneers will be brought within the framework of the Convention and provided that the interim arrangement is transitory in character ... [4].

CONTENTS OF THE PIP RESOLUTION

The contents of Resolution II Governing Preparatory Investment in Pioneer Activities Relating to Polymetallic Nodules which resulted from these negotiations are rather complicated and detailed.

Under the Resolution, eight specified mining entities qualify as pioneer investors. These miners must have spent 30 million US dollars by January 1, 1983, and 10 percent of that on a specific site. The list contains four entities whose component companies have the nationality of, or are controlled by, the eight nations currently involved in international consortia (Belgium, Canada, the FRG, Italy, Japan, the Netherlands, the UK, and the US). It also lists four countries which are sponsoring pioneer mining enterprises (France, Japan, the USSR, and India) [5]. In addition, any entity sponsored by a developing nation may qualify by meeting the same financial requirements before January 1, 1985.

Each pioneer investor must be sponsored by a "certifying state" which has signed the Convention. When the "certifying state" (standing in the same relationship to the pioneer investor as a sponsoring state would under the Convention) certifies that the levels of expenditure requested have been met the pioneer investor will be registered as such by the Preparatory Commission. In applying for such registration a "banking system" similar to that of the Convention is set up: the Preparatory Commission must register the pioneer investor for half of the total area submitted to it, the other half being held in reserve for the Enterprise. Each registered pioneer area is limited to 150,000 sq. km., at least 50 percent of which must be relinquished after a period of eight years.

When registered, pioneers are given the exclusive right to conduct "pioneer activities" in their areas. These activities include every kind of investigation such as engineering developments, at-sea observation, etc. It seems that pioneer activities may cover activities which under the Convention would be termed exploration, and not just prospecting.

The pioneer investor will have to pay to the Preparatory Commission an initial fee of $250,000 and an annual fiscal fee of $1 million. Furthermore, the pioneer must undertake to incur periodic expenditures in the area allocated. He is also

required to provide personnel training, perform the transfer of technology obligations of the Convention, and carry out exploration for the Enterprise on a cost-reimbursable basis.

Within six months after the entry into force of the Convention, the pioneer must submit a plan of work for exploration and exploitation. This plan must be approved by the Authority if the requirements of the Convention are met. Priority must be given to pioneer investors over every other applicant (except the Enterprise, which may obtain two sites) in the allocation of production authorizations. However, the production limitation system has to be applied. As a consequence, applicants whose production, if authorized, would exceed the production ceiling will only get a priority for the granting of the next production authorizations allowed by the ceiling.

One of the important aspects of the PIP system is the link between pioneer status and participation in the Convention. This issue not only represented one of the major political bargaining points, but also a question subject to legal controversy during the 11th session. As mentioned above, certifying states must, in order to obtain registration of a pioneer investor, be signatories to the Convention. This requirements is made less stringent for the four consortia composed of companies from more than one state. Although the Resolution does not translate the clear political compromise into clear legal terms, the generally accepted result is that only one of these companies need come from a state having signed the Convention. However, in order to obtain approval of plans of work and production authorizations after the Convention enters into force, it is necessary for the certifying states to be parties to the Convention, including all those to which component entities of a consortium belong. The Resolution provides, nevertheless, for the devolution of pioneer status to successors that may belong to a state signatory to the Convention and for the changing of nationality of pioneer investors whose certifying states fail to ratify or accede to the Convention.

LEGAL NATURE OF THE PIP RESOLUTION

The PIP Resolution is an international legal instrument which seems extraordinary in various respects. The main question is whether Resolution II is a legally binding instrument containing rights and obligations under international law. Firstly, the PIP Resolution is a resolution of UNCLOS III and not of the UN General Assembly. Therefore, it cannot be assimilated to resolutions of the Assembly, which are generally held not to be legally binding. Secondly, the PIP Resolution must be judged on its own merits in the context of the Conference.

The language of Resolution II is that of an international treaty and not merely of a non-binding recommendation. Although, as far as I recall, it was never said expressis verbis

during the negotiations, it was clearly the intention of the Conference to create a legally binding instrument to bridge the gap between the Conference and the entry into force of the Convention.

Whereas under article 318 of the Convention the Annexes form an integral part of the Convention, the Resolutions are not in the same legal situation. However, article 308, paragraph 5 provides that the Authority and its organs must act in accordance with Resolution II. This indicates that Resolution II has a legal life of its own. Finally, the preambular paragraphs of Resolution II and the use of the activating verb "decides" in introducing the operative paragraphs, reflect the intention of the Conference to create a legally binding instrument. In short, I believe Resolution II can be compared to resolutions by other conferences whereby the participants decide to apply provisionally the Convention adopted by the conference -- a kind of separate agreement of the participants. This kind of practice is also reflected in the new provisions of the Convention on the Law of Treaties, e.g., article 25 on provisional application [6].

Another question is: from what moment did Resolution II become binding? Various dates suggest themselves: on April 30, 1982, when the results of the Conference were adopted; on September 24, 1982, when the finalized texts of the Convention and the text of the Final Act were adopted; or on the closing date, December 10, 1982, when the Final Act was adopted and the Convention opened for signature. Today, the question has essentially an academic interest. However, in conformity with the opening phrase of Resolution II: "Having this day adopted the Convention on the Law of the Sea ..." I believe the right solution to be April 30, 1982.

A further question is: on whom is the PIP Resolution binding? This does not mean "binding" in the sense that any state is bound to make use of the PIP system, but only that a state, if it is involved in pioneer activities, is required to observe it. Surely, the provisions of the PIP Resolution can have binding effects only on the states which voted in favor on April 30, 1982. The fact that some states announced that in case of a separate vote they would have voted against or abstained on Resolution II is of no relevance if -- according to the voting system adopted by the Conference -- they voted in favor of the entire package. The question may be asked whether, in order to be definitively bound, it is required that a state should also have corroborated its positive vote by signing the Convention. Furthermore, it would probably be correct to assume that states which sign the Convention after having abstained or cast a negative vote will become bound by Resolution II upon signature.

A more interesting question in this connection would be: what is the legal situation of the non-state entities mentioned in the PIP-Resolution, i.e., the private consortia referred to in paragraph 1 (a) (ii). These consortia would, as pioneer investors, be directly subject to certain obligations flowing from the Resolution, such as paragraph 7 and paragraph 12.

One aspect of this problem was dealt with in the legal opinion of the Legal Counsel of the United Nations [7] in reply to certain complaints by the USSR and other members of the Eastern European Group. One of their complaints was that it was legally impermissible and inappropriate for an international diplomatic conference, such as UNCLOS III, to decide to grant the status of a pioneer investor to private companies, identified by means of a reference to a United Nations document, and thereby place them on the same footing as states. The Legal Counsel responded that the approach adopted by the Conference is legally permissible and consistent with the practice of the United Nations [8].

The Legal Counsel referred to precedents where, in agreements between states, rights and benefits have been conferred also on private commercial enterprises, such as airlines designated by the states parties to an airline agreement.

However, the pertinent question is not the question of private persons as beneficiaries of rights under international law. Even if, as mentioned by the Legal Counsel, a private pioneer investor will operate under the umbrella of a certifying state, it seems nevertheless that pioneer investors are subject directly to certain obligations under international law. (If international law is considered, by definition, as consisting of rules governing only states, do we then have to review our definition? I shall leave the answer to that question to the scholars.)

A simple answer to the immediate question probably is that the private companies in question constitute a very special group of four entities which are in fact capable of responding to the specific obligations of the PIP Resolution and of the Convention. For this particular purpose they are assimilated to states. The sea-bed mining provisions constitute a very special body of international law (see, inter alia, article 21 of Annex III). When life is bred into these rules, they may turn out to look more like a specialized set of internal rules within the framework of the Convention -- "sui generis" rules which could be compared to the rules of the European Community applicable to private persons or to the United Nations internal rules applicable to officials of the Organization.

PROBLEMS RELATING TO THE IMPLEMENTION OF THE PIP RESOLUTION

From the very beginning some of the industrialized countries made it clear that in their development work they had encountered possibilities of overlaps in sea-bed areas, and that the problem of emerging conflicts over site claims was an urgent one.

Paragraph 5 of the PIP Resolution requires that all area-overlap conflicts be resolved before any applications for registration as a pioneer investor can be made to the Preparatory Commission. Paragraph 5 also contains an initial

timetable for all prospective certifying states, including all potential claimants, to resolve their conflicts by negotiations prior to March 1, 1983. If conflicts are not resolved through negotiations, the cases are to be submitted to binding arbitration not later than May 1, 1983, to be completed by December 1, 1984.

In July 1982, Canada took the initiative to call a meeting of all prospective certifying states in order to discuss the question of settling conflicts regarding overlapping areas. Canada submitted a draft "Memorandum of Understanding" (MOU) to this effect. The willingness to negotiate a conflict resolution mechanism was not overwhelming. Hesitation in many quarters was, of course, mainly due to the fact that some prospective certifying states had either taken no decision yet to sign the Convention or had already declared an intention not to sign, i.e., the United States on July 9, 1982. At the same time, it was commonly known that some Western mining states as well as some Western mining companies were negotiating mechanisms to resolve conflicts regarding overlapping claims among themselves.

On September 2, 1982, the US, the UK, France and the FRG concluded an "Agreement concerning interim arrangements relating to polymetallic nodules of the deep sea-bed." Although the basic objective of this conflict resolution agreement apparently is merely to avoid the overlapping of areas claimed under their national mining laws and although it is drafted to appear compatible with the Convention, this arrangement raised international criticism for various reasons. Firstly, it was not a global system since it failed to include potential sea-bed miners such as Japan, the USSR and India; the latter two countries seem, however, to have blessed an action of this kind by their subsequent bilateral negotiations on resolution of possible overlapping claims. Secondly, it anticipated a further agreement providing for the mutual recognition of sea-bed claims under national legislation. Indeed, resolution of overlapping boundary disputes and mutual recognition of claims are the two essential features of a so-called "mini-treaty" on sea-bed mining.

At that time in particular, the four states' agreement was seen as a potential for conflict and as a threat to the Convention by foreclosing options of signing, even before the Convention was opened for signature. However, the agreement did not prevent France from signing the Convention on December 10, 1982. As long as the agreement does not develop into a genuine mini-treaty, it is difficult to oppose efforts by interested states to resolve overlapping claims. In fact, the PIP Resolution presupposes the existence of such mechanisms, but that seems to reflect an assumption that conflicts among <u>all</u> potential claimants will be resolved. That is why the global avenue suggested by Canada appears to be the only right one in the long run. This conclusion fully accords with the views expressed yesterday by Ambassador Elliot Richardson when he said that universality is a necessity. But it also accords with the position of Congressman Breaux when he emphasized that the

objective is security of tenure. Indeed, such security cannot be obtained unless all potential claimants are involved in settling conflicts regarding overlapping claims.

Negotiations on the basis of the Canadian MOU were continued during the first meeting of the Preparatory Commission in Kingston. The main problems have been the legal nature of the agreement, participants (signatories to the Convention only?), the system for exchange of information identifying the claims, confidentiality, and deadlines.

The last problem seems to be one of the major outstanding issues. On the one hand, it became obvious that the first deadlines mentioned by the PIP Resolution in paragraph 5 (March 1 and May 1, 1983) could not be met. On the other hand, some negotiators seem extremely hesitant to do anything which could appear to be a modification of the Resolution. That is why many negotiators prefer the term "Memorandum" and refuse to label the conflict resolution mechanism a Protocol or any similar term, as this could imply that it is a formal legally binding instrument purporting to modify the provisions of Resolution II.

However, there is an underlying problem of a more far-reaching nature. Paragraph 5 of the PIP Resolution provides that "the prospective certifying states including all potential claimants" must resolve their conflicts within a reasonable period. The Convention is open for signature until December 9, 1984. Paragraph 5 stipulates that any conflict resolution must be completed by December 1, 1984, and the MOU negotiators, quite reasonably, wish the exchange of information on claims to begin in due time before this deadline. If the MOU is open only to signatories of the Convention, what then is the legal situation of a prospective certifying state which wants to avail itself of the full period until December 9, 1984 before signing? How do signatories which are certifying states know whether there are other prospective claimants with whom their claims might conflict? Could they start resolving conflicts without being certain that there might be some late-comers?

That is why I believe that all potential claimants -- whether signatories or not -- could and should take part in the conflict resolution exercise and should be able to join the MOU. The provisions of paragraph 5(a) and paragraph 5(c) deal with two different situations. Paragraph 5(c) does not exclude non-signatories from taking part in a conflict resolution mechanism. Indeed, it invites them to do so if they are potential claimants.

Similar problems arise if some states apply at a time when the Preparatory Commission is not yet assured that there will be no conflicting applications. It appears necessary to establish certain mechanisms in order to ensure that applications are not opened prematurely with the risk of compromising proprietary information. Furthermore, the question arises of who determines whether the obligations of paragraph 5 have been met: the prospective certifying state(s) or the Preparatory Commission? It seems, in the nature of things, that it is for the Preparatory Commission to make such determinations, not by

voting, but according to rules, regulations and procedures on this question. In the absence of such rules, it is difficult to see the interest of the USSR and India in submitting their applications to the Preparatory Commission [9].

Indeed there are other matters which must be dealt with before the Preparatory Commission can begin to implement paragraph 2 of the PIP Resolution. Simple problems relating to submission of applications need to be solved: for example, the format of the application, the information it should contain, and who receives it. Moreover, certain terms need further clarification: for example, the terms "State enterprise and entity" (paragraph 1(a)) and "nationality" or "effective control" (paragraph 1(a)ii)) are not precise legal concepts. Neither is the term "component" sufficiently clear. Paragraph 2(a) requires the submission of a statement certifying the level of expenditure of the pioneer investor. What evidence of expenditure is required, and how should work carried out be equated with dollars spent?

The area covered by every application must be "sufficiently large" and of "sufficient estimated commercial value". These notions require assessment criteria. The total area submitted may not exceed 300,000 square kilometres, but it could be less if it is determined that a smaller area is large enough to accommodate two mining sites. Who should determine that and how? The Preparatory Commission must obviously have some competence in this respect. No doubt pioneer investors would like to know beforehand, for example, what standards of evidence will be required to determine the commercial value of an area.

The existence of these, and many other, problems seems sufficient to indicate that by their very nature they cannot be solved unilaterally by the certifying state. The Preparatory Commission must, as a matter of priority, work out rules, regulations and procedures relating to the submission of applications, not only in order to handle such applications, but also to inform the applicant, who otherwise may not be able even to prepare an application. Moreover, the potential applicant may not wish to submit an application before he is fully aware of the precise nature and extent of the further obligations resulting from the PIP Resolution. As mere examples, he may wish to know the implications of the obligations concerning "periodic expenditures" which he has to incur according to paragraph 7(c) and of the undertakings pursuant to paragraph 12 concerning exploration of reserved sites, training of personnel, and obligations regarding the transfer of technology.

This leads to the question of whether even certain principles of the Convention itself need clarification before pioneer investor applications will be made. Reference is made in particular to the provisions of article 5 of Annex III concerning transfer of technology. Under the PIP regime the pioneer investor is required merely to accept an undertaking prior to the entry into force of the Convention to perform these obligations. However, pioneer investors may wish to ensure that satisfactory rules, regulations and procedures in this regard

are drawn up, since PIP is only a temporary arrangement whereas the rules, regulations and procedures of the Authority are to be permanent.

The Preparatory Commission is empowered to prepare such draft rules according to paragraph 5(g) of Resolution I. The question is, however, to what extent the Preparatory Commission should prepare rules, regulations and procedures before it can "begin to function" in the sense of paragraph 2 of Resolution II. Some of the tasks already outlined -- which various potential pioneer investors might consider a prerequisite for filing an application -- could take several years to perform. Some of the work is absolutely necessary, whereas demands for prior rules in other fields may be seen as attempts just to delay unduly the administration of the PIP system.

The Preparatory Commission will at a certain moment have to decide when its work has progressed sufficiently to permit the Commission to begin its functions under paragraph 2 of Resolution II. The delay in commercial mining places mining states and industry under less immediate pressure to decide whether to sign (and ratify) the Convention. However, they may feel compelled to retain priorities for mine sites until they can make a formal decision.

Among the other parameters that the Preparatory Commission should take into account is the date of entry into force of the Convention -- when the PIP Resolution ceases to have effect -- and the date of January 1, 1988 -- according to the national laws no exploitation based on national licenses can take place until that date.

SEABED MINING WITHIN AND OUTSIDE THE CONVENTION

In his article in "Marine Policy" of January 1983, Professor Tullio Treves states that there seem to be two paths open for states whose companies are engaged in sea-bed mining -- one within the Convention, starting with PIP, and one outside the Convention's framework, based on unilateral legislation and a "mini-treaty" concerning the reciprocal recognition of mining permits issued by states having adopted such legislation.

If this statement relates to paths to exploitation of a particular sea-bed area by one sea-bed miner, to the exclusion of others, there would, in my opinion, be only one path compatible with international law: that of the Convention. Indeed, such exclusive exploitation outside the Convention could hardly be considered an exercise of any of the freedoms of the high seas.

However, some states may still want to assess the comparative advantage of security, stability and cooperation with the Third World -- which seem assured by working inside the Convention -- and of a more flexible and less burdensome system resulting from operating outside the Convention.

If all of the states which have hitherto introduced national legislation and negotiated conflict resolution agreements, or even reciprocity agreements, were to sign the

Convention they would combine the two approaches. They would also obtain a very strong hand during the negotiations in the Preparatory Commission. Neither the PIP Resolution nor the Convention seems to exclude the existence of national legislation or reciprocity agreements, provided they are made compatible with the Convention system.

However, if one or more states parties to a reciprocity agreement were to stay out of the system by not signing or ratifying the Convention, some legal difficulties would arise. As mentioned by Professor Treves, other states parties to the Convention could claim that it is in violation of article 137, paragraph 3 of the Convention for a reciprocating state, party to the Convention, to be bound to recognize the exclusive rights granted by another reciprocating state, not a party to the Convention. This article obliges states not to recognize any claims or rights with respect to minerals from the area except in accordance with Part XI of the Convention. Professor Treves argues that the obligation of article 137, paragraph 3 cannot be interpreted to preclude a state, in its sovereign discretion, from refusing to grant its nationals authorizations to explore or exploit sites on which another state has given its nationals such authorization.

Seen from the perspective of the Convention, the situation would be a little different. The problem seems to be whether a private company can use its home country to certify it as a pioneer investor, and then subsequently to sponsor it as an operator. If not, the private company would probably look for another certifying state. Of course, this may open the way for corporate maneuvering and for a kind of "flag of convenience". The PIP Resolution does contain provisions on change of nationality and sponsorship. In any case I agree with Professor Treves that the safest way for a state to keep options open to resort to the Convention system is to make any declarations or participation in reciprocity agreements subject to abrogation in case it decides to become a party to the Convention.

CONCLUSIONS

The PIP system embodied in Resolution II seems to meet the fundamental objectives of the prospective sea-bed miners. The former chairman of the US UNCLOS delegation, Ambassador Elliot L. Richardson, has stated that the PIP provisions meet substantially all the concerns set forth by President Reagan in his statement of January 29, 1982 [10]. The deputy chairman of the US delegation, Mr. Leigh Ratiner, shares this judgment [11]. In his opinion, the PIP Resolution meets not only some of the fundamental objectives of the US, but also the most central objective held by US allies, by guaranteeing automatic access to the strategic raw materials of the sea-bed for the first generation of sea-bed mining. Altogether ten sea-bed mining sites are allocated to all of the mineral production likely or possible from the sea-bed for the next 30 to 50 years. With the notable exceptions of mandatory technology transfer and

procedure for amending the treaty, the offensive ideological provisions of the treaty would not effectively apply before the middle of the twenty-first century. By that time, Mr. Ratiner concludes, there would have been a thorough treaty review and an opportunity to re-negotiate.

Indeed, the PIP system may be seen as a mechanism for at first encouraging and then forcing reluctant states to become parties to the Convention [12]. Some say it is a splendid demonstration of the carrot-and-stick principle. However, the carrot aspect seems very predominant, and the stick will hardly ever be felt.

Not only does the delay in sea-bed mining, due to the prevailing uncertain economic prospects, reduce urgency and, conversely, offer reasonable time for proper preparation, but the mandate of the Preparatory Commission also seems sufficiently broad to allow for the elaboration of rules, regulations and procedures in all relevant fields which might serve to dispel any reluctance with regard to the PIP system and the sea-bed mining provisions of the Convention. Consequently, it would seem more sensible to get into the system -- to sign the Convention and become a full member of the Preparatory Commission, and thereby be able to influence the shaping of these rules -- than to stay outside the Convention and be affected in any event by rules on which no effective influence has been exercised.

Where do we go from here with regard to PIP?

I have dealt with some of the regulatory or law-making functions of the Preparatory Commission. But I have not even mentioned the institutional problems. Who is to be entrusted with the executive functions of the Preparatory Commission, i.e., receiving applications, registration of pioneer investors, etc.?

The Consensus Statement of Understanding read out by the President of the Preparatory Commission in Kingston at the end of the spring session identifies the implementation of Resolution II as one of the matters to be dealt with by the special commission and the Plenary. The Consensus Statement also says that the Preparatory Commission will adopt, by consensus, rules and procedures for the implementation of Resolution II and the establishment of adequate machinery to administer the regime for the protection of pioneer investors.

Should PIP questions be handled in a working group or in the plenary under the responsibility of the President? Should the MOU negotiations be conducted under the direct responsibility of the President?

The questions are more abundant than the answers. However, the PIP problem is an important one. It may be our first test case, the first indication of whether the Preparatory Commission and eventually the Convention will function. It is also a challenge. In that regard I share the following opinion expressed by the President of the Conference, Ambassador Tommy Koh, at the signing ceremony for the Convention in Montego Bay:

If (the Commission) carries out its work in an efficient, objective and business-like manner, we will have a viable system for the mining of the deep sea-bed. This will induce those who are standing on the sidelines to come in and support the Convention. If, on the other hand, the Preparatory Commission does not carry out its tasks in an efficient, objective and practical manner, then all our efforts in the last 14 years will have been in vain.

NOTES

1. Doc. IA/1 of 2 April 1980.
2. Leigh S. Ratiner, Deputy Chairman of the US delegation to the final negotiating session of UNCLOS, in Foreign Affairs, Summer 1982, p. 1014.
3. Doc. A/Conf. 62/C.1/L. 30
4. Subsequent proposals are contained in Doc. A/Conf. 62/L. 132/Add. 1 and Corr. 1 of 23 April 1982, and A/Conf. 62/L. 141/Add. 1.
5. During the 11th session the USSR and India declared that they had also made substantial preparatory investments in pioneer activities. On April 19, 1982, the Soviet delegation announced that on that same day the USSR had introduced a national sea-bed mining legislation.
6. See also preliminary note of June 29, 1982, prepared by B. Sen, Secretary General of the Asian-African Legal Consultative Committee:

   > There are of course certain differing views concerning the legal effect of the resolutions adopted by the General Assembly but adoption of resolutions together with a Convention as part of the package by a Conference of Plenipotentiaries may well appear to provide a legal basis for restricting the activities in the sea-bed area to the pioneer investors even before the Convention comes into force.

7. Doc. A/Conf. 62/L. 133.
8. It is worth noting that the states which at UNCLOS III complained about private companies being placed on the same footing as states, advocate in the UNGA a convention against recruitment, application, financing and training of mercenaries, whereby actions by private persons would be contrary to international law.
9. See Doc. LOS/PCN/4 of April 1983, and Doc. LOS/PCN 7 of 26 April 1983, reproducing letters from the USSR and India in which the two states announce their intention to submit

applications. The USSR, furthermore, announced its understanding that if the Preparatory Commission receives no notification from interested certifying states of their readiness by May 1, 1983 to exchange co-ordinates of areas and to negotiate resolution on any conflicts, it would consider that it had complied with paragraph 5 (a) of Resolution II and that it would be registered as the first pioneer investor. India said it would in that situation feel free to take any appropriate action under Resolution II. A number of other states expressed their disagreement with this interpretation of Resolution II stating, inter alia, that consultations on conflict resolution were on-going; that the date "1 May 1983" is only the deadline for submission to binding arbitration of overlapping claims; and that the Preparatory Commission had not yet begun to function in the sense of paragraph 2; see e.g., letter from France in LOS/PCN 8 of April 27, 1983; from Canada in LOS/PCN/15 of April 29, 1983; and from the Netherlands in LOS/PCN/18 of May 3, 1983. Some of them also stated they were prospective certifying states; see letters from the FRG in LOS/PCN/9, from Japan in LOS/PCN/9, from Japan in LOS/PCN/11, and from Italy in LOS/PCN/10 of 28 April 1983. The United Kingdom in LOS/PCN/13 and Belgium in LOS/PCN/14 of 29 April 1983 reserved their position.

10. Elliot Richardson, Sealaw Convention Benefits U.S. National Interests, Sea Technology, June 1982.
11. Foreign Affairs, Summer 1982, p. 1014.
12. Tullio Treves, The Adoption of the Law of the Sea Convention, Marine Policy, January 1983

RECIPROCATING STATE ARRANGEMENTS: A TRANSITION OR AN ALTERNATIVE?

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CORPORATE DECISIONS TO INVEST IN MINERAL RESOURCE DEVELOPMENT

The mineral resources of the earth's surface, on land and in the ocean, are not inexhaustible. They are, however, abundant. Many significant ore bodies have been developed and shut down due to excess world capacity or discovered but not exploited; others still await discovery. When demand for minerals increases and prices rise, investors have the incentive to find new ore bodies and to exploit existing reserves. From a global perspective there is no present or foreseeable shortage of supply.

Since nature dictates the location of mineral deposits, most natural resource companies have a global perspective as they survey competing investment opportunities. They are accustomed to working under the sovereign control of many differing countries and can adapt to a variety of political systems and environments. This accounts for their global view.

There is a mutual interdependence between large multinational corporations with the technology, know-how and capital to exploit mineral resources and potential host governments in need of these assets to develop resources within their boundaries for the benefit of their domestic populations. When the senior executives of a natural resource company survey investment opportunities, they are quite pragmatic. They seek a secure long-term supply, free of political doubt to the extent possible; financial arrangements with host countries which maximize profitability; and logistics, both in terms of infrastructure and transportation, which minimize the cost of production. Many countries afford these characteristics to foreign investors. Frequently, ore bodies are found in similar qualities and quantities on different continents and in different countries. Many countries find themselves in competition to host foreign investors seeking investment opportunities.

Accordingly, when we analyze the future of deep-sea mining under a regime which does not provide all of the essential ingredients -- such as a reciprocating states regime -- we must compare, as corporations will, the alternatives which may be available for their investment dollars. In doing so, we must use the criteria which will be used by corporate decision-makers who are accountable to their stockholders, not the criteria used by lower level corporate officials who do not have the same accountability. We should also be aware of the essential irrelevance of sea-bed mining in our calculation. A corporation does not wish to engage in sea-bed mining because of some

affection for the sea-bed. It will engage in sea-bed mining if that is the most attractive of a variety of other potential investment opportunities where the corporation's technology, know-how and marketing capacity can best be put to use.

UNIVERSAL METALS COMPANY

Let us assume, then, that a hypothetical corporation -- which I will call the Universal Metals Company -- is seeking investment opportunities because it has available to it metal market forecasts that convincingly portray substantial growth in the world economy and in metal markets commencing 10 years from now and enduring for several decades thereafter. Universal Metals has experience in a number of developing countries mining nickel, copper, cobalt and manganese. Let us also assume that Universal Metals is a corporation organized in the United States and that its directors bear legal responsibility to its numerous private stockholders to exercise prudent judgment in making investment decisions.

Universal Metals, as part of its general research and exploration program, has over the years assembled considerable data about available deposits of manganese, nickel, cobalt and copper. In some cases it already has acquired concessions on land from some countries which exclude others from engaging in exploration in those countries during the period to which the concession applies. In short, Universal Metals has the "inside track" to ore bodies in a number of countries, although it has not yet worked out arrangements for the commercial exploitation of those ore bodies. Universal Metals' senior executives for strategic planning, resource development and finance together must make recommendations as to which investment opportunities to pursue and which to discard or put on a back-burner.

Let us also assume for the sake of this hypothetical case that Universal Metals has acquired the technology for deep-sea mining and considerable prospecting information about the quality of potential ore bodies.

Finally, to simplify our analysis, let us assume that all of the Universal Metals' alternative investment opportunities will involve approximately the same cost of production, produce the same output of metals, and have the same cost of money. How, then, will a choice be made?

On the basis of these assumptions, the principal issues facing the corporate executives will be political security and government-imposed burdens and taxes. The corporate executives will choose that investment opportunity which involves the longest possible term, the least prospect for political interference (including a prediction about the stability of the host government) and the lowest possible taxes.

Every investor and every potential host country recognizes equally that local tax policies will affect the investor's decision to go to another country which provides better financial arrangements. With respect to the last of these factors, let us therefore assume -- to further simplify our

analysis -- that the financial arrangements set forth in the Law of the Sea Convention are equal to, or more favorable than, the financial arrangements a company is likely to obtain initially when it invests in any foreign country, whether industrialized or developing (provided of course the company is not taxed a second time by its home state for one type of investment but not the other).

No corporation in the modern world expects to obtain total freedom from political interference. In a venture to develop the resources of a sovereign state which has a population dependent on its government for social services and in many cases the necessities of life, there will always exist political pressures to adjust the terms of an ongoing transaction, depending on the economic and political exigencies affecting the Head of Government and the Minister of Finance. At the same time, every government knows that its capacity to attract investment depends on trustworthy assurances to investors that they will be as free as possible of political interference and changes in the rules of the game. Otherwise, foreign investors will not invest their capital.

Under the Law of the Sea Convention, a corporation is guaranteed substantial freedom from political control and interference in the sense that, if it obeys written rules and regulations, the opportunities for discretionary interference by the Sea-bed Authority are extremely limited -- more so indeed than if it were to invest even in the United States where, for example, the government has enormous discretion to interfere with mining ventures in the interest of protecting the environment and the courts are notably reluctant to stay the decisions of the executive branch in the management of natural resources.

Moreover, unlike the situation in many developing countries, the Sea-bed Authority does not subsidize rice for its domestic population, does not provide health care for its population, does not provide educational assistance, roads or transportation, and does not have constituent political parties fighting for control of its government. In short, the factors which give rise to political instability for an investor in most countries -- the uncertainties of political interference and the incentives for extracting confiscatory tax payments in order to deflect political or popular demands for increasing government funds -- do not exist in the Sea-bed Authority. Indeed, the Sea-bed Authority will be motivated by very different considerations (which I will touch upon shortly) that would tend to provide an even greater measure of stability. Not the least of these is its functional governing arrangements which make it difficult to take important decisions, including those which involve interference with an on-going mining venture.

It seems clear to me that from the perspective of stability of investor expectations, there are probably few safer havens on earth for mining investment than under the Law of the Sea Convention -- with one important caveat: a need to establish a track record.

International bureaucracies are widely believed to be insensitive to economic reality, rife with red tape, and likely to introduce costly inefficiencies into an otherwise productive project. For that reason the senior executives of Universal Metals, faced with equivalent financial arrangements, costs of production, and freedom from political interference, would probably still choose an individual country's land-based (or economic zone) resources rather than those administered by the Sea-bed Authority. Moreover, there is a tendency to feel that an individual country is more monolithic in its attitudes to foreign investment, more cooperative with its foreign investors, and more in need of the foreign exchange earnings generated by its foreign investors.

But if the Sea-bed Authority offers a politically more stable environment, this consideration might well tip the scales the other way. If in addition to increased political stability, it turns out that sea-bed mining is treated more favorably from a financial perspective, the incentive would be even higher. While, therefore, we cannot predict whether a corporation faced with competing land-based (and economic zone) alternatives on the one hand, and deep sea-bed alternatives on the other, would choose the deep sea-bed until it has seen the Sea-bed Authority in operation, we can compare investment in the sea-bed under the Law of the Sea Convention with investment under a reciprocating states regime.

THE CONVENTION VERSUS THE RECIPROCATING STATES REGIME

Let us first dispose of the issue of finance. The prospective reciprocating states are among the countries in the world with the highest tax burdens. Even in the United States, where mining companies enjoy a depletion allowance under the Internal Revenue Code, the effective tax rate for an American citizen mining there is higher than it would be under the Law of the Sea Convention. The same may also be true in Western Europe and Japan. Therefore, mining under a reciprocating states regime is unlikely to be financially more attractive than mining under the Law of the Sea Convention -- again, provided sponsoring states do not indulge in double taxation.

Let us then examine the question of political security. For Universal Metals to borrow half of the capital required for a project of the magnitude of deep-sea mining, it will be asked to demonstrate that the ore body it seeks to use to secure the loan is not claimed by another corporation or country and is not the subject of legal dispute.

Some have argued that corporations will pledge their overall corporate assets to secure the loan, rather than project financing where a judgment is made by the lender that the ore body is secure and the technology adequate, and that therefore the borrower will be able to service his debt from the revenues generated by the project. This view, however, avoids the issue of corporate executive accountability. The management of a corporation may take risks with corporate assets which slightly

exceed the risks that would be taken by its financiers. But it is unlikely to commit extraordinary sums of money to a project which fails to demonstrate that the company can enjoy, even for one year, uncontested title to the resources which are needed to generate a revenue stream which will service the debt and return a profit which can be translated into dividends for its stockholders.

But for the option of proceeding unilaterally under domestic legislation, the reciprocating states regime is the least politically secure arrangement which could be deployed as an umbrella for sea-bed mining investment. Everyone connected with sea-bed mining is willing -- either privately or publicly -- to concede that sea-bed mining under unilateral legislation is impractical, if not impossible. All would agree that the reason for this judgment is that the risk of competing claims to a mine site applied for under US legislation -- which does not even purport to grant exclusive rights except to claimants from reciprocating states -- is too high. It defies understanding how there can be a consensus view on this judgment that is not, in turn, carried over to an analysis of a reciprocal regime among some but not all sea-bed mining countries. What is to prevent the USSR, France or Japan from claiming ore bodies under the Law of the Sea Convention (and PIP) which are also claimed by the UK, the FRG and the US under a reciprocal regime? (I am assuming that Japan and France will not join in a reciprocating regime which recognizes the lawfulness of American claims in light of article 137, paragraph 3 of the Law of the Sea Treaty which prohibits the recognition of any "claim, acquisition or exercise" of rights in the resources of the Area unless granted under the Law of the Sea Treaty. If Japan and France were to join a reciprocating regime and recognize American rights, it would appear that they were in violation of their treaty obligations and might as a result jeopardize their rights under the treaty since article 185 would be likely to be called into play. While the standard for suspension from the Sea-bed Authority is high -- gross and persistent violation of Part XI -- it seems certain that most countries would consider recognition of exclusive rights by a non-treaty party to be gross and each day of such recognition to be persistent.)

Accordingly, since there can be no security of title to the ore body under a reciprocal regime which operates in competition with the Law of the Sea Convention regime, the reciprocal regime must be viewed as a mere device for misleading politicians in industrialized countries in the interest of pandering to ideological views which give rise to opposition to the Convention on grounds of principle. What is presumably being told to these politicians is that advanced industrialized countries can afford to stay outside of the Law of the Sea Convention and luxuriate in their ideology because they have the alternative of a reciprocating states agreement under which business can proceed.

Unfortunately, some in industry collaborate with this misinformation because they too are ideologically opposed to the

principles of the Convention, and hope that by the time sea-bed mining becomes a reality -- which is easily 20 years away -- abstention from the Convention regime by some great powers will have caused the Convention to disappear or be renegotiated. This prognosis, in my opinion, will be correct if the Sea-bed Authority fails to avoid the pitfalls of other international bureaucracies. If it establishes a favorable climate for investment, however, it will be a most attractive regime for investment and it will easily acquire for the Enterprise the technology and capital of the USSR, Japan, France, Canada, Australia and other Western European countries. While sea-bed mining technology still remains to be proven at a commercial scale, there is essentially no technological mystery about it. With good management and know-how any new entrant can easily play "catch up" -- even the Enterprise. Thus, the absence of the United States or some of its Western allies may well go unnoticed.

A NEW GLOBAL ETHIC

Earlier it was suggested that the Convention regime was likely to create a more favorable investment climate than would be the case with respect to land-based (or economic zone) investments with which sea-bed mining would compete. It was stressed, however, that the Sea-bed Authority had no track record and that this is always an important ingredient in any large corporation's evaluation of political risk. Therefore, I would like briefly to explore some of the considerations which may lead the Sea-bed Authority to create a favorable track record.

To those who have watched the negotiation of Part XI of the Convention since the Declaration of Principles was adopted -- or more importantly since 1973, when the OPEC oil embargo heightened global awareness of the potential for wealth transfers that accompany concerted action with respect to the supply of basic raw materials -- it has been obvious, but rarely stated explicitly, that the struggle was one involving new international ethical norms. These new norms are not significantly different from those which are frequently pressed on unwilling national governments and which sometimes result in abrupt changes of government.

Perhaps it is presumptuous for me to suggest what the motives of the Group of 77 were and, if so, I apologize in advance for doing so, but I believe that the negotiation of Part XI was an effort to bind Western industrialized countries to a new global morality, to wit: to recognize that wealth is inequitably dispersed and that efforts should be made to redistribute wealth from the upper classes to the lower classes -- in this case the upper classes being the Western industrialized countries and the lower classes being the developing countries.

I do not think any developing country leader at the Law of the Sea Conference believed that Part XI of the Law of the Sea

Convention would in any way actually cause such a redistribution of wealth. What in fact was sought was a consensus that the ethical principle of obligatory redistribution of global wealth was accepted (as for example it has been through a graduated income tax in the United States).

Perhaps it is not apt to suggest that Part XI of the Law of the Sea Convention is another example of the Robin Hood syndrome, but I think it would be inapt only because, when Robin Hood took from the rich to give to the poor, he was from among the rich. When the poor try to take from the rich to give to the poor, they are called revolutionaries and are generally resisted.

Some of the industrialized countries throughout this negotiation felt strongly that the price of this Convention was too high because they believed that, since they alone possessed the capital, technology and know-how (in short, the means of production), they had already "acquired" the sea-bed, there being no universally accepted treaty to the contrary. Thus, participation in a more restrictive future Law of the Sea Convention was seen as a surrender of rights. This view pervaded the American Congress, with the exception of a handful of members who, over the years, were thought of as "left-wing one-worlders." The issue was so emotional that it was never possible for an American government official to explain that the freedoms of the seas may not extend to sea-bed mining and that, whatever the legal status of the sea-bed, one could not obtain secure title to the resources without a global imprimatur. Moreover, government officials could not publicly make such statements without adversely affecting their negotiating position at the Law of the Sea Conference.

Those days are behind us now. The Law of the Sea Convention has clearly translated the political will of the vast majority of nations into legal terms which, simply stated, provide that the right to mine the resources of the sea-bed is derived from the Law of the Sea Convention and should in principle be generously granted to qualified applicants under reasonable rules and regulations. While American abstention does successfully defeat the long-sought consensus on new international ethical norms, the legal regime is here to stay because it is "the only game in town."

I would be remiss if I failed to mention that another motive in the negotiations -- aside from the establishment of a new global ethic -- was somewhat more pragmatic, to wit: the protection of land-based producers. Here again, a common assumption was made by certain industrialized countries that Part XI negotiations were always stacked in favor of such land-based producers, and that the Authority would therefore have an anti-development orientation. In my opinion it is true that the land-based producers were a very important and influential group in the negotiations and that many of the aspects of the final Convention which the Reagan Administration found offensive might not have existed but for the negotiating pressures of this group.

But in the Sea-bed Authority the land-based producers do not have the same political machinery to prevent development of resources which they had available in the Law of the Sea Conference to force compromises. Moreover, I think the overwhelming sentiment -- and that is where the votes are in both the Assembly and the Council of the Sea-bed Authority -- will be to demonstrate that when a new institution is created pursuant to a treaty that establishes an important new ethic, it is imperative to set a precedent that the system will work fairly for all.

All of us are familiar with the phenomenon of revolution where sometimes -- having ousted the old government -- the new government finds itself lured by the same trappings of power and money and continues the practices that it intended to obliterate by engaging in the revolution. What needs to be better understood by certain Western industrialized countries is that: (1) they do not own the sea-bed and have not acquired legal rights to mine it; (2) they cannot obtain secure investment conditions for sea-bed mining outside the Law of the Sea Convention; and (3) the Law of the Sea Convention established a constitutional system involving the full participation of all countries with more clout going to the rich than to the poor. Therefore, the backsliding phenomenon which has occurred in individual countries whose revolutions have not ultimately worked for the benefit of the people is extremely unlikely to occur with respect to deep sea-bed resources.

While the Law of the Sea Convention contains a number of features which can reasonably be considered to be noxious by the standards of industrialized, free-market economies, it does not on balance harm the potential for enjoyment of the economic benefits of exploitation of the resources. In one respect, however, the "revolution" went too far and probably tipped the scales for some countries. That issue was the Review Conference. To spend twelve years negotiating by consensus a Convention which can ultimately be changed by the developing countries voting as a bloc to adopt new treaty provisions binding on all -- that is a step beyond asking for consensus on a new ethic. This provision of the Convention added to the package an element of world government by majority rule. It was simply premature at this stage in history to try to establish the principle that not only <u>should</u> the rich give to the poor, but if the poor so decide as a group, the rich <u>must</u> give to the poor.

CONCLUDING REMARKS

In closing I would like to summarize these remarks.

- The reciprocating states regime cannot function as an alternative legal regime unless it is joined by all countries who have the capital, technology, know-how, and interest to engage in deep sea mining -- and even then it would be very risky from a legal perspective.

- The Law of the Sea Convention on balance may be an excellent investment vehicle for companies with foresight and the self-confidence to do business in a new regulatory environment.
- The Sea-bed Authority can be expected to be relatively free of restrictive, cartel-like political behavior because its primary mission is to prove that community resource management is possible and desirable, not to deter the development of needed resources.
- The participation of Eastern and Western European Countries and Japan will ensure the viability of the Authority and the Enterprise, and will also afford those participating countries direct access to the resources without competition from the countries who choose to remain outside the Convention.
- If deep sea-bed mining does occur, it will only occur under the Law of the Sea Convention. If such mining does not occur, it will be for one or both of the following reasons: (1) land-based (or economic zone) resources are cheaper to produce; or (2) the Sea-bed Authority becomes an onerous and inefficient bureaucracy which impedes and interferes with the companies who choose to do business in the sea-bed.

It is too soon to predict the success or failure of the regime. This will be decided by the extent to which the members of the Authority collectively establish well organized, efficient and pragmatic rules, regulations and procedures; deploy a highly competent technical staff; avoid political controversy; and create a management system which invites investor confidence. The absence of a handful of industrialized countries will not have an important impact. If the regime succeeds, even that handful may come to join.

LEGAL ASPECTS CONCERNING THE RULES AND REGULATIONS OF THE INTERNATIONAL SEA-BED AUTHORITY TO BE DRAFTED BY THE PREPARATORY COMMISSION

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THE PROCEDURE FOR THE PREPARATION OF THE RULES, REGULATIONS AND PROCEDURES OF THE INTERNATIONAL SEA-BED AUTHORITY

The preparation of the rules, regulations and procedures of the International Sea-bed Authority will be a major, if not the primary task, of the Preparatory Commission which has been set up for the establishment of the Authority [1]. The drafting of these rules, regulations and procedures will be of special importance for two reasons:

1. The rules, regulations and procedures of the International Sea-bed Authority must be ready before the international sea-bed regime can properly function because many provisions of the Convention which govern the functions of the organs of the Authority refer to these rules, regulations and procedures and, thus, presuppose their existence and applicability.
2. The rules, regulations and procedures drafted by the Preparatory Commission will apply provisionally after the entering into force of the Convention until they will have been formally adopted by the Council and Assembly of the International Sea-bed Authority [2]. As the adoption or change of rules, regulations and procedures by the Authority requires a consensus decision in the Council [3], it can be anticipated that the rules, regulations and procedures as drafted by the Preparatory Commission will -- probably without change -- govern the functioning of the international sea-bed regime for the near future.

It seems rather unlikely that states, in particular those which are interested in deep sea mining or which face a considerable burden in the initial financing of the Authority and its Enterprise, will ratify the Convention before the rules and regulations of the Authority, which will close a number of gaps in the provisions of the Convention and may considerably influence the interpretation of these provisions, have been finally drafted. What is even more important: the rules and regulations of the Authority may meet some major objections that have been raised by the deep sea mining states against some elements of the present conventional regime and may eventually facilitate their decision to join the Convention. The drafters of the rules and regulations of the Authority should bear in mind this aspect of the Preparatory Commission's work in mind.

The Preparatory Commission has not yet approached the state of drafting the rules, regulations and procedures of the International Sea-bed Authority. The Commission began its first session on March 15, 1983, but is still occupied with the internal organization of its work and the adoption of its rules of procedure; it will probably finish this part of its work in the second session this year. The Subcommission on the rules, regulations and procedures of the Authority will then begin its work. It may be noted, however, that the decision-making procedure by which the Preparatory Commission will adopt the draft rules, regulations and procedures has already been agreed upon. In a "Consensus Statement of Understanding" which was proposed by the Chairman of the Commission and adopted by the Commission at the end of its first session on April 8, 1983, it has been agreed that the rules of procedure of the Commission must ensure that all decisions subject to consensus under the articles the Convention in the organs of the Authority must also be taken by consensus in the Preparatory Commission [4]. This means in effect that the rules, regulations and procedures of the Authority, the adoption of which requires a consensus in the Council under articles 161, paragraph 8(d) and 162, paragraph 2(o) of the Convention, must also be adopted by consensus in the Preparatory Commission. This will give each of those governments which has already signed the Convention, or will do so in the near future, an influential part in shaping the future rules, regulations and procedures of the Authority.

THE DIFFERENT CATEGORIES OF RULES, REGULATIONS AND PROCEDURES

The provisions of the Convention refer generally to "rules, regulations and procedures" of the International Sea-bed Authority without defining them or distinguishing between them as to their content, mode of adoption, or legal effect. Nevertheless, a closer look at the numerous provisions in the Convention where reference is made to rules, regulations and procedures of the Authority reveals that the following categories may be distinguished:

1. Regulations (this single term will henceforth be used to cover all sorts of rules, regulations and procedures whatever their description or content) dealing with matters which have intentionally been left to later decision by the Authority. Examples are regulations on environmental standards or other environmental requirements for deep sea mining operations. Because the provisions of the Convention do not offer significant legislative guidance as to the content of such regulations, they may be called rule-creating regulations.
2. Regulations that supplement a rule contained in a provision of the Convention by determining the details of the application of this rule, such as regulations determining the necessary data as to the technical and financial capability of the applicant, the size of a mine site to be

accorded to an applicant, the costing and accounting rules for calculating the financial contributions of the contractor, etc. Such regulations may be called Implementing regulations.

3. Regulations that neither create nor implement rules, but have a merely interpretative character for securing the uniform and non-discriminatory application of a rule contained in the Convention, such as the definition of such terms as "commercial production," "availability of a technology on the open market," "fair and reasonable commercial terms and conditions for the transfer of technology," etc. Such regulations may be called Interpretative regulations.
4. Regulations that establish procedures to be followed in the deliberations of the organs of the Authority or in the transactions of the Authority, such as the procedure and time-limits to be observed by the Legal and Technical Commission in dealing with an application for a mining contract, or the procedure and time-limits to be observed in the control of mining operations. Such regulations may be called procedural regulations.

While these categories may be convenient for the purpose of description, it should be borne in mind that the classification of a particular regulation under one of these categories has no specific legal effect, although it may influence its interpretation. Moreover, several categories of regulations may be combined in one regulatory instrument. It will not always be easy to distinguish between the different categories of regulations because the demarcation-line between them is rather fluid. Legally, all these different categories of regulations have, in any case, a subordinate character in relation to the provisions of the Convention in that their content has to remain strictly within the limits of the higher-ranking provisions of the Convention, and they will have to be interpreted accordingly.

THE SCOPE OF THE LEGAL POWER TO ENACT RULES, REGULATIONS AND PROCEDURES

I will now examine the scope of the legal power of the International Sea-bed Authority to enact the aforementioned categories of regulations. As this scope will have to be observed also by the Preparatory Commission in drafting these regulations, the issue is immediately relevant for the present task of the Commission.

The regulatory power of the Authority under the Convention may be either explicit or implicit. I will deal first with the explicit authorizations for the enactment of regulations that can be found in the Convention. I will later turn to the question whether there are also implicit sources of such power.

The Explicit Powers of the Authority to Enact Rules, Regulations and Procedures

The basic provisions of the Convention which deal with the power to enact regulations are to be found in the articles 160, paragraph 2(f)(ii) and 162, paragraph 2(o)(ii) and in article 17 of Annex III. These provisions have to be read and construed in conjunction with each other, because article 17, paragraph 1 of Annex III specifically refers to the aforementioned articles 160 and 162 of the Convention. According to these provisions the "rules, regulations and procedures shall relate to prospecting, exploration and exploitation in the Area and the financial management and internal administration of the Authority" [5]. The scope of this enabling clause is rather general and broad, but it has, nevertheless, some external and inherent limits which will be considered later. Article 17 of Annex III adds to this clause a catalogue of subject-matters on which regulations "shall" be adopted, so that this catalogue may be interpreted as an obligatory list of regulations that must be enacted before the conventional system of exploration and exploitation can properly function [6]. The catalogue, however, is expressly subject to an "inter alia" clause, thus making clear that it is not exhaustive.

There are many other provisions in Part XI as well as in the Annexes III and IV of the Convention which specifically presuppose the existence of regulations on a certain subject matter for their application or which at least indicate that the Authority may regulate that subject matter in more detail. Some of these subject matters for regulation re-appear in the catalogue of article 17 of Annex III, while others do not [7]. There will then be a question of interpretation of the specific provision regarding whether prior enactment of a regulation will be indispensable for its application, and therefore obligatory, or whether it will be only optional.

On the basis of an interpretation of the relevant article of the Convention, we may distinguish between obligatory and optional regulations. Examples of the first kind of provision are article 4, paragraph 3 of Annex III, requiring the criteria for the implementation of the sponsorship requirements to be set forth in regulations of the Authority, or article 7, paragraph 2 of Annex III, providing that the selection between competing applications must be made on the basis of objective and non-discriminatory standards set forth in regulations of the Authority. Examples of the second kind are article 13, paragraph 14 of Annex III, on regulations that "may" be made to provide for financial incentives to contractors, or article 16 of Annex III, which presupposes that regulations of the Authority may define the scope and content of the exclusive rights of the operator under a mining contract in more detail.

There are some isolated provisions in the Convention which refer to regulations of the Authority on subject matters beyond the ambit of the enabling clauses in the above-mentioned articles 160 and 162 and article 17 of Annex III. An example of this kind of provision is article 11, paragraph 3(a) of Annex

IV, stating that the amount of the funds to be made available by the states parties to the Enterprise for its first deep sea mining venture must be determined in a regulation of the Authority drafted by the Preparatory Commission. The creation of financial obligations for state parties certainly exceeds the regulatory power with respect to the "financial management and internal administration of the Authority" mentioned in article 17 of Annex III. This leads us to the general problem whether there are implicit, or even implied, powers to enact regulations outside the scope of explicit enabling clauses contained in the Convention.

Implicit and Implied Powers to Enact Rules, Regulations and Procedures

An analysis of the question whether the Convention confers implicit or implied powers to enact regulations must start from the general provision on the competence of the Authority contained in article 157, paragraph 2. This provision states unequivocally that the powers and functions of the Authority are those expressly conferred upon it by the Convention, but it adds that the Authority has such "incidental" powers, consistent with the Convention, as are "implicit in and necessary for" the exercise by the Authority of its powers and functions with respect to "activities in the Area." This provision -- which is a product of a carefully negotiated compromise -- must be interpreted as follows: in principle there is no power to enact regulations where no express authority can be found in any provision of the Convention or its Annexes. Thus, the regulatory power of the Authority has to remain within the scope of regulating the prospecting, exploration and exploitation of the mineral resources in the "Area" and there are no implied powers by mere reliance on an alleged general functional power to organize and control activities on the international sea-bed. It is only within the ambit of a specific power or function of the Authority under an article of the Convention that a power to enact implementing or interpretative regulations may be inferred, on condition that such regulation is implicit in and necessary for the proper exercise of the respective power or function of the Authority. Whether and to what extent the power of supplementary regulation and interpretation exists will depend on the proper construction of the specific provisions of the Convention.

This leads to the question whether there is at least a general power of the Authority to enact interpretative regulations with respect to any of the basic conditions of prospecting, exploration and exploitation laid down in the articles of Annex III of the Convention. I am rather hesitant to admit the existence of such a general power of interpretation of the Convention -- I would rather regard it more in line with the basic provisions of the Convention on the competence of the Authority, and employ here again the test of whether an interpretative regulation will be implicit in and necessary for the proper exercise of a power or function of the Authority

under an article of the Convention. Certainly, a regulatory power in this respect may be more easily justified than in the case of regulations that purport to supplement or implement provisions of the Convention. Two examples may illustrate this approach:

1. Article 5 of Annex III of the Convention concerning the transfer of technology does not contain a clause referring to supplementary regulation by the Authority, but a legal basis for such regulatory power may, nevertheless, be found in article 6, paragraph 3, where express reference is made to "... provisions of this Convention and the rules, regulations and procedures of the Authority, including those on ... undertakings concerning the transfer of technology." Even if this provision in itself would not be regarded as a sufficient basis for interpretative regulations covering the whole field of article 5, there seems to be sufficient ground to sustain an implicit power of the Authority to enact such regulations for the proper and predictable application by the Authority of its actions under the rather complicated system of article 5.
2. On the other hand, article 22 of Annex III concerning the responsibility and liability that might be incurred by the Authority in the exercise of its powers and functions or by a contractor in the conduct of its operations is a provision where interpretative regulations by the Authority do not seem to be justified for its proper application. There is no specific power or function of the Authority to be clarified and the determination of wrongful acts, and their consequences, falls rather within the province of judicial control by the International Tribunal for the Law of the Sea.

Limits of the Regulatory Power Under the Convention

The review of the provisions of the Convention has shown a rather broad legal basis for the enactment of regulations and this seems to vest the International Sea-bed Authority with a wide discretion in supplementing and defining the provisions of the Convention. A closer look, however, reveals some notable limits to the exercise of the regulatory power which will be found partly outside the enabling clauses and partly within the legal context of the respective enabling clause itself.

Restrictions Resulting from the Limits of Competence of the Authority

A general limitation of the regulatory power results from article 157 of the Convention which restricts the competence of the Authority to the organization and control of "activities in the Area," that is, of activities of exploration for, and exploitation of, the mineral resources of the sea-bed [8]. It follows from this provision that the regulatory power remains

confined to the regulation of matters connected with the economic exploitation of the mineral resources of the international sea-bed and taking place within that area. Thus, it would be outside the scope of the regulatory power of the Authority:

(a) to regulate activities of states, or their nationals, which have no connection with the economic exploitation of the mineral resources of the international sea-bed, even if they take place on the international sea-bed;
(b) to regulate the transport, processing and marketing of the minerals recovered from the international sea-bed in so far as these activities do not take place "in the Area;" activities of the Enterprise, however, in these fields may be regulated under the power of the Authority to regulate the internal management of the Enterprise under article 17, paragraph 1 of Annex III and article 1, paragraph 2 of Annex IV.

Article 135 of the Convention affirms that the powers of the International Sea-bed Authority do not affect the legal status of the waters superjacent to the Area. This implies that the regulatory power of the Authority may not affect activities of states, or their nationals, in the waters superjacent to the international sea-bed area. The possible conflict between mining activities on the international sea-bed area and other activities taking place on the international sea-bed or in the superjacent waters is governed by the general principle embodied in article 147 of the Convention: all such activities must be conducted with reasonable regard for each other [9]. The Authority has no power to regulate conflicts between deep sea mining and other activities with binding effect for states conducting such other activities.

Article 143 allows freedom of marine scientific research to states and their nationals "in the Area," even if this research relates to the mineral resources therein, provided that such research does not assume the character of "prospecting" under article 2 of Annex III. It follows that the International Sea-bed Authority has no regulatory power to regulate or restrict marine scientific research on the international sea-bed; it may only regulate research activities undertaken by the Authority itself or under contact with the Authority.

Specific Restrictions Contained in the Provisions of the Convention

The various provisions of the Convention which authorize the enactment of supplementary regulations contain partly express and partly implied restriction with respect to the scope of such regulations. In particular, it is always necessary to examine whether such regulations may validly create new obligations (or more stringent requirements than those already contained in the provisions of the Convention) or whether they must be confined to regulations of an implementing or

interpretative character. The following examples may illustrate this:

1. Article 17, paragraph 1 of Annex III authorizes and directs the enactment of regulations relating to, inter alia, the size of a mine site, the duration of a mining contract, the performance requirements under a contract, and the categories of minerals covered by the contract; paragraph 2 adds a list of criteria that should be reflected in those regulations. These criteria limit to some extent the scope of discretion in imposing more stringent requirements on deep sea mining operations than are justified under the applicable criteria.
2. Article 4 of Annex III deals with the qualification of applicants and refers in this respect to qualification standards set forth in regulations of the Authority. The article prescribes that such qualification standards must relate only to the financial and technical capability of the applicant and his performance under previous contracts, thus excluding any standards which have no bearing on the financial or technical capability of the applicant.
3. The regulation to define the criteria of nationality for determining the state or states that will have to sponsor the application is expressly qualified in article 4, paragraph 3 of Annex III as a mere "implementing" regulation.
4. If a selection has to be made between competing applicants for production authorizations under the production limitation scheme of article 151 of the Convention, article 7, paragraph 2 of Annex III provides that a regulation must set forth objective and non-discriminatory standards for the selection. The succeeding paragraphs of that article define the criteria which are relevant for such selection, thus limiting the choice and content of the standards in such a regulation.

Further restrictions to the exercise of regulatory power may result from general principles of law and from the general policy directives contained in article 150 and other provisions of the Convention [10]. The rule that the regulations relating to the approval of contracts, the selection of applicants, the imposition of operational requirements, and the financial terms of contracts should be uniform and non-discriminatory vis-a-vis all applicants, including the Enterprise, has been expressly inserted in article 6, paragraph 3, article 7, paragraph 2 and article 13, paragraph 14 of Annex I. It may be regarded as a general rule which is also applicable in those cases where it has not been specifically referred to [11]. It is true that there are some provisions that allow more favorable treatment for developing states or that grant the Enterprise a priority. However, these cases are exceptions to the rule. This interpretation is in harmony with the policy directives contained in the articles 148 and 150 of the Convention, which

allow the promotion of the participation of developing states in deep sea mining activities only in those cases where this is specifically provided for in the Convention, as well as with article 12 of Annex III, which subjects the Enterprise generally to the same legal regime as other contractors.

TO WHAT EXTENT MAY REGULATIONS MAKE OBJECTIONABLE PROVISIONS OF THE CONVENTION MORE ACCEPTABLE?

Clearly, the regulations of the Authority may not change the content of the provisions of the Convention and, as subordinate legislation, they must remain within the scope of those provisions. However, as the objections raised against some elements of the international sea-bed regime result to quite an extent from uncertainties as to how these provisions will be applied in practice, the enactment of regulations that more clearly define, or even restrict, the scope of the application of such provisions may render them more acceptable. This may enhance the prospects for eventual universal acceptance of the international sea-bed regime. The range of the regulatory power of the Authority is broad enough to modify, or interpret, objectionable provisions in this direction without deviating from their object and purpose.

The following examples relating to such sensitive and controversial issues as the right to a mining contract, the obligatory transfer of technology, and the financial terms of the contract will demonstrate what opportunities are open in this respect.

The Right to a Mining Contract

The Convention provides that applications to the Authority for a mining contract must be judged solely on the basis of the technical and financial capability of the applicant. If recommended favorably in this respect by the Legal and Technical Commission, the application will have to be approved unless the Council unanimously decides otherwise [12]. Although these provisions seem to offer a reasonable guarantee that technically and financially sound applications will be approved, it is still felt that in the deliberations of the Legal and Technical Commission applications may be delayed or even turned down for political or other improper motives, particularly in those cases where a selection has to be made between competing applications; they may also be burdened with unduly restrictive and unexpected operational requirements. To dissipate these apprehensions, the regulations governing the consideration of applications in the Legal and Technical Commission [13] should, inter alia, lay down exhaustive criteria for determining the technical and financial capabilities of an applicant, define precise standards for an eventual selection between competing applicants, provide fixed time limits for the consideration of an application, restrict the imposition of technical or environmental requirement additional to those already prescribed in the relevant regulations, and direct the Commission to hear the applicant

before it decides on his application and to inform the applicant of the reasons in case of a negative recommendation. Such regulations may give the applicant more assurance that his application will be properly handled and his right to a mining contract respected.

Transfer of Technology

Article 5 of Annex III of the Convention provides for the mandatory transfer to the Enterprise of the technology used by the contractor in his mining operations if the Authority so requires because the Enterprise is unable to obtain the necessary technology in the open market [14]. Although the optional right of the Authority to require a transfer of technology is limited to the initial phase of Enterprise operations (i.e., until the tenth year after the commencement of its commercial production) [15] and although the transfer can only be required under license and other appropriate arrangements on "fair and reasonable commercial terms and conditions" [16], there are still strong objections in industrial circles against this element of the international sea-bed regime. It is feared that the obligatory transfer of technology might lead to the underselling of valuable industrial property, to competitive disadvantages in the industrial market, or even to disguised expropriation. These apprehensions may be dissipated to a considerable extent if in an interpretative regulation the ambiguous term "fair and reasonable commercial terms and conditions" would be clarified, in particular with respect to the relationship between the "commercial" and the "fair and reasonable" criteria for determining the price of a transfer. It would certainly be very helpful if it were made clear that the adjective "fair and reasonable" does not carry with it the obligation to reduce a transfer price that has been properly calculated on a cost and reasonable profit basis and that it is meant to exclude excessive pricing to maintain a monopolistic position or other improper considerations.

The Financial Terms of Contract

The financial obligations of a contractor under article 13 of Annex III of the Convention are rather burdensome and also quite rigid. They do not allow much variation, except that there are some incentives for the development of deep sea mining in general or for promoting joint ventures between national contractors and the Enterprise [17]. The mining industries regard this financial system as nearly prohibitive; it may well be that the present conditions in the metal markets and the rising cost estimates for deep sea operations will make mining ventures not economically feasible in the near future unless heavily subsidized by national governments. This situation may add to the reluctance of the deep sea mining states to ratify the Convention. It would help to meet this situation if regulations even now were to define the conditions for lowering the financial obligations of contractors and the amount of reduction guaranteed in such cases. One might even contemplate

exempting contractors, wholly or partly, from the payment of contributions in the initial phase of their mining operations. This could be accomplished in the same way as with respect to the Enterprise, which is already exempted under article 10 of Annex IV to the Convention.

These, then, are a few suggestions on ways in which appropriate regulations of the Authority could make the international sea-bed regime of the Convention more acceptable, or even attractive, and thus improve the prospects for the universal acceptance of the Convention.

NOTES

1. The Preparatory Commission was established by Resolution No. I of the Third United Nations Conference on the Law of the Sea, Annex I to the Final Act of the Conference); The Commission's first session was convened from March 15 to April 8, 1983, as the requirement of at least 50 signatures to the Convention (paragraph 1 of the Resolution) had been met already on December 10, 1983.
2. Article 308, para. 4 of the Convention.
3. Articles 161, para. 8(d) and 162, para. 2(o).
4. U.N.Doc.LOS/PCN/3 of (April 8, 1983). Paragraph 4 in the Consensus Statement of Understanding reads as follows: "When adopting its rules of procedure as provided for in paragraph 4 of Resolution I, the Preparatory Commission shall ensure that all decisions which in the Convention require consensus, including decisions requiring consensus under articles 160, 2(e), 161 and 162 and Annex IV, article 11, 3, shall also require consensus in the Preparatory Commission. This does not preclude the possibility of the Preparatory Commission deciding that other matters of substance may also be decided by consensus."
5. Article 160, para. 2(f)(ii) refers also to regulations relating to the transfer of funds (e.g., part of the net income) of the Enterprise to the Authority. This is of no immediate relevance to the present stage of the establishment of the international sea-bed regime.
6. Article 17, para. 1 contains -- apart from a general power to enact administrative procedures relating to the prospecting, exploration and exploitation in the Area -- a list of 14 items of mining operations in the Area to be regulated and 3 further items concerning financial matters.
7. Examples of the latter category are the following provisions in Annex III: article 7 (selection between competing applicants); article 9, para. 3 (contracts and joint ventures with the Enterprise); and article 13, para. 1 (financial terms of contracts).

8. See the definition of "activities in the Area" in article 1, para. 1, sub-para 1 and 3 of the Convention; para. 1 reads: "'Area' means the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction;" para. (3) reads: "'Activities in the Area' means all activities of exploration for, and exploitation of, the resources of the Area." The term "resources" is defined in article 133: "All solid, liquid or gaseous mineral resources in situ in the Area at or beneath the sea-bed, including polymetallic nodules."
9. Article 147, para. 1 and 3. Article 147, para. 2 subjects only those installations on the sea-bed to the jurisdiction of the Authority which are emplaced and used for carrying out "activities in the Area" as defined in article 1 (note 8 above); thus, the Authority has no competence to regulate the emplacement and use of installations on the sea-bed for other purposes.
10. Article 13, para. 1 of Annex III contains a list of objectives that must guide the Authority in adopting rules, regulations and procedures concerning the financial terms of a contract.
11. This interpretation is in harmony with the Declaration of Principles for an international sea-bed regime (Resolution No. 2749 (XXV) of December 17, 1970, of the General Assembly of the United Nations), which states in its paragraph 5: "The area shall be open to use exclusively for peaceful purposes by all States whether coastal, or landlocked, without discrimination, in accordance with the international regime to be established." The preamble of the Convention refers specifically to the principles of this Declaration.
12. Articles 4, para. 2 and 6, para. 2(b) of Annex III; articles 162, para. 2(j) and 165, para. 2(b) of the Convention; the other conditions which must be fulfilled before an application has to be approved (e.g., sponsorship by the competent government; observance of the anti-monopoly limitations) do not relate to the qualifications of the applicant.
13. Article 163, para. 11 provides for regulations concerning the decision-making procedure in the Legal and Technical Commission of the Authority.
14. Article 5, para. 3 of Annex III.
15. Article 5, para. 7.
16. Article 5, para. 3(a).
17. Article 13, para. 14 of Annex III.

DISCUSSION AND QUESTIONS

RENATE PLATZOEDER: I now open the floor for discussion. The first speaker on my list is Professor Betchov.

ROBERT BETCHOV: I am a physicist. In times of war governments can ask me to build atom bombs and in times of peace universities ask me to teach about meteorology or large computers. As a human being, I believe in the ancient precept of the Vikings: "The land must be ruled by law and not wasted by war."

This is the reason why I have joined an organization of private citizens dedicated to the search for something stronger than the United Nations. We have a vision of a World Federal Authority. It would have a General Assembly where the votes would be distributed according to the population of the member nations and according to their industrial power.

How does this relate to the International Sea-bed Authority?

About three years ago, we wrote to a few governments and suggested weighted voting for the Sea-bed Authority. I proposed an Assembly where 160 nations have a minimum of one seat. In addition, one hundred seats would be allocated in proportion to population and one hundred seats in proportion to industrial power. The results are condensed in a table which I would like to see included in the proceedings of this meeting.

As a measure of industrial power, I looked at the G.N.P. tables of the I.M.F. and at an index listed in Soviet handbooks. However, I preferred the tables for annual energy consumption given in the U.N. Statistical Yearbook. This seems the best scale, until a better measure of industrial power is found.

Thus, the USA, the USSR and China would each have about 30 votes and some 50 African nations would together have some 60 votes. These figures could be updated each year and the formula can be used, even if major nations do not join the organization.

The reply from governments amounted to this: "Thank you, Professor, for your brilliant proposal. Do not call us, we will call you."

At present, it seems that most nations will ratify the Convention and that the Sea-bed Authority will come to life. However, the USA and some other nations may not ratify. Thus, it may be desirable to create a "Sea-bed Managing Agency," receiving powers from the Enterprise, as well as from the reluctant nations or from some transnational corporations. I can imagine a board of directors presiding over the actual mining operations in which each nation entrusts one of the board members with its voting rights under a weighted voting formula.

In this way the sea-bed could be treated as a common heritage, until all nations have ratified the Convention. Such a solution would also create a unique precedent and constitute one more step to global order. The planet must be ruled by law and not be devastated by war.

APPENDIX I

WEIGHTED VOTING FOR A SEA-BED MANAGING AGENCY

Each nation has at least one vote and the total number of votes is fixed at 360. One half of the remaining votes is allocated on the basis of population and one half on the basis of industrial power, measured in TEC units (Ton Equivalent Coal, Energy Consumption Tables, U.N. Statistical Yearbook). This means about one vote per 40 million people and one vote per 80 million TECs.

In an Assembly each vote corresponds to one seat. In a Council of 36 directors, each group of ten votes corresponds to one seat. In a board of directors, each nation could entrust one board member with its voting credits.

Nations	Number of Nations	Votes	Seats in Council
USA	1	33	3
USSR	3	24	2-3
East Europe	6	14	1-2
China	1	29	3
India, Pakistan	2	20	2
Japan	1	8	1
Brazil, Mexico, Venezuela	3	11	1
FRG, UK, France, Italy	4	20	2
Western Europe, various	20	30	3
Canada, Australia, New Zealand	3	8	1
Africa	55	67	6-7
Asia, various	31	46	4-5
Latin America, various	32	38	4
Middle East	10	12	1
TOTAL	172	360	36

HENRY DARWIN: The meeting here today and through this week is discussing the future of the Convention and the first paper this morning gave one viewpoint on some problems in the deep sea mining regime. Any discussion of the future of the Convention must take account of all viewpoints and I would, therefore, like to enlarge the debate a little by speaking -- very briefly in order to allow others time -- about problems which my country, the United Kingdom, sees in the deep sea mining regime.

The United Kingdom has made it clear that there are a number of problems for it, created by aspects of this Convention which it can not accept. Part XI and its annexes are highly complex and in a number of important respects -- in our view -- contain undesirable features. For example, the proposed sea-bed regime would establish a disproportionately weighty structure

for the Sea-bed Authority. It would inevitably involve a large financial commitment in order to support the Authority as well as the Enterprise. There are serious difficulties with the provisions for transfer of technology and also in the review clause. And we are not alone in finding these elements unacceptable.

At the same time, it is recognized that there would be great advantage if the regime could evolve so as to become more generally acceptable. It is not too late to try to bring this about, though it may not be easy. Some of the solutions involve a change or modification in what is currently envisaged and it may be necessary to find new mechanisms for accomplishing that kind of change. But it is our hope that others will think it worthwhile continuing to seek solutions which will attract to a sea-bed regime those with a capacity to undertake sea-bed operations and which will insure that within that framework these resources are in fact put into circulation. The United Kingdom has made it plain that it wishes to work with the international community to achieve a system for sea-bed mining which is generally acceptable and workable and it is with this aim that the delegation of the United Kingdom will be returning to Kingston in August.

I was glad to detect a certain openness in quite a number of statements made here: for example, in the remarks of the distinguished Foreign Minister of Norway -- the country to whom we are so indebted for this excellent meeting -- and in the remarks of Ambassador Koroma yesterday when he spoke of the Preparatory Commission as a possible vehicle for finding solutions. After all, the 1970 Declaration of Principles did say that the regime was to be established by an international treaty generally agreed upon and that is not quite what happened at the Conference. If all opportunities are properly taken up, it must be possible to achieve a more generally acceptable deep sea mining regime and thus to achieve a more generally acceptable Convention, which was the aim of the whole Conference.

TULLIO TREVES: I would like to make just one point. The PIP Resolution raises one problem that could become urgent next year. Only signatory states are entitled to participate as certifying states in pioneer activities under that Resolution. What about acceding states? If the Convention does not enter into force before December 10, 1984, and if, consequently, the Preparatory Commission and the PIP regime continue to function after the time limit for signing has elapsed, it may well happen that some of the states which are possible certifying states and have not yet signed the Convention, will wish to accede to it. Will they be entitled to enjoy the privileges of certifying states?

Last year in the Drafting Committee a proposal to mention acceding states among possible certifying states did not succeed. This does not seem to be decisive for holding that acceding states are not entitled to be certifying states. The

debates in the Drafting Committee are off the record and it seems clear that the proposal was rejected because it was held to be inappropriate for the Drafting Committee to deal with it.

If one considers that acceding states are entitled to participate in the Preparatory Commission -- which is the main body in charge of the PIP regime -- it seems incompatible with the system of the Resolution to hold that states mentioned in it as possible certifying states can not get into that position when they accede. Indeed, accession is an indication of a much deeper commitment to the Convention than signature.

RENATE PLATZOEDER: Thank you. I now call on Finn Seyersted of the University of Oslo for a comment.

FINN SEYERSTED: Over the last decades we have seen an enormous extension of national jurisdiction over what used to be the high seas, partly because there was no way to exercise effective international control as necessitated by technical developments. It is important now to develop an international jurisdiction in order to preserve the remaining parts of the high seas as truly international and in order to make the principle of the common heritage of mankind a real one. As has been pointed out earlier in the debate, this principle should apply, not only to the international sea-bed area, but also to outer space.

However, it may prove impossible to confer extensive powers upon international organs if they are going to work under the principle of one-nation one-vote. This is a beautiful principle for the traditional type of intergovernmental organizations that make non-binding recommendations to their member states, but it is problematic when we are faced with an organization exercising extensive real powers. States are too different in size as well as in practical activities in the fields concerned. It is easy for small countries like mine, with four million inhabitants, to ratify the Convention -- as we will do. But it is understandable that big countries have difficulties.

So far these difficulties have been circumvented by tricks, while maintaining nominally the principle of one-nation one-vote. In the UN Security Council, for example, the five big powers have a right of veto, which is unfair and arbitrary as it divides states into two classes. Moreover, it curtails the possibilities of the Council to act because frequently no decisions can be made.

In the International Sea-bed Authority other devices have been used. The Assembly -- which is the "supreme" organ with all members represented -- has no real powers. These are vested in a Council of restricted membership, with a few states having in fact guaranteed seats. Moreover, by providing for decision by qualified majority, an attempt is made to ensure that no important decisions are taken contrast to the will of a powerful group of states. The disadvantage is the risk of being unable to make the necessary decisions.

The best system appears to be that of weighted voting. This method has been adopted in the European Communities, where the weighted votes agreed upon represent a compromise between the principle of one-nation one-vote and each state voting in proportion to its population. Another example of weighted voting can be found in international satellite telecommunication organizations like INTELSAT, INMARSAT and EUTELSAT. Here, each member has an investment share in accordance with its use of the system, and its voting strength is largely in accordance with that investment share. The investment shares are revised regularly in accordance with the actual use of the system, thus avoiding the laying down of fixed voting percentages in the convention.

It is now too late to introduce a new voting system in the Law of the Sea Convention. One must try to find a solution -- permanent or temporary -- within the framework of the text as its stands. However, if this does not prove possible and if we do not succeed in making the Convention work as it stands, we must in due time consider amendments. And then we must consider introducing a weighted voting system. If we do not do so, we risk further extensions of national jurisdiction -- and our opportunity for establishing the common heritage of mankind will be gone.

The International Sea-bed Authority is no consultative organization making recommendations to states. It has broad powers to make decisions binding upon states and individuals. We will most likely need to develop these powers further in the future so as to make them effective and to take care of future needs. In that case states must be given influence according to their size and capacity to exploit the sea-bed at any given time. Dr. Betchov has already circulated to some of you a Concrete example of how such a system could look.

Finally, I would like to say two words on the legal basis of the common heritage of mankind, which has its main application in respect of the high seas and outer space. In respect of both of these areas the United Nations has stated in resolutions and conventions that they may not be subject to national occupation. This principle we want to uphold. But I emphasize that it precludes only <u>national</u> occupation. We may need an <u>international</u> occupation. If we can elaborate an international regime supported also by the bigger states, an international sea-bed authority -- with a just and realistic voting system -- could assume legal powers over the sea-bed entitling it to enact regulations binding even on those few states that might not ratify the Convention.

LUNCHEON SPEECH

BERNARD OXMAN: Our luncheon speaker today represented Sri Lanka at both the U.N. Seabed Committee and the Third U.N. Conference on the Law of the Sea. He played a pivotal role in preparing the Declaration of Principles governing the seabed beyond national jurisdiction and in the efforts to give substance to those principles in the Convention. Former Legal Advisor to the Ministry of Foreign Affairs and Defense of Sri Lanka, he is currently the Secretary-General of the Iran-United States Claims Tribunal. It is a great honor to introduce Mr. Christopher Pinto.

THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA AND THE NEW INTERNATIONAL ECONOMIC ORDER: INTERDEPENDENCE AND INTERNATIONAL LEGISLATION

M.C.W. Pinto
Iran-United States Claims Tribunal

My address to you today will attempt to deal with the interdependence of all of the states of the world community and the significance of that fact or principle for the process of international legislation. It is to me the theme that connects most closely the Convention on the Law of the Sea and the New International Economic Order.

Recognition of the principle of interdependence is as old as the great religions of the world and as modern as the New International Economic Order. It is based on recognition of a more fundamental principle that we might term "reciprocity" -- a principle that lies at the root of all forms and expressions of solidarity.

In the field of international law as well the principle is of considerable antiquity. The great Spanish jurist Suarez has said:

> Mankind, though divided into numerous nations and states, constitutes a political and moral unity bound up by charity and compassion; wherefore though every republic or monarchy seems to be autonomous and self-sufficing, yet none of them is, but each of them needs the support and brotherhood of others, both in a material and a moral sense. Therefore they also need some common law organizing their conduct in this kind of society.

A decade later Hugo Grotius -- regarded by many as the father of modern international law -- said:

> There is no State so powerful that it may not some time need the help of others outside itself, either for purposes of trade, or even to ward off the forces of many foreign nations united against it. In consequence we see that even the most powerful peoples and sovereigns seek alliances.

Suarez had spoken of the need for "some common law organizing their conduct in this kind of society." What are the characteristics of that "common law"? A preliminary answer was offered in our own day by the Chilean jurist Alvarez. In his individual opinion in the Anglo-Norwegian Fisheries Case Judge Alvarez said:

> The starting point is the fact that, for the traditional individualist regime on which social life

has hitherto been founded, there is being substituted more a new regime, a regime of interdependence, and that, consequently, the law of social interdependence is taking the place of the old individualistic law.

The characteristics of this law, so far as international law is concerned, may be stated as follows:

(a) This law governs not merely a community of States, but an organized international society.
(b) It is not exclusively juridical; it has also aspects which are political, economic, social, psychological, etc. It follows that the traditional distinction between legal and political questions and between the domain of law and the domain of politics is considerably modified at the present time.
(c) It is concerned not only with the delimitation of the rights of States but also with harmonizing them.
(d) It particularly takes into account the general interest.
(e) It also takes into account all possible aspects of every case.
(f) It lays down, besides rights, obligations towards international society: and sometimes states are entitled to exercise certain rights only if they have complied with the correlative duties. (Title V of the "Declaration of the Great Principles of Modern International Law" approved by three great associations devoted to the study of the law of nations).
(g) It condemns abus de droit.
(h) It adapts itself to the needs of international life and develops side by side with it.

Judge Alvarez was remarking the close of an era during which the majority of norms of international law were concerned with the adjustment and limitation of national sovereignties and their claims to jurisdiction, an era when the most general substantive principle of international law was that a state was legally free to act in any way it pleased (Alvarez' "individualistic law"), except to the extent that that act was contrary to one or other of the positive norms of international law, norms that consisted mainly, if not wholly, of prohibitions.

Despite Alvarez' earnest attempts to secure general recognition of a concept of a "law of social interdependence," the Court ignored it; nor did the theme seem to hold much interest for scholars, although there were some notable exceptions. One reason for this lack of enthusiasm may be that, to a lawyer, the scope and context of a "law of social interdependence" would seem far from clear. Of what relevance

is it to his familiar field of rules and norms derived from custom, treaty or judicial decision? Can it be fitted into article 38 of the Statute of the International Court of Justice? The answer to these questions would probably be in the negative.

While Alvarez' law of social interdependence awaited development, events at the United Nations began to focus interest on similar themes. Stimulated by the shock experienced in the wake of the so-called "oil crisis," the General Assembly of the United Nations adopted in quick succession the Declaration on the Establishment of the New International Economic Order, the Charter of Economic Rights and Duties of States (1974), and a Resolution entitled "Development and International Economic Cooperation" (1975), in all of which "interdependence" was a central theme. But the shock waves faded fast, as did the brief vision of "interdependence" it had compelled. Rather than accept the fact of interdependence and apply human ingenuity to the elaboration of its laws, those principally concerned preferred to return to the more familiar strivings toward national or regional self-sufficiency, assuming, as they were entitled to do, that new technologies in energy production would bury the spectre of interdependence equated, as always, with undesirable "foreign dependence." The term "interdependence" was moved off the centre of the stage. The term "New International Economic Order" came to be regarded by some as a part of Third World jargon to be eliminated from any more respectable broadly negotiated statements issued by the United Nations.

And so another opportunity for a closer look at what implications the law of social interdependence might have for international law was lost. But not quite. While the torch of the New International Economic Order burned brightly in the mid-seventies, a spark from it had ignited another flame: it had inspired many countries represented at the Third United Nations Conference on the Law of the Sea. Being a Conference on law, with legislation as its aim and convened in part to draw up a regime based on "the common heritage of mankind," the Conference absorbed the notion of interdependence and associated themes from the New International Economic Order as more grist for its legal mill. In the result the new law of the sea, both in its rules and in its institutions, reflects a first, tentative attempt to draw out the legal content of what Judge Alvarez had called the "law of social interdependence."

Without elaboration for lack of time I suggest to you six principles, some legislative, some substantive, derived from the Convention on the Law of the Sea, which may represent the legal content of a "law of social interdependence:"

1. The principle of <u>universality</u> whereby all states must have the opportunity to attend and participate in international law-making processes in which, in their perception, their legal, political, economic or other interests are involved. This principle recognizes what has long been recognized in municipal law: that groups, however well-intentioned and

however technically and financially qualified, but lacking a representative character freely conferred on them, can not validly enact laws binding upon the community of states or affecting their interests.

2. A holistic approach to issues in the international law-making process. This implies that the formulation and aggregation of issues is a vital part of the international law-making process and that new international law on a particular subject should not be evolved piecemeal, a part at a time. The law as a whole, after due consideration and negotiation of as many of its aspects as can be conceived by the legislators at the time, must emerge as an integrated and balanced set of rules.
3. The principle of decision-making by consensus-oriented rules. These rules require the legislators to make all efforts possible within an agreed time-span to reach a conclusion that does not evoke the formal objection of any state or group of states. As a complementary principle, designed to protect the efficiency of the system, where such "consensus" cannot be reached in the time-span agreed, a decision on the basis of one-state-one-vote will determine the issue. This is seen as the development of the constitutional principle of majority rule to permit the maximum impact of minority views short of the veto.
4. The principle of sharing and integration which would require the widest possible spread of the benefits of resources, including technology and scientific knowledge, to all countries with a view to their rapid integration into a global economy. This is seen as the evolutionary development of earlier principles based on the rigid exclusiveness of property rights which retarded such integration.
5. The principle of cooperation which would require all states to collaborate with one another even when a position of relative economic strength and legal security might support a policy of no-action. This is seen as an evolutionary development away from rules based exclusively on unregulated competition, with the winner taking all, and subject only to rules prohibiting action which would in an active sense cause physical damage to another state.
6. The principle of non-reciprocal conduct which would require benefits from resources to move to those in need of them without necessarily requiring a material equivalent in exchange. This is seen as an evolutionary development away from earlier rules based on a narrow mutuality as the basis of contract.

"But wait," say our friends from the North, "stop talking in generalities. Perhaps we have no particular fault to find with these principles. On the other hand, we do not like the way they are reflected in the Convention on the Law of the Sea. We wonder in fact whether they are reflected there at all and whether the Convention does not, on the contrary, subvert them.

A genuine and practical expression of such principles ought to provide for equal sharing not merely of benefits, but also of responsibilities. The Convention must allow adequate scope for the only productive force known: free enterprise, fueled by competition and the profit motive."

At this point we should examine for a moment the law-making process as developed at the Conference on the Law of the Sea, developed under pressures generated by the character of the modern community of states, as well as the origin of that process in the nature of international law. International law is a law designed to be self-enforcing or, to put it another way, designed to regulate interstate relationships without the use of force in an "acephalous" society, a society with no central governing authority. It is a law destined to be observed because of its very rationality, because the feeling has arisen that it ought to be observed, because not to observe it would mean regression to unreason and chaos. But the reasonableness of a particular rule of international law must be perceived by all or the overwhelming majority of the community. The law-making process must produce rules that in the perception of all participants, or the overwhelming majority of them, appear to be rules that will bring the greatest good to the greatest number, while not leaving without recourse any who might be adversely affected thereby. For it is the all-important perception of what is acceptable that dominates in this, as in any other democratic process. On that perception is based the acceptance of states and from that acceptance is derived the binding force and viability of this kind of law. The principle is not really new, but the days are no more when acceptance by a handful of princes determined the rules affecting half-remembered nations and regions of Asia and Africa. Those nations themselves now insist that the only law that they can be expected to observe is that in the making of which they themselves have participated and that is perceived as acceptable.

But to return to the process, acceptance is essential to the utility of a self-enforcing law and perception of the law as acceptable is the basis of that acceptance. The nature of the perception is determined by the foreign policies of the states as charted by their domestic policy-making organs. Foreign policies are often a reflection of a domestically applied ideology, but this is by no means an invariable circumstance. Again, it may often happen that positions taken by one state may appear to others to be hurtful to that very state and its people, but that assessment is not relevant in the legislative process, except that it generates reasoned attempts at persuasion at the stage of negotiation. The only datum of which practical account can be taken at a law-making conference is a state's representative's perception of what is acceptable and what the community as a whole believes ought to be binding as being of the highest attainable benefit for the greatest number.

And so the art of the modern law-making conference is to bring about a synthesis of different perceptions of policy-

makers and representatives, perceptions based upon widely different degrees of information availability and molded by different philosophies and ideologies. At the Conference on the Law of the Sea, a major task of the negotiators was to resolve ideological conflict by creating a regime for sea-bed mining that would allow sufficient, if not unlimited, scope for the expression of all ideologies in the interest of continued international harmony -- a regime that would take into account, to a certain degree, every basic philosophy and do so in such a way that no serious violence was done to any. This was essential in order to secure a coalescence of perceptions as a foundation for acceptance of the regime. As an inter-governmental Conference required to deal with a variety of ideologies, it could not afford the luxury that most national legislatures enjoy: that of enacting a law or working out a legislative program that is inspired by a single ideology or social or economic philosophy. This legislative assembly was required to work in several ideological dimensions at the same time and, undismayed, seek to reconcile them. The object was reconciliation with justice accorded to all points of view, none of which could be conceded to have a monopoly of rightness. The object was a workable regime within which competing ideologies and economic systems could persist at the national level and demonstrate their efficacy in securing benefits at the international level for the community as a whole.

Let us examine an example of the reconciliation of conflicting approaches concerning a central issue: consider "control" as the principal attribute of governmental intervention in the cause of social justice, as contrasted with "no control" as the chief feature of a system which aims at benefiting the greatest number through encouraging and protecting free and competitive enterprise. The challenge of the Conference was to evolve a regime which the adherents of both approaches might be able to accept. Let us recall again why it is necessary to become engaged in coming to terms with this apparent contradiction: because this is an exercise in international legislation. The result must be "inclusive," rather than "exclusive;" it must win adherents, not alienate the thinking of some, injure the pride of others or make them feel that the world is out of step with them; and it must avoid as far as possible implications of value judgments concerning the "rightness" of any ideology. What other approach is possible? Postpone all law-making until the world adopts a single ideology? Allow the legislative process to continue indefinitely, while domestic policies change and change again? Surely, neither alternative is a practical one.

How does the Convention deal with the issue of "control" as contrasted with "no-control?" Article 153 requires that "activities in the Area," previously defined to mean mining or mineral recovery operations only, be "organized, carried out and controlled" by the International Sea-bed Authority. But having made that general statement on control, the Convention goes on to qualify it. First, we find that "control" here relates only

to the monitoring of mining operations; second, we find that such control is to be directed solely at ensuring compliance with the Authority's rules, regulations and procedures; third, we find that the rules, regulations and procedures referred to will be those which are acceptable to all states concerned (article 161, paragraph 1 (a) on the composition of the Council; article 161, paragraph 8 (d) on the consensus procedure; and article 162, paragraph 2 on the adoption of rules, regulations and procedures); fourth, we find that the sponsoring state will be associated with the Authority in exercising this control; and fifth, we note that by circumscribing the term "control" to apply only to this type of routine activity, its potential to affect wider issues, like the right of access to the resources of the sea, has been totally removed. Finally, we note that any attempt to interfere with access to minerals through use of the overall organizing powers of the Authority is prevented through ensuring automatic approval of mining contracts under article 162, paragraph 2 (j) and security of tenure.

A similar synthesis of positions can be seen in provisions concerning the powers of the Assembly or plenary organ of the Authority. Being the only organ on which all members are represented, the Convention (article 160, paragraph 1) begins with the thesis that the Assembly is to be accorded the status of "supreme organ of the Authority," a position favored by one group. But immediately the antithesis favored by another group begins: first, we find that the Assembly's powers are set down in what appears to be an exhaustive list; second, we find that this organ of universal representation is to act in all operational matters only on the recommendation of its executive organ of limited membership, the Council; and third, that the Assembly for all its "supremacy" is asked to "avoid taking any action which may derogate from or impede the exercise of specific powers and functions conferred upon another organ," in particular, the Council. Thus, in the synthesis little remains to the Assembly of its pristine "supremacy," and it is left to practice in implementation of the Convention to determine what relationships will ultimately develop among the organs of the Authority.

The Convention's provisions on the transfer of technology offer another example of such a synthesis. Paragraph 3 of article 5 of Annex III boldly states in terms of an obligation, a legally binding obligation, no less, that a contractor must make available to the Enterprise the technology he uses. Here, one may think, a major blow has been struck at the root of the old individualistic, exclusive legal principle. But let us look at the matter more closely. Let us examine the qualifications, the antithesis, before reaching a conclusion. Is the contractor required to make the technology available free of charge? Is he required to give it away? Of course not. The contractor is merely asked to sell the technology and to do so on fair and reasonable terms and conditions. Does this provision apply to all the technology at the disposal of the contractors? No, it only applies to technology connected with nodule mining and not

to technology connected, for example, with processing of the nodules. Does it apply, perhaps, to all mining technology? No, it does not. It applies only to mining technology that the contractor is legally entitled to transfer. Is the obligation to sell an absolute one? No, it is not. The obligation such as it is, for we are beginning to see the quality of the paper of which this particular tiger is made, arises only whenever the Authority, the Authority, mark you, and not the Enterprise, so requests. Under what circumstances, we may ask, would the Authority make such a request? The Authority is permitted to make such a request only if the Enterprise finds that it is unable to obtain the same or equally efficient and useful technology on the open market on fair and reasonable commercial terms and conditions.

But that is not all; there will be operational rules, regulations and procedures to govern assurances regarding transfer of technology and requests by the Authority for technology transfer would have to be made in accordance with them. And how will those rules, regulations and procedures be adopted? Yes, as you have probably guessed, they will be adopted only on recommendation by the Council. And how will the Council decide to recommend adoption of those rules, regulations and procedures? By a decision-making process that calls for consensus among its members. And so we see that the synthesis achieved in paragraph 3 of article 5 of Annex III, for all its bold pretensions, hardly amounts to a forced sale of technology contrary to free market principles. Indeed, purists may well ponder whether free market principles would countenance the kind of interference with market forces constituted by a refusal to sell under the conditions specified in this article.

The other seemingly mandatory provisions of article 5 of Annex III can similarly be taken apart to show that they conceal no ideological monsters opposed to the free market philosophy.

These are just three examples of the reconciliation process to which international legislation is compelled when it is conducted with due regard to the positions of all participants and in circumstances under which the positions taken by governments are deemed to be of equal validity. To recall again the contrast with the national legislative process: representatives at an international law-making conference do not have the luxury of building on a single ideology to which, for the time being, the electorate has given its approval. The foundations of international law are the softer sands of synthesis and effective compromise among a variety of national positions which are themselves based on a variety of factors, including ideology. The foundations of international law lie in perceived community benefit, and both the law-making process and the emergent structure depend for their viability on notions that recognize the interdependence of all the states of the community.

The Convention on the Law of the Sea creates a structure: it sets up an organization to regulate sea-bed mining and the basic rules of a regime to govern the use of the sea and its

living and non-living resources. After intermittent meetings covering some 14 years, a structure which very nearly all the states of the community perceive as acceptable has emerged. Recognition of the interdependence of states was an important factor from the beginning of the negotiations. It became verbalized doctrine from 1974 onward.

But equally important, the Convention on the Law of the Sea is a process. With its provisions on the adoption of rules, regulations and procedures concerning sea-bed mining and for amendment and periodic review, it anticipates supplemental growth and ordered change. The legislative process which the Convention represents has reached a critical point in its development. Recognizing the interdependence of states, it has established the frame-work, the basic rules of a system for sea-bed mining in which states of different ideological persuasions may participate and compete. It is of the highest importance to the community as a whole that the legislative process be carried on through universal participation in the formulation of rules, regulations and procedures which, as do the basic rules themselves, allow scope for all states to give effect to their domestic ideologies and commitments. Participation in this phase would bring about an orderly preliminary interpretation of the Convention's basic rules, with balanced growth taking place within the community's legislative system and an orderly resolution of conflicts arising in the process. The energies generated through disagreement would be harnessed and applied in ways which carry the process forward, while containing and moderating the sharpness of conflicting views. This would seem to be the way of the community, the way to which the principle of interdependence makes a clear and urgent appeal.

But, of course, there is another way to proceed. States may choose a course away from that charted by the community in general. Deeply convinced of the correctness and superiority of their view, they could seek to act outside the community's legislative system; they would seek in fact to take the law into their own hands. To take that course would be to turn their back on the community and to strike a blow at its infant legislative process. To turn one's back on the community, to compete from outside the system, to take the law into one's own hands, such a course has surely as little to recommend it in the lives of individuals as it has in the lives of states. It can only lead away from the haven of ordered growth and into the storm of conflict. Conventional wisdom says that one should have the courage of one's convictions. But in the community of states where acts can have such far-reaching consequences, surely a greater circumspection is called for and a greater forbearance. To abandon the community's processes in despair and disillusion and to act outside them could drain community energies in endless conflict. It could lead, on the one hand, to the build-up of injured pride and its expression in the rhetoric of defiance, which are the greatest obstacles to persuasion, and on the other hand, it could fuel an equally dangerous cynicism and encourage a chain-reaction of resentment

and conflict that could strike at the roots of order in the community.

We are concerned today to protect and develop a body of rules and a legislative technique which emerged as a result of the Third United Nations Conference on the Law of the Sea. Those rules and that technique were an expression of the principle of interdependence of states, a principle so fundamental and of such respectable antiquity that it can scarcely be controverted by adherents of any political persuasion: socialist or capitalist, conservative, liberal or radical. Those rules and that technique seek not to place a value on any particular view of the world at the expense of any other, but, on the contrary, to reconcile them. Both rules and technique are vulnerable and need to be protected from forces originating in prejudice and ignorance and fueled by the posturing and the rhetoric of representatives whatever their points of view.

Sadly, in the latter months of the Conference on the Law of the Sea some commentators, misled by defiant rhetoric into misreading the Convention's carefully drafted, but sometimes awkward texts, saw in them confirmation of the worst fears concerning the Third World: a Third World rampant, incompetent and stridently demanding. In the United States, pulling out of the law of the sea negotiations was described as: "one way the Reagan administration...let it be known that the U.S. government will fight unwarranted giveaways to the Third World countries." Alas, one may wish that, if the US administration had indeed intended to deliver this salutory warning to the rest of the world, it could have chosen a subject less fraught with a cargo of good will, of hard work and hope. For the truth is that the Convention on the Law of the Sea contains no "giveaways" of an "unwarranted" kind or indeed of any other kind. And there are certainly no "giveaways" to the Third World countries.

The Convention does strive, however, under pressure from the overwhelming majority of participants in the Conference, to give more than merely cosmetic effect to the six principles I have attempted to formulate as the derived legal content of the "law of social interdependence." But its provisions are so qualified, diluted and circumscribed as to pose no threat to any state's ideological position on fundamental issues.

It would seem to be the responsibility of all those who hold opposing views, now more than ever before, to work together to ensure that the cooperative endeavors launched some 15 years ago are not brought to nothing through failure of communication or failure of understanding. The interdependence of the states of the community, rich and poor, large and small, north and south, demands that the process of reconciliation should not be halted, but rather be intensified in the final rule-making stages of legislation. Equally, it is important that this great endeavor not fail for lack of nerve or lack of imagination. The Preparatory Commission, under the leadership of its dedicated and brilliant President, Minister Warioba of Tanzania, confronts the tasks of putting the provisions of the Convention to work,

of building the organizational framework, and of drafting rules, regulations and procedures that will facilitate and encourage sea-bed mining, while at the same time making it subject to specified checks and balances.

That task will be accomplished; that task must be accomplished whether or not one or a handful of states withhold their adherence for the time being. But it must be accomplished, and accomplished quickly, not in the spirit of defiance, but rather in order to demonstrate to those countries which hesitate that their apprehensions are groundless, that their future participation is needed and urged by the community as a whole, that their participation with the rest of the world under the Convention calls for no sacrifice, neither in material terms, nor in terms of philosophy, but that indeed they have much to gain by undertaking a leading role in the community's management of the mineral resources of the sea.

There are surely certain ideals to which all of us can subscribe, in particular those which tend toward improvement of the general human condition. It is those ideals which brought our countries together and kept them together at the Third United Nations Conference on the Law of the Sea. It is those ideals which bring us as individuals together today. It is those ideals which, while we may agree to differ on the means of achieving them in our respective countries, must show us that our fortunes are bound together in interdependence when we meet to frame the rules which the community as a whole will be asked to observe. It is to that sense of idealism that an appeal must be made as we stand at a crossroads in the greatest legislative undertaking in history. I would like that appeal to idealism to be made not by me, but by one of the most profound international lawyers of all time, Wilfred Jenks, and so it is with the measured eloquence of his words that I conclude my address to you:

> The place of international law in the future of international society depends on our continued fidelity to those ideals. If we build the law with these ideals we shall have the makings of an effective legal system for an organized world community. If we are satisfied with a law which rejects these ideals as beyond its reach, or prejudicial to interests which it seeks to preserve, we write off the role of law and lawyers in the future government of mankind. For these are the issues which will determine, greatly for good or greatly for ill, the future of human destiny. If international law is concerned with these things it matters greatly; it becomes a vital factor in the shaping of the human future. If international law regards these things as beyond its purview, it matters much less. It may regulate the life of states but remains of small account in the lives of men. This is the scale of things by which we must judge whether idealism in international law should be rejected as an

illusion unworthy of the trained intellect or cherished as the vital energy without which the law cannot fulfill its mission in the service of mankind. So stated the choice becomes a simple one for those who have lost faith in human destiny.

These observations are made by the speaker in his personal capacity and do not necessarily represent the views of any government or institution.

PART IV

EFFECTS OF EXTENDED MARITIME JURISDICTION

INTRODUCTORY REMARKS

Douglas Johnston
Executive Director
Dalhousie Ocean Studies Programme

Good afternoon, Ladies and Gentlemen:

The topic of this session is "Extended Maritime Jurisdiction." I suppose most of us would say, following conventional wisdom, that the advent of extended maritime jurisdiction is one of the major contributions of UNCLOS III. We all know that predecessors of these trends have appeared earlier than UNCLOS III, but it is questionable indeed that the world today would be witness to the present pattern of extended jurisdiction were it not for the diplomatic consensus that emerged on these matters at the Conference.

Indeed, most people say that it is one of the two dominant motifs of the Conference. Up to now we have heard a great deal especially about the other dominant motif, the institutionalization of the common heritage of the deep ocean floor. So in the middle of the second day of this conference it is surely time that we come up from the murky depths of the deep ocean floor to the sunlit zone of surface waters and inspect worldwide developments in these more hospitable maritime areas. Probably no one will wish to suggest that every possible aspect and feature of the regimes of extended jurisdiction is perfect in every way. But at least there is one sense in which the gloom may be lifted somewhat from our deliberations, because at least this may have to be conceded: that whatever we wish to say in detail about extended jurisdiction, at least it is a phenomenon that now exists outside the framework of the Convention. It is reflected in state practice, to some extent, taking on a life of its own somewhat independently of the cruel realities of political decision-making in the form of signature and ratification. At least we are out of that particular box. So I suggest we relax a little bit and enjoy the presentations that we are going to hear this afternoon from our panel.

All members of the panel are, of course, distinguished and prominent contributors to the literature on the law of the sea. Given the multi-faceted character of the regimes they will be discussing, it seems appropriate that we have a full array of disciplinary expertise on our panel. We have distinguished specialists in international law, fishery economics, strategic studies, political geography, and political science. I am, of course, referring to the speakers in the order you will hear them.

Our first speaker is Professor Carl August Fleischer from the University of Oslo, a distinguished international lawyer and an eminent Norwegian, who will speak to us about the exclusive economic zone under the Convention and in state practice. That Professor Fleischer is eminently qualified to speak on this topic was made clear to all of us yesterday when, on very short

notice, he gave a very insightful analysis of the work of the Second Committee of the Conference.

Following Professor Fleischer, the next presentation will be shared by two speakers, Professor Gordon Munro, Professor of Economics at the University of British Columbia, and Professor Giulio Pontecorvo, Professor of Economics at the Graduate School of Business Administration at Columbia University. The devil inside me is prompting me to say that this is a spectacular display of collaboration between the United States and Canada in international fisheries. I hope that the symbolic significance of this is not lost on the negotiators, politicians, and fishing industries of North America.

Professor Kenneth Booth from the Department of International Politics of the University College of Wales will present our third paper, on the military and strategic aspects of extended jurisdiction. As I am sure most of you know very well from his numerous and most insightful writings on the subject, Dr. Booth is one of the leading specialists in this area of the law of the sea.

Our final paper will be presented by Bob Smith, who offers a rare combination of practice and theory. He is, on the one hand, chief of the International Boundary and Resource Division of the Office of the Geographer of the US Department of State and as such he is immersed in the day-to-day difficulties of boundary-making and related problems. On the other hand, he is the author of many articles in the journals on the law of the sea and to his writing he brings practical awareness of these great difficulties.

We are very fortunate to have for commentator this afternoon an eminent Swedish academic in the person of Professor Christer Jonsson of the Department of Political Science, University of Lund. He wants to deal mostly with the last two presentations.

I will also make a few comments myself.

THE EXCLUSIVE ECONOMIC ZONE UNDER THE CONVENTION REGIME AND IN STATE PRACTICE

Carl August Fleischer
Faculty of Law
University of Oslo

GENERAL

Origin and Possible Bases of Jurisdiction in Areas Beyond the 12-Mile Limit

It goes without saying that the question which poses, and has in the past posed, difficulties in regard to international law is that of jurisdiction vis-a-vis foreign vessels beyond the 12-mile limit. Vis-a-vis vessels under its own registry the powers of a coastal state are not limited to the area which lies within a certain distance from the shore.

One has seen several attempts at extended coastal state jurisdiction in the belt between 12 and 200 miles or in a part of that belt, e.g., up to a 50-mile limit. Different legal viewpoints have been involved. In particular, we may distinguish between the following types of claims for extended jurisdiction:

- Claims for an extended territorial sea beyond 12 nautical miles, based on the view that international law does not prescribe any uniform limit of the territorial sea or at least not a limit of 12 miles;
- Claims for extended jurisdiction over fisheries prior to the Informal Single Negotiating Text of UNCLOS III in 1975, based on similar views as just mentioned in regard to the territorial sea or to the effect that there is no limitation to 12 miles in the particular field of fisheries and biological resources;
- Claims for economic zones from 1975 onwards, more or less in accordance with the emerging consensus of UNCLOS III; and
- Claims according to that same emerging consensus, but restricted to fisheries, as opposed to a full economic zone.

Further Discussion of the Different Cases

The above does not mean that in the following we will have to deal separately with all four cases. The two latter items mentioned in the preceding paragraph would cover both those coastal states which allow for foreign state participation in conformity with the Law of the Sea Convention and those which do not. In the following we will examine, first, the right to a 200-mile zone in the matter of fisheries and biological resources and, second, whether and to what extent foreign state participation is obligatory under international law.

As for claims which might be considered as analogous to the 12-mile contiguous fisheries zone of the 1960's, but which extend further seaward, we do not have to treat these as a

separate case. Possible examples of such claims will have to be discussed under the same two main headings as other claims going beyond 12 miles, i.e., whether there is a right to extend fisheries jurisdiction to 200 miles with effect for vessels of foreign registry and whether there is a right for foreign states to participate in the harvesting of resources in the area mentioned.

Conventional vs. Non-Conventional Law

Suffice it here to remind ourselves of a fundamental dichotomy which exists presently in international law and which will also exist in the future. States that are formally bound by the Law of the Sea Convention will, at least in relation to other states parties, have to conform to the rules of the Convention. Other states, however, will be bound by general customary law -- which may or may not coincide with the provisions of the Convention -- and by special bilateral or multilateral agreements.

The Impact of UNCLOS III

Even in respect of states not adhering to the Law of the Sea Convention, UNCLOS III will have had an extremely strong impact. It was only through the debates at UNCLOS III on the system of 200-mile economic zones and after having written this system into the UNCLOS III negotiating text in 1975 that extensions to 200 miles became a general and dominant practice in the world community. In respect of the regime to be applied in the new 200-mile zones the ideas of UNCLOS III have also played an extremely important role by being adopted in national legislation and thereby appearing as elements of relevant state practice. Up to the adoption of the Law of the Sea Convention in 1982, such practice represented in fact the only possible legal foundation for a new rule of international law concerning rights and obligations in the 12-to-200 mile zone.

THE RIGHT TO A 200-MILE ZONE

The Legal Situation Prior to 1975

Was There a General Rule on a 12-Mile Maximum in Regard to Fisheries in 1974?

Even before 1975 there might have been strong arguments in favor of a right for coastal states to extend their fishery limits beyond 12 miles and possibly up to a maximum of 200 miles. Jurisdiction up to such a limit had been claimed by Chile and Peru since 1947 and there were several instances of limits going beyond 12 miles [1] at the time when the two Icelandic disputes were ajudicated by the ICJ in 1974. At the time, the Court did not accept extensions beyond 12 miles as opposable to other interested states [2].

It is not necessary here to take any definite position as to whether the Court's decisions were indeed well-founded or not. It is sufficient to note that state practice then existing

and the doubts which might already then have existed as to the purported maximum of 12 nautical miles have not been nullified by the Court's judgments.

It might be argued that even in 1974 the "burden of proof" should lie on the foreign states claiming the existence of a prohibition in international law, according to which a coastal state would not be justified in upholding its national legislation in an area between 12 and 200 miles [3]. Even then there was no universality in state practice to the effect that 12 miles was the maximum limit.

Relationship to the Present Situation [4]

It seems, however, that we need no longer concern ourselves with the question of the "burden of proof" in respect of fisheries jurisdiction beyond 12 miles. Events since 1974 mean that the state practice then existing -- which in itself represented strong arguments in favour of a coastal state's right to choose for itself the extent of its fishery limit up to a maximum of 200 miles -- has been supplemented by a vast amount of practice concerning 200-mile zones, this in the wake of the UNCLOS III negotiations. Those zones are either special 200-mile fishery zones or economic zones, but in the field of fisheries and biological resources this difference is not material.

Taken together, the pre- and post-1975 practice will give us the correct picture -- of course, in addition to the provisions of the Law of the Sea Convention itself [5].

The Right to a 200-Mile Fishery Zone or Economic Zone Under Contemporary International Law

Status of the Law of the Sea Convention

We do not wish to enter here into any subtle discussion as to whether a convention can be termed "contemporary law" as long as it has not yet entered into force. It is likely that the Law of the Sea Convention will -- in a not-too-distant future -- become binding and effective among a large number of states, governing directly their bilateral state-to-state relationships. Furthermore, the Convention's rules will be advanced as legal sources in regard to general, non-conventional law. There can be no doubt as to the latter -- and possibly the most important -- role of the Convention: its predecessors in the form of the various negotiating texts have indeed already been instrumental in bringing about a large amount of new state practice on the 200-mile limit.

Greater doubts may arise concerning the Law of the Sea Convention's status as indicative of general law in other areas and in regard to provisions appearing more as "contractual" or "specific details of treaty regulation." At this stage, however, we are only concerned with the right to 200-mile zones as such.

The Right to Establish a 200-Mile Zone According to the Law of the Sea Convention

Every coastal states is given the right to establish a 200-mile zone by virtue of articles 56 and 57 of the Convention. After the definition of the exclusive economic zone (EEZ) in article 55, article 56, paragraph 1 (a) goes on to state, inter alia, that in this zone the coastal state has "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the sea-bed and subsoil and the superjacent waters." According to article 57 the maximum width of the EEZ is 200 miles from the baselines; it "shall not extend" beyond that distance.

As the right to a 200-mile zone is accorded to all states, that right does not depend on proof of any special situation or necessity (this as opposed to what was found by the ICJ in 1974). All coastal states -- developed and developing states alike -- may extend to 200 miles on the same legal basis and with respect to a state's entire coastline; the right is not limited to those stretches where a population of fishermen depends on the sea for its livelihood.

However, a state may be barred from establishing a 200-mile zone purely by reasons of geography, e.g., when its entire coastline faces a narrow bay with no possibility to go further out than 12 miles.

There are also exceptions in law: according to article 121, paragraph 3, "rocks" which cannot sustain human habitation or economic life of their own have no EEZ or continental shelf.

Is There an Obligation to Exercise Jurisdiction in a 200-Mile Zone?

If one looks at articles 56 and 57, the EEZ appears as something which exists ipso facto -- without any express proclamation by the coastal state. The Convention does not say that the coastal state "may establish" such a zone, but that the coastal state "has" certain rights, e.g., sovereign rights, with regard to the exploitation of resources in the zone. And, according to article 55, the EEZ "is" an area. This language seems to suggest that the coastal state is obliged to exercise such jurisdiction in the zone beyond the territorial sea as is provided for in the Convention, or at least that this obligation will arise when the Convention has been ratified and entered into force. But this interpretation does not seem reasonable.

The general rules of international law do not mandate exercising jurisdiction beyond 12 nautical miles or even beyond the traditional three-mile limit of the territorial sea. Although there has been controversy on the question of whether or not an extension is allowed, any existing rule on a 200-mile limit can clearly only be permissive; that is, it allows the state to extend its jurisdiction beyond three or twelve miles if it desires to do so. There is no valid reason that a Law of the Sea Convention should oblige a state to establish a 200-mile zone and thereby interfere with the activities of foreign vessels if that state does not want to do so. The language of

article 56 is unclear, but no compelling reason exists for interpreting it to contain an obligation which is called for neither by the interests of the coastal state nor by those of other states.

Furthermore, reference must be made to article 57, which states that the EEZ "shall not extend beyond" 200 nautical miles. This language seems to imply that the coastal state may decide on a breadth for its zone of, for example, 50 or 100 miles. If this interpretation is correct, the conclusion seems warranted that the state itself may decide whether it should have a zone at all.

Finally, article 77, paragraph 3, concerning the continental shelf should be considered. According to this article -- which is based on article 2 of the 1958 Geneva Convention on the Continental Shelf -- the rights of a coastal state over the shelf do not depend either on occupation or on any express proclamation. As the chapter on the EEZ contains no similar provision, it may be a valid interpretation a contrario that there is no ipso facto EEZ where foreign fishing is prohibited even if the coastal state has not proclaimed any such zone.

Limitation to Fisheries Jurisdiction in Regard to the Law of the Sea Convention

Just as a state may find an EEZ extending to less than 200 miles sufficient for its needs, it may also have reasons to refrain from exercising jurisdiction for all the purposes mentioned in article 56. In particular, it may limit itself to establishing an extended zone for fisheries only.

It goes without saying that in doing so a state party to the Convention cannot thereby escape from the obligations towards other states in fishery matters, e.g., regarding conservation and participation by land-locked states and others. It must also respect the rights of other states in respect of navigation, overflight, etc., as laid down in article 58 (see also article 59 on "residual rights"). But there is no valid reason to require that the coastal state concerned must also apply all other possible restrictions vis-a-vis foreign vessels by creating a zone with effect in regard to matters falling under article 56 other than fisheries.

If in this manner a coastal state should refrain from using all its rights under article 56 and restrict itself to establishing a 200-mile zone for fisheries only, all other matters in the zone between a 12-mile territorial sea and the 200-mile limit will be governed by the rules on the "high seas."

Under General, Non-Conventional Law

Significance of State Practice

In questions of general law, i.e., in the absence of formal conventional regulation, the most important source of law must be state practice. However, in considering the legal significance of practice we are faced with two preliminary questions.

One question is whether a distinction is necessary between establishing an EEZ -- this being a rather new concept without a firm basis in traditional rules and practice -- and establishing a special limit purely for the regulation of fisheries or the exploitation of natural resources. Contiguous or adjacent zones for this more limited purpose have been well-known elements in practice since the failure of the Second UN Conference in 1960, although opinions have differed about how far the limit may extend.

The second preliminary question is whether the right to extend up to a certain limit must be justified by considerable evidence from state practice or whether the burden of proof is in the reverse. May one rely on the right of the coastal state to determine in the first instance the extent of its own jurisdiction -- for this is per se a right which is being exercised by all nations -- but with the proviso that "the delimitation of sea areas has always an international aspect" [6] and that it therefore must be kept within the limits which might derive from international law?

The latter perspective might warrant the submission that there is at present no uniform legislation on the limits of fisheries jurisdiction and that such limits may be fixed by each coastal state within the range evidenced by state practice, which in fact goes up to 200 nautical miles. Today no evidence exists of any uniform practice which obliges a coastal state to restrict itself to a narrower limit. The 1951 judgment of the ICJ in the Anglo-Norwegian Fisheries Case may support this kind of reasoning [7]. If this is correct, it means also that one does not have to lay too much stress on the 200-mile extensions which were formulated as "provisional" or were in practice subject to agreement by foreign states. Otherwise, such proviso would tend to reduce the value of the extension as evidence in favor of a general customary rule on a right to a 200-mile zone.

State Practice on 200-Mile Zones with Effect for the Matters of Fisheries and Biological Resources

The 200-mile limit has become the most commonly applied limit in matters of fisheries and biological resources [8].

In Europe 200-mile zones are in effect for countries such as the USSR, Norway, Iceland, Denmark (including Greenland and the Faroe Islands), the United Kingdom, France, Ireland, and Portugal -- covering the main oceanic coasts of these countries. In Africa the 200-mile limit is applied, inter alia, by Angola, Benin, the Comoros, Kenya, Liberia, Mozambique, Nigeria, Senegal, Sierra Leone, Somalia, and Togo [9].

In North America the 200-mile limit has become universally applicable through the recent practice of Canada, Mexico, and the US. And the Latin American countries of South and Central America appear to be the more or less original supporters of a 200-mile rule, even before the years of UNCLOS III: Argentina, 1966; Brazil, 1970; Chile, 1947; Peru, 1947; etc. [10].

In the Pacific region one needs only to mention the two cases of Australia and New Zealand covering extensive areas of

oceanic coast [11]. As for Asia, the picture may still be a bit complex, but reference may be made to 200-mile zones being applied by Bangladesh, India, Pakistan, Sri Lanka, Japan, and others [12].

The Role of Reciprocity

It seems obvious that a state which itself claims a 200-mile zone, established by its own unilateral decision and on the basis of its own perception of general international law, will not as a rule bring forth claims to the effect that a 200-mile limit claimed by another state is legally void. Consequently, the great amount of state practice on 200-mile zones will settle a large number of bilateral state-to-state relationships and reduce the possibility of legal disputes over the 200-mile limit as such.

It may, theoretically, still be feasible to maintain the position that the 200-mile limit is not valid on the basis of general international law alone, but merely because of the conduct of other states, including agreements. However, in my opinion the more realistic viewpoint is that state practice has now reached such a level that a general rule has been created. The zones that have been established are by themselves sufficient authority for the right of coastal states to extend to 200 miles.

Statements Concerning "Provisional Measures" and Other Reservations Concerning the Status of the 200-Mile Zone

In some cases there is evidence that a zone of special jurisdiction has been qualified by being referred to as a "provisional measure," a measure subject to international law, or otherwise. To some extent, this may be said of a 1976 Resolution of the Council of the European Communities which states that "the present circumstances, and particularly the unilateral steps taken or about to be taken by certain third countries, warrant immediate action by the community to protect its legitimate interests" [13].

In this context, one may also quote a USSR Decree of December 10, 1976, which notes that an "increasing number of states, including some adjoining the USSR," have been establishing economic or fishing zones up to 200 miles "without waiting for the conclusion" of UNCLOS III and that "pending the conclusion" of a convention "immediate action is needed to protect the interests of the Soviet state" [14]. The measures laid down in the Decree, including the establishment of sovereign rights over fish and other living resources, are referred to as "provisional" [15].

The weight to be put on such reservations in regard to the general law on special zones may be open to some doubt. One may wonder whether a purely "provisional" jurisdiction can be "sovereign" at the same time. The same difficulty does not adhere to the idea of a "protective" measure, as self-preservation is an essential element of state sovereignty. As for provisions to the effect that the rights over the special

zone must be exercised in accordance with "international law" [16], they may be said to contain no more than a reference to rules which would operate in any event and which do not depend on declarations by individual states.

Certain provisions of the 1976 Fishery Conservation and Management Act of the US may, to some degree, reduce its persuasive force in favor of a general right to an extended zone. They are found in Section 401 and deal with the effect of a comprehensive Law of the Sea Treaty -- which may lead to amendments to the Act -- and with "non-recognition": the US government will not recognize any claim by a foreign state to a fishery zone if that state "fails to consider and take into account traditional fishing activity of fishing vessels of the USA" [17]. It may be argued that this, together with the terminology of a "conservation and management zone" with fishery management authority, is evidence in favor of a contention that the right to a zone is dependent on acceptance and recognition in the bilateral relationship with each and every other state with fishing interests in the zone.

The Right to a 200-Mile Zone Under the General International Law of Today: Conclusions

Despite all such reservations concerning the legal principles, it seems a reasonable presumption that the development towards extended coastal state jurisdiction is not a reversible process. Once the 200-mile EEZ's and exclusive fishing zones were put through in practice, they formed a network of international and national arrangements and they have become the basis of the expectations and aspirations of fishermen, as well as of other voters and pressure groups in a great number of coastal states. Whatever the fate of the Law of the Sea Convention, there can be no going back from this new international law of fisheries management to the limits of coastal state jurisdiction that existed before [18].

Even if extended zones of jurisdiction have become a common practice all around the world only in recent years and even if the development of this practice on a global scale has been prompted by the debates and proposals at UNCLOS III, it must be remembered that 200-mile zones of jurisdiction over resources and *de facto* economic zones have been in existence for some 30 years in certain Latin American countries, in particular on the Pacific coast of South America. As Garcia Amador put it, the "zona maritima" existed as a zone *sui generis* [19], and this even prior to UNCLOS I and II. The 200-mile zones of Chile and Peru were proclaimed as early as 1947 [20].

The Right to a 200-Mile Zone as a General Right, Applicable to All Coastlines

State practice seems to give strong evidence of a general right to extend special jurisdiction up to 200 nautical miles from the baselines. When the "territorial" claims are added to those of "sovereign rights" or "jurisdiction," coastal state rights over resources extending up to the 200-mile limit have

been established along virtually all the oceanic coasts of the world, including those of North, South, and Central America, as well as of Africa, Europe, the USSR (Asiatic as well as European coasts), Asia, and Australia.

The right to a 200-mile zone -- be it a fishery zone or an EEZ -- seems to be applied on all parts of the coasts of a state. It is not restricted to countries where there is a particular need for measures to protect the resources or the interests of the fishing population, nor is it restricted to such parts of a state's coastline where there is specific evidence of such needs. The practice also covers the coasts of islands, as well as of the mainlands. The view that the taking of measures beyond a 12-mile limit is a right to be exercised only by a limited number of states "overwhelmingly dependent" on fisheries -- a view which had some support at UNCLOS I and II in 1958 and 1960 and which found some recognition as a rule of law by the International Court of Justice in 1974 -- has not been adopted in the state practice which is now in existence. Practice has chosen the avenue of sovereign rights applicable for coastal states and coastal areas in general, while in 1974 the International Court restricted itself to "preferential rights" for a limited number of states only.

Whether or not the exception found in the Law of the Sea Convention with regard to "rocks" (article 121, paragraph 3) is also part of general customary law may be open to doubt. The answer may again depend on the way in which the question is framed or on considerations in relation to the "burden of proof." If it is accepted that a 200-mile rule exists with effect for all coastlines and if it is held that it is up to the third state claiming that there is an exception for "rocks" to present sufficient evidence concerning a practice supporting the exception, the answer may well be in the negative: there is no uniform practice to rely on. If, on the other hand, the question is framed as concerning a practice which has been exercised also in relation to "rocks," the answer may be the opposite: there is yet no general acceptance in the international community of a 200-mile rule expressly covering "rocks."

Theoretically, it may be argued that a possible exception for "rocks," or smaller islands in general, has a wider scope in customary law than under the Law of the Sea Convention. The other possibility may also be open, i.e., that the exception is even narrower, e.g., limited to low-tide elevations.

The Right of the Coastal State to Limit its Jurisdiction to Fisheries and Biological Resources

The existing practice on 200-mile zones seems to depart from the pattern of the continental shelf in that it has not accepted the ipso facto and ab initio idea [21]. In other words, whereas the shelf is regarded as belonging to the coastal state without any express proclamation and while no one may undertake exploration and exploitation of its resources without that state's permission [22], the existence of a special 200-

mile zone depends on a formal decision of competent authorities to establish such a zone. Consequently, it seems that practice allows a state to refrain from establishing a zone of special jurisdiction, while it may also restrict its claim to a narrower area than the 200 miles permitted by international law or to certain of the rights and/or jurisdictions.

Here, the most striking difference is perhaps between a fisheries zone and a full economic zone, i.e., a zone where the sovereign rights of the coastal state apply also to non-living resources and in particular to the sea-bed and subsoil. This difference occurs in practice. The states having established a 200-mile zone in the wake of the UNCLOS III negotiations may be classified in two groups, i.e., those establishing a full EEZ of 200 miles and those restricting their claim to a 200-mile fishery zone.

Whether and to what extent such a "jurisdictional surplus" over the jurisdiction in regard of living resources has been established as a rule of customary law may at present be open to some doubt, but this question will not be discussed here [23]. The main point is that both the EEZ practice -- e.g., of France or India, and the fishery zone practice, e.g., of the United Kingdom and the USSR -- support a rule which accords the coastal state a right to 200 miles in respect of fisheries and biological resources. [Editor's note: the USSR has since declared an economic zone.]

It may be observed that state practice presents us with a different picture than the Law of the Sea Convention. In the Convention the EEZ occupies the most prominent place, while the right to restrict claims to matters of fisheries has not been set out in any express provision. In state practice it is the right to 200 miles for fisheries which commands the largest measure of general international acceptance, while the right to a full EEZ under contemporary customary law may be more questionable.

Relevance of "Territorial" Claims to the 200-Mile Zone

In some cases coastal states, in particular those states which claim a 200-mile territorial sea [24], purport to exercise authority which is even broader than "sovereign rights." The difference between such a position and the promulgation of a zone of special jurisdiction in regard to resources may mainly be found where matters other than fisheries jurisdiction are concerned. To the extent that the traditional freedoms of navigation and overflight are upheld, it may also be argued that the extended "territorial seas" or areas of "sovereignty" in reality have the same effect as special resource zones.

It is my view that sometimes claims referred to as examples of a 200-mile territorial sea should not be put in this category. This appears to be the case as regards the 1966 200-mile law of Argentina, which in an Annex to FAO Doc. COFI/78/Inf. 9 is classified as a 200-mile territorial sea. This Law of 29 December 1966 is also put under the heading of "The Territorial Sea" in the U.N. Collection of National

Legislation of 1970 [25]. While article 1 of the Law admittedly speaks of the "sovereignty of the Argentine nation" over a 200-mile belt, it must be observed that under article 3 the "freedom of navigation or "overflight" is not affected by its provisions.

Claims for "Authority" or "Jurisdiction" in the 200-Mile Zone

It may be observed that not all national laws and regulations or bilateral agreements relevant to extended zones of special jurisdiction use the term "sovereign rights." The Japanese Act of 2 May 1977 (amended on 29 November 1977) speaks about "jurisdiction" in the "fishing zone" [26]. A term favored in the practice of the United States is "fishery management authority" [27].

Perhaps one should be careful not to over-emphasize the difference between the terms "sovereign rights," "jurisdiction," "authority," or similar terms. As is demonstrated by the development of the UNCLOS III articles from the Revised Single Negotiating Text (RSNT) of 1976 to the Informal Composite Negotiating Text (ICNT) of 1977, the subtleties of legal terminology may be drawn too far. In particular, it is difficult to see any material difference between the "jurisdiction" over certain "other" economic uses of the EEZ in the 1976 text and the "sovereign rights" over living and non-living resources. In 1977 the "other" uses were added to the list of "sovereign rights" and there also was a simplification of the rest of the catalogue of what is now article 56; the term "jurisdiction" is now being used also to cover cases which had earlier been put under the formula of "exclusive" jurisdiction.

Obviously, the concept of "sovereign rights" contains the idea of a stronger position of the coastal state than "jurisdiction" does. Practice based on "sovereign rights" may therefore have a greater impact on the evolution of a new rule of customary law or on the confirmation of a rule which was already in existence -- inter alia, in view of the now almost traditional maritime zones of Latin American countries such as Chile, Ecuador and Peru -- but still contested by several countries.

At the same time there is reason to point out that the use of a term such as "jurisdiction" in some instances does not necessarily weaken the formation of customary law based on "sovereign rights." The word "jurisdiction" is completely neutral and applicable to "sovereign" as well as to other rights accorded under international law. While the value of a national law based on jurisdiction alone is smaller than that of a law based on "sovereign rights" in order to support a "sovereign" regime in the extended zone, there is nothing in "jurisdiction" which *per se* serves to deny the existence of "sovereign rights" or to counter-balance a practice which is otherwise in evidence. It may further be observed that in fact the exercise of "jurisdiction" or "authority" may often amount to the same as the exercise of sovereign rights, e.g., with regard to the general management of fisheries as well as the decision on who

will have the right to fish or not. Article 6 of the Act of 2 May 1977 of Japan, for example, prohibits foreigners from fishing in its extended zone of coastal jurisdiction unless permission has been obtained from the Ministry of Agriculture.

Significance of Bilateral Agreements

It has been fairly common to conclude bilateral or even multilateral agreements on the right to fish within extended fisheries limits [28]. Such agreements may relate to the phasing-out of foreign fishing over a period of years or to arrangements of a more permanent nature.

The conclusion of such bilateral agreements may have several different aspects. It appears that the true manifestation of a "sovereign" right -- i.e., a right that belongs to any coastal state by virtue of its very existence and sovereignty and as a direct result of the existing law of nations -- must be the practice found in national legislation and the enforcement thereof and not in the practice of bilateral agreements. Such agreements may, however, be regarded as practical instruments in the exercise of sovereign rights, in particular insofar as the coastal state by its own will chooses to allocate fishing rights to other states; or, if a coastal state is under an obligation to do so because of the general rules of customary law, bilateral agreements may be the most convenient way in which to execute such an obligation.

A bilateral agreement between the coastal state and another state interested in fishing in the extended zone may further be looked upon as a recognition by that other state of the rights of the coastal state. This strengthens customary law based on "sovereign rights." In this connection, however, one must note that in principle a recognition can never go further than what is contained or implied in the statements made by the recognizing party. It may, for example, be argued that the parties have gone no further than to regulate their bilateral relationship on a provisional basis in the special situation which had arisen as a result of the protracted deliberations at UNCLOS III and the difficulties caused by unilateral action. In this light, each party may have retained its full freedom to take whatever position of principle in regard to the 200-mile zone. In this connection, one may also point to such elements of bilateral agreements as whether they use the term "sovereign rights" [29] or the more neutral term "jurisdiction" (or even "exclusive" jurisdiction), whether or not they contain a non-prejudice clause with respect to the parties' views on maritime jurisdiction, etc.

If the agreement goes no further than to accept a specific system of jurisdiction on fisheries in a specific zone for a limited period of time and if it does not use the expression "sovereign rights" [30], one may perhaps assert that it does not imply any acceptance of a general rule on "sovereign rights." Nor may the particular exercise of such rights by the coastal state, party to the agreement, have been accepted as lawful beyond what has been actually conceded for a certain period in

the provisions of the agreement. Such an approach would be consonant with the more cautious attitude taken in modern legal theory on the question of the effect of bilateral agreements in regard to the recognition of states and governments [31].

The role of a bilateral agreement is also to substitute itself, in the relationship between the parties, for the rules of general international law. A bilateral agreement is the foundation of binding rules of international law, but only of a particular character. It may, therefore, be argued that the widespread practice of bilateral fisheries agreements allowing for coastal state jurisdiction and rights of third states tends to reduce the importance of national legislation as evidence of a customary rule on "sovereign rights." As far as the exercise of jurisdiction has its basis in a binding arrangement, it may be said that there is no need to rely on general international law. Consequently, the practice does not need to be construed as expressive of an opinio juris in regard to the coastal state's rights by virtue of the general law. In my view, this line of reasoning will in all likelihood be met with the argument that most bilateral agreements must be considered as a consequence of, and not as prerequisites for, the exercise of coastal state jurisdiction in the extended zones. The agreements are needed to solve questions that have arisen as a result of extensions carried out on the basis of coastal state sovereign rights and they have enabled the coastal states concerned to limit the exercise of their sovereign rights by giving certain rights of access to third states. They also enabled them to execute possible specific obligations under international law in this regard, but they are not called for as a condition for the exercise of sovereign rights as such [32].

THE APPLICABLE REGIME IN THE 200-MILE ZONE

The Sovereign Rights of the Coastal State in Respect of Fisheries and Biological Resources

The Main Rule: "Sovereign Rights"

As for the contents of the special jurisdiction [33] of coastal states, the term "sovereign rights," which has a firm basis in state practice in addition to being used in article 56 of the Law of the Sea Convention, seems to go a long way in providing the answer [34]. The term also corresponds to the one commonly used in state practice with regard to the continental shelf, including the now traditional formula of article 2 of the 1958 Continental Shelf Convention.

"Sovereign rights" are related to one or more specific purposes. On the one hand, the term conveys the idea of a functional approach: the coastal state does not have full sovereignty as on its land territory or in the territorial sea but a right of jurisdiction that is related to certain purposes. Beyond the scope of the jurisdiction so defined, there is no special basis for coastal state rights, and the traditional

rules developed for the high seas will continue to apply. On the other hand, in so far as the specific purposes are concerned, the coastal state is "sovereign": it has the exclusive right of decision in regard to the rules which are to apply within the extended zone and the exclusive right to enforce the measures on which it has decided.

It does not detract from the above that some claims in national legislation have been expressed in terms such as "territory" on the one hand and "authority" or "jurisdiction" on the other. Once the general competence of the coastal state to establish a 200-mile resource zone with the right of decision as to who is entitled to fish there is recognized, the regime of "sovereign rights" is in effect put in practice. However, this does not exclude the possibility of limitations on said "sovereign rights," e.g., by an obligation to give access to vessels from other states. Even sovereignty over land territory may be limited in a similar manner.

The Resources Included Under Coastal State Jurisdiction

By virtue of article 56 of the Law of the Sea Convention, both living and non-living resources are included in the "sovereign rights" of coastal states; this article covers all the resources of the sea-bed and subsoil as well as those of the superjacent waters. Whether or not a state basing itself on the Convention will have in practice such a wide field of jurisdiction depends, of course, on whether or not it chooses to establish a complete EEZ or to limit itself to a zone concerning "fisheries" or "biological resources" in general.

Where customary law is concerned, one might raise certain questions as to the rights of coastal states with respect to the mineral resources out to the 200-mile limit in areas which are not "continental shelf" according to traditional practice. This need not be considered here. Where biological resources are concerned, it seems clear that the rights of the coastal state comprise both the fish in the narrower sense of the term and other living resources which are biologically not of the same order as fish proper. This general right concerning living resources is confirmed both by the practice on zones concerning living resources or fisheries and by the more far-reaching practice on full economic zones, also covering the non-living resources of the sea-bed and subsoil.

In state practice there is some variation as to what is covered by the term "living resources." The USSR decree of 1976, for example, mentions "fish and other living resources" [35], while the Act of the Bahamas of 1977 defines a "fishery resource" subject to sovereign rights as "fish of any kind found in the sea" including sedentary species but excluding species of tuna which spawn and migrate over great distances in the waters of the ocean [36]. The 1977 Act of Japan covers both "fisheries" and the "catching and taking of marine animals and plants" [37]. Plant life is also included in the definition of "fish" in Guyana's Act of 1977 [38], while Pakistan in 1975 included "molusks, crustaceans, kelp and other marine animals"

under that term [39]. The "young and eggs" of any fish, including marine animals, are covered by the term "fish" in the New Zealand (Tokelau) Act of 1976 [40]. Irrespective of these differences, it seems that state practice must be construed as the basis for coastal state jurisdiction over living resources in general. The differences should be considered to be expressions of administrative or political convenience, not an opinio juris restricting the rights of the state in question.

Exploration, Exploitation, Management and Conservation

The four elements -- exploration, exploitation, management and conservation -- are all included among the "sovereign rights" of the coastal state in the text of article 56 of the Convention. The obligation to apply measures of conservation is dealt with in later provisions of the Convention.

As to a large extent both national legislation and bilateral treaties have been based on the UNCLOS III texts, it is not surprising that state practice covers "exploration" of resources as well as their "exploitation." Sovereign rights over these matters imply that the coastal state is the master of who may explore or exploit and of the conditions to apply. The coastal state is not restricted to non-discriminatory conservation and management measures in the narrower sense of these words, but may restrict or exclude foreign fishing activities in order to further the interests of its own population. This is the basic principle and the point of departure. Whether or not there are limitations on the discretion to be exercised by the authorities of the coastal state is another matter.

Practice based on the UNCLOS III texts has a tendency to include sovereign rights over the "conserving" and "managing" of natural resources in addition to "exploring" and "exploiting." It may be said that this probably does not have any legal effect insofar as the scope of coastal state rights is concerned. As is indeed shown by the 1958 Geneva Convention on the Continental Shelf, "exploration" and "exploitation" are sufficient to give the coastal state all relevant powers in regard to the resources mentioned, management and conservation included.

However, this does not necessarily justify the conclusion that the extra wording is redundant. It may be invoked in particular as part of the basis for certain limitations on the rights of the coastal states. The broader terminology may in effect support the view that the state is also under an obligation to manage the resources and to take effective measures of conservation, obligations that probably go beyond what can be inferred from the 1958 Continental Shelf Convention but which are of particular importance in the matter of living resources. Such obligations may also be substantiated from other elements of state practice.

Exceptions for Certain Stocks?

As was already said, the entire range of biological resources present in the EEZ at a given moment is subject to the

sovereign rights of the coastal state. This is borne out by article 56 of the Convention, as well as by state practice.

There is no support in practice for a limitation of a coastal state's sovereign rights within the 200-mile zone when a stock is shared with other states because it also migrates into their zones, nor is there any exception in case the fish spends part of its life cycle in the waters of the high seas, i.e., in waters beyond the special zones, the internal waters or territorial seas of any state. But in both these instances, it would seem advisable and even necessary for the states concerned to enter into negotiations and to cooperate on the establishment of suitable arrangements, including the use of regional commissions. The coastal state is also under obligations to do so, because of existing provisions and custom on conservation measures and because of the damage which might otherwise be caused to the legitimate interests of other states.

A specific item is that of the so-called "highly migratory species" [41]. We find instances here where such species have been excluded from the zonal jurisdiction otherwise applicable. In the 1977 Act of Japan, the prohibition of foreign fisheries without permission does not apply if the fisheries or the catching and taking of marine animals and plants "pertain to highly migratory species prescribed by Cabinet Order" [42]. The US legislation and practice is similar [43]. "Species of tuna" are also excluded from the definition of "fishery resources" in the 1977 Act concerning the sovereign rights of the Bahamas [44]. It may, however, be difficult to regard the practice in this matter as a sufficient foundation for a rule of customary international law. The answer to this question seems to depend on whether evidence of a uniform practice is required in order to prove a specific rule on the sovereign rights of a coastal state in regard to highly migratory species within its 200-mile zone or whether it is the possible exception for such species which needs a specific basis in a state practice, once the general right of coastal states over the resources has been established.

In the Law of the Sea Convention, "highly migratory species" have received special attention in article 64 and in the list of Annex I to the Convention. Article 64, paragraph 1, establishes the obligation of the coastal state and the other states fishing in the region for the species listed in the Annex to cooperate with a view to ensuring their conservation and to promoting the optimum yield. However, this obligation does not derogate from article 56 and accordingly these resources also fall under the sovereign rights of the coastal state. Article 64, paragraph 2, states expressly that paragraph 1 of the article applies in addition to the other provisions of the Convention's EEZ chapter.

Obligations Incumbent Upon the Coastal State in the Matter of Fisheries and Biological Resources

The Foundation for Obligations of the Coastal State

Basically, there may be three grounds for limiting the exercise of coastal state sovereign rights in respect of fisheries and biological resources. These are:

1. The "package deal" element requiring the coastal state to give something in return for being accorded a right to extend jurisdiction to 200 miles. Obviously, such a quid pro quo underlies the provisions on the EEZ in the Law of the Sea Convention. The obligations on access for land-locked and geographically disadvantaged states to fisheries within the 200-mile zone in particular have been negotiated against this background. To some extent, the same may be said of the obligations with respect to conservation, but here also more fundamental considerations apply.
2. Fundamental considerations on the need to conserve the natural resources of the sea and to promote their rational utilization as one of the most important sources of protein in the general interest of mankind.
3. Obligations may also exist in connection with the rights of other states in the EEZ in regard to matters other than fisheries and biological resources, in particular their rights of navigation and overflight. The coastal state must, of course, respect those rights. To some extent this may limit the possible courses of action available to the coastal state in the exercise of jurisdiction over resources, e.g., when it comes to measures such as the closure of an area to protect concentrations of fishing vessels.

The System of the Law of the Sea Convention

To some degree the Convention has joined the first two elements. The Convention's system is based on:

- Limitation of catches on the basis of a total allowable catch;
- Determination of a coastal state's own capacity to harvest the available resources within the 200-mile zone; and
- The use of those two figures as a basis for the allocation of fishing rights to other states [45].

The "Exclusive" Economic Zone

The word "exclusive" before "economic zone" in the Convention must be considered as a term of art.

First, the rights and jurisdiction conferred upon the coastal state are not exclusive in the sense that no other state has any rights in the zone. It is envisaged, for example, that jurisdiction in relation to the preservation of the marine environment remains to a large degree with the flag states.

Second, the Convention also provides for certain rights of other states to exploit the resources of the zone. Evidently, this zone is different from the truly "exclusive" 12-mile resource zones that were established as a result of the developments after the Second Geneva Conference in 1960. As from the end of the ten-year phasing-out period, such zones would be "exclusive" in the ordinary sense of the word. Also this zone is different from the "exclusive" zone -- with no rights of participation -- that the ICJ refused to accept as lawful in the two 1974 judgements.

The Obligations of Conservation Under Article 61 of the Convention

Article 61 starts with an obligation of the coastal state to determine the "allowable catch of the living resources in its exclusive economic zone." From the viewpoint of conservation and optimum utilization, this seems a bit defective, even as a general point of departure. If a population of fish occurs in the waters of a coastal state as well as in other areas, and if it is also harvested in those other areas, it seems imperative that the total allowable catch (TAC) should be determined for the population in its entirety. However, the starting point of the provisions of article 61 is the limited sphere of coastal state jurisdiction, as the coastal state cannot exercise jurisdiction in the same manner with respect to resources and fisheries beyond the 200-mile limit. It goes without saying that in determining the TAC within its zone the coastal state must take due account of any harvesting that takes place beyond the limits of its jurisdiction, be it within the zone of another state or on the high seas.

It seems acceptable under article 61 to dispense with an obligation to determine the TAC specifically in relation to each single EEZ; this would represent, after all, only a part of a population's overall figure that must be the basis for all calculations. The condition is that the coastal state and the other states exploiting the same population have agreed on a common TAC and on the distribution of the catches between them. Whether harvesting takes place in the one or in the other EEZ or on the high seas is in many cases immaterial. Indeed, it may be desirable to direct most of the fishing effort to the zone of a single coastal state in order to concentrate that effort on fully matured fish and avoid over-exploitation of young and immature fish.

A general provision on cooperation in cases where stocks occur in two or more EEZ's, or in an EEZ and on the high seas, is found in article 63. Paragraph 1 of this article contains the proviso "without prejudice to the other provisions of this Part." This proviso should perhaps not be read too literally, and in particular paragraph 1 should not be interpreted a contrario.

Evidently, the calculations by the coastal state must also take account of fisheries within areas of jurisdiction not covered by its EEZ, which is the only area mentioned in articles

61 and 63. We also have internal waters, the territorial sea and a possible contiguous zone up to the 12-mile limit.

According to paragraphs 2 and 3 of article 61, the coastal state must through proper conservation and management measures ensure that the maintenance of the living resources in its EEZ is not "endangered by over-exploitation." The measures must be designed both to "maintain" and to "restore" populations with the objective of reaching levels that can produce the maximum sustainable yield. However, this latter objective may be qualified by relevant environmental and economic factors including, inter alia, "the economic needs of coastal fishing communities and the special requirements of developing states," and take account of fishing patterns, etc.

Article 61, paragraph 4, requires that account be taken also of the effects on species associated with, or dependent upon, harvested species with a view to maintaining or restoring populations of such species "above levels at which their reproduction may become seriously threatened." This latter obligation may seem somewhat weak. It may perhaps be supplemented with the objective of "optimum utilization" of article 61, paragraph 1, in cases where, from an overall viewpoint, it would be more desirable to increase the populations of the dependent or associated species and their harvesting by limiting or increasing catches in the EEZ, as the case may be. It may, for example, be possible to increase catches of seal or dogfish, thus contributing to larger populations of cod and other species of fish in the neighboring areas.

Participation of Other States Under Articles 62, 69 and 70

The Convention has three main provisions concerning the rights of access of vessels from states other than the coastal state. The first, and the most general, provision is found in article 62, paragraph 2, which gives other states the right to exploit the surplus, if any, of the living resources of the EEZ after a coastal state has determined both the allowable catch and the part of the catch which it can harvest itself. Such access must be governed by agreements or other arrangements between the coastal state and the other states concerned in accordance with the terms and conditions set out in article 62, paragraph 4, including the regulatory powers of the coastal state. The second provision on the rights of other states is article 69 dealing with land-locked states. Thirdly, article 70 grants fishing rights to certain geographically disadvantaged states (GDS).

Taken together, articles 69 and 70 purport to meet the requirements of an important group, possibly a "blocking third" in the voting procedures at UNCLOS III: the group of land-locked and geographically disadvantaged states. However, not all states which in one sense or the other might claim to be "geographically disadvantaged" have a right to fish. Rather, the right is limited to certain cases mentioned in article 70, paragraph 2. Article 70 does not even use the term GDS but

refers to "states with special geographical characteristics." The definition of that term covers in fact two groups. The second of these groups constitutes the more simple part of the definition, and here the notion of "geographical" is to the point: "coastal states which can claim no exclusive economic zones of their own." The first group, however, is defined on the basis of more complex criteria: "coastal states, including states bordering enclosed or semi-enclosed seas, whose geographical situation makes them dependent upon the exploitation of the living resources of the exclusive economic zones of other states in the subregion or region for adequate supplies of fish for the nutritional purposes of their populations or parts thereof." It seems that the evaluation of whether or not a state meets the requirements of this definition cannot be based on geography alone.

The rights set out in articles 69 and 70 involve participation "on an equitable basis." The terms and conditions must be determined by the states concerned through bilateral, subregional or regional agreements. The coastal state has an obligation both to enter into negotiations with such other states and to grant them such rights as are provided for. However, paragraph 1 of article 69, as well as paragraph 1 of article 70, restrict these rights to the "surplus of the living resources" of the EEZ as defined in article 62, paragraph 2 [46].

However, the provisions of article 69, paragraph 3, and article 70, paragraph 4, go further than those of article 62: they also grant a right of participation even when no surplus exists. "When the harvesting capacity of a coastal state approaches a point which would enable it to harvest the entire allowable catch of the resources in its exclusive economic zone," the coastal state and other states concerned must cooperate in the establishment of "equitable arrangements" on a bilateral, subregional or regional basis. The objective of such arrangements must be to allow for participation of developing, as opposed to developed, land-locked states and states with special geographical characteristics of the same subregion or region in the exploitation of the living resources of the EEZ.

The Evaluation of State Practice and Other Factors as Evidence of a Rule of Law

In regard to non-conventional law, one is again facing the rather crucial preliminary question as to whether the right to extend to a certain limit must be justified by considerable evidence from state practice or whether the burden of proof is in the reverse. May one rely on the right of the coastal state to determine the extent of its own jurisdiction, albeit within the limits which might derive from international law? Such a perspective might warrant the submission that, as there is at present no uniform rule on the limits of fisheries jurisdiction, such limits may be fixed by each coastal state within the range evidenced by state practice, which in fact goes up to 200 nautical miles. Presently, there is no evidence of any uniform

practice that would oblige a coastal state to restrict itself to a narrower limit. In this perspective, it seems natural to regard the 200-mile limit of special jurisdiction in the same light as the traditional limit of the territorial sea and the 12-mile fisheries zones of the 1960's. In this view, there would be no obligation to share resources inside the areas which fall within the limits of fisheries or continental shelf jurisdiction.

Therefore, the large number of agreements or other arrangements entered into by states to allow for foreign fishing within the zones of coastal jurisdiction may seem to spring from reasons of politico-economical expediency rather than from legal requirements. It may be agreed that they do not represent an opinio juris, which is, as was emphasized by the ICJ in 1969, an essential element in the formation of customary law [47]. Earlier agreements relate to a considerable extent to voisinage and to the phasing-out of foreign fishing in connection with the extensions to 12 nautical miles, situations that are clearly different from the claims which have played a major role at UNCLOS III and that for this reason may be of little value in the formation of a legal custom.

But there also is another possible construction which may fit in well with existing state practice -- the traditional Latin American maritime zones, as well as the more recent zones based on the UNCLOS III deliberations -- and in particular with the sui generis aspect. We may regard the 200-mile EEZ or fishery zone, or in general the 200-mile limit, as a new creation or institution of international law; and this may warrant the submission that it is the existence of such a new rule that must be supported by a sufficient amount of state practice.

Following this line of thought, it may be argued that state practice does not prove the existence of full or unlimited sovereign rights of coastal states in the sense that such a state may appropriate the resources of the extended zone in the manner it chooses and neglect the need for conservation. Indeed, the very development of the 200-mile zones has been intimately connected with the idea of conservation. This goes for the traditional Latin American practice, as well as for that inspired by UNCLOS III. The preambles of the 1947 Proclamations of Chile and Peru refer to the two Declarations of 1945 by President Truman [48]: one concerning the continental shelf and the other concerning conservation [49]. The duty of the coastal states to protect the living resources of the sea, as opposed to the mere right of exploitation, was of paramount importance also in the ensuing practice, e.g., the Joint Declaration of Chile, Peru and Ecuador of 18 August 1952 [50]. Conservation is also an essential element of more recent practice, regardless of whether or not a coastal state copied the exact formulae of the negotiating texts or the Convention on the aspect of conservation and management in addition to the aspect of exploration and exploitation.

Obligations of Conservation and Obligations of Participation in Customary Law

Consequently, it appears that state practice presents a strong case for the submission that international law presently allows coastal state jurisdiction in a special zone and that this jurisdiction is based on sovereign rights in combination with the obligation to take effective measures of conservation. In modern law, the obligation to conserve can probably also be built on more general considerations, i.e., independently from the specific practice relating to the 200-mile zone.

In regard to the participation of other states, it seems more difficult to present a line of argument to the effect that there is an obligation under international law. State practice does not give the impression that such an obligation is an indispensable element and one of the reasons for the creation of a new zone, as is the case with conservation. The large number of agreements on participation in existence may easily be explained away as resulting from considerations other than a legal obligation [51].

However, there may also be room for the contention that state practice up to now does not prove the existence of a right to an exclusive zone if that right is understood to mean that a coastal state may establish a zone for its own benefit only, without regard to the fishing interests of others.

The view that there is no sufficient basis for a truly exclusive zone might to some degree be built on the 1974 judgment of the ICJ [52], which refused to accept the right of Iceland to establish an exclusive zone. In the Court's opinion, only more limited powers were accorded to certain coastal states in the zone between 12 and 50 miles, and coastal states were not entitled to claim exclusive rights with a general prohibition of foreign fishing. Iceland should have entered into negotiations in order to share the catch, albeit with a "preferential" share for its own fishermen. While the judgment as such can probably not be upheld as against subsequent state practice, the premises of the Court may, nevertheless, lend support to the theory that only a more limited type of jurisdiction is established in favor of coastal states in the special zone and that there is an obligation to give access to certain other interested states.

As the term "exclusive" in regard to the EEZ is a term of art, the extensive use of the same term in state practice should not be invoked against these possible conclusions. However, it may be maintained that the more recent practice of states tends to prove that there is at least one aspect where the EEZ is truly exclusive, i.e., the exercise of jurisdiction. There seems to be no basis in practice for requiring a system of joint jurisdiction or for requiring that limitations on foreign fishing beyond 12 nautical miles can only be achieved through agreement. Both national legislation and bilateral treaties seem to confirm quite clearly that the regulatory powers, including the power to allocate fishing rights, are vested in the coastal state. Leaving aside the possible objection that the present regime is of a transitory nature, state practice

seems to have arrived at a definite solution in the sense that the special zone is subject to the exclusive jurisdiction of the coastal state. The only remaining question is whether the present practice of allocation by agreement on the basis of coastal state sovereign rights is to be regarded as a limitation on these sovereign rights or merely as a matter of political expediency.

A strong objection against the use of the 1974 judgments as precedents in regard to 200-mile EEZ's or fisheries zones is, of course, that practice based on "sovereign rights" results in zones that are entirely different from the system of "preferential rights" based on negotiations as envisaged by the Court in 1974 [53].

Where regional commissions are concerned, it is probably too early to draw any definite conclusion. But it is to be expected -- and this trend is already evident in the Northeast Atlantic Commission (NEAFC) [54] -- that conservation measures within the 200-mile zones will be established by each individual coastal state. The role of the regional commissions will be to serve as fora for discussion and coordination of different national measures, to assist the coastal state in the gathering of data, and possibly to recommend solutions [55].

The Fixing of a "Total Allowable Catch" According to Customary Law

We may now turn to a more detailed examination of some of the possible limitations on the exercise of coastal state rights to the extent that it might be argued that such limitations, with the above reservations, emerge from the existing legal material.

A first question that arises is what is implied in the setting of a "total allowable catch" (TAC) [56]. Having established that the coastal state has sovereign rights in regard to the regulation of fisheries in the extended zone, one may wonder whether there is any interest in specifying that the coastal state must establish a TAC. If the coastal state may decide what parties are to be allowed to fish, as well as the amounts to be caught and the other conditions to apply, it goes without saying that the coastal state can also fix the TAC. That TAC may be regarded as nothing more than the figure which emanates from the addition of the quotas allotted to the various foreign states together with the quantities to be taken by the coastal state itself.

However, the rules on TAC in the international documents that have served as an inspiration for national policies and the formation of international custom are intended as something more than a mere repetition of the principle of sovereign rights. The idea of a TAC is connected with the limitation of coastal state rights in the EEZ. In the Convention the rights of coastal state in the zone are not the same as those that apply to the sea-bed and subsoil of the continental shelf by virtue of the 1958 Convention or relevant customary law.

The term "allowable" seems to convey the idea that there must be a limitation on the rights of the coastal state, as well as on the rights of others. There is to be no complete freedom of action; even the "sovereign" rights are restricted to what is "allowable." It may be argued that "sovereign" is not an adequate term: the constraints operating on the rights are those of nature and not those laid down by an international organization or by another state; it is a general characteristic of a state's sovereignty that it is limited to such natural resources as are found within its territory or in other areas subject to its sovereignty. It may, nevertheless, be said that the notion of an "allowable" catch has a juridical connotation that makes it different from the biologically-oriented notion of a "sustainable yield", be it "maximum" or "optimum."

More precisely, the idea of a TAC seems to imply two important restrictions on the sovereign rights of coastal states. The first restriction is primarily resource-oriented: there is no right to catch whatever amount the coastal state or others might wish to utilize because of short-term economic benefits or because there is no effective regulation of the fisheries in question. There must be a TAC, and fishing effort must be kept within that maximum. However, this may not exclude the possibility that for certain stocks the existing total harvesting capacity, or the actual fishing effort, is so small in relation to the size of the resources that overfishing is impossible. In that case, the formal fixing of a TAC in tons or numbers can be dispensed with.

The second aspect of the TAC is of a politico-economic nature: it deals with the allocation of the right to fish to other states. Together with the fixing of a coastal state's harvesting capacity, the fixing of a TAC is also instrumental in deciding the amounts available to the fishing fleets of other countries. Thus, the TAC is relevant in establishing the total quantity to be caught by others, while additional provisions of the Convention impose certain restrictions on the freedom of the coastal state in the sharing-out of that total quantity. As this aspect of the TAC is an element of the rules concerning the right to fish of other states, it may perhaps be examined most easily in that connection.

The Allowable Catch in Regard to Conservation

As regards the first limitation on a state's right to utilize living resources within its jurisdiction, it may have a certain basis in more general and more fundamental considerations of international law than those relating to special maritime zones.

Article 2, paragraph 2, of the 1958 High Seas Convention qualifies the right to take part in fishing activities on the high seas with an obligation to pay due regard to the right of other states to exercise the same right. Indeed, this provision was invoked by the ICJ in 1974 [57]. However, the advent of the EEZ with its limitation of the rights of other states, as well as the fact that the Convention's terminology excludes the EEZ

from the high seas fisheries regime, have put this article in a somewhat different light.

But even if fishing activities are conducted wholly within the limits of national jurisdiction, it seems that traditional international law must contain some restrictions on the right to exploit a renewable resource, particularly in the case of a "shared resource" [58], i.e., when a stock of fish migrates into the zones of other states. More novel is perhaps an obligation to limit the total catch if the entire stock is found within a single EEZ and if the coastal state's harvesting capacity exceeds the total "allowable" catch so that no rights of other states are involved. Even in this situation, other states may have an interest in conservation, e.g., in view of future changes in the available stocks or a possible reduction of the coastal state's harvesting capacity, for example, by a transfer of fishing effort to other populations of fish.

Given that there may be certain more far-reaching principles concerning the limitation of catches, the role of custom in the EEZ and in other zones may, first of all, be to give evidence of such general principles or to reinforce them. Furthermore, practice may serve to establish a more firm and precise obligation to avoid over-exploitation. There is here a certain procedural element which may prove to be of great value in the efforts to obtain an optimum utilization in the interest of the entire world community: the principles and practices concerning the TAC make a state's right to fish within its own waters conditional upon its undertaking a serious assessment of the available resources and of the fishing efforts that may be undertaken without serious or even irreparable damage to those resources.

Examples From State Practice on the TAC

An evaluation of state practice on TAC's meets with considerable difficulty. In the first place, a state may obviously have reasons of its own for limiting the catch in its zone and for conserving the resources. Thus, existing practice need not be the result of any legal obligation. Second, national legislation often lays down the sovereign rights or, more generally, the jurisdiction of the coastal state in regard to the resources without specifying the different elements or instruments to be used in the exercise of those rights, such as the fixing of a TAC. Among this latter group, we find in particular countries which have extended their fisheries limits to 200 miles in accordance with recent trends but which at the same time have retained their earlier legal framework for regulating fishing within their fisheries zone. The United Kingdom, Denmark, Canada, and Ireland belong to this group [59]. The Proclamation of the Federal Republic of Germany of 1976 on the creation of a 200-mile fisheries zone states in article 2 that fishermen from the member states of the European Communities will have the right to fish in the extended zone and that fishermen from third countries may fish "only with special permission or on the basis of agreements with those countries"

[60]. Several of the more recent members of the 200-mile club, on the other hand, have followed the UNCLOS III texts by making provisions for the establishment of a TAC and the allocation of quotas to foreign fishermen. States in this category are the US, the USSR, Mexico, New Zealand, Norway, and Portugal [61]. The Norwegian law does not make the fixing of a TAC mandatory: the King in Council "may" issue regulations on TAC's.

Is There an Obligation for Optimum Utilization?

By virtue of its sovereign rights may a coastal state refrain from the exploitation of certain living resources without permitting others to take the allowable catch instead?

Considerations concerning the nutritional needs of the world population as a whole have played a certain role in UNCLOS III [62]. And it seems reasonable that a coastal state should not be given the right to exclude citizens of other states from utilizing a certain resource, as this may bring them great economic difficulties and dislocations, unless the citizens of the coastal state or of a third state obtain at least some benefit from its action.

Looking again at the particular situation at UNCLOS III and the first series of extensions to 200 miles in accordance with UNCLOS III patterns as from 1976, one may find a certain basis for arguing that the general acceptance of a 200-mile system has been subject to certain conditions, one of those conditions being that a coastal state may not exclude or curtail foreign fishing without sufficient reason. However, now that some time has passed, such an idea of a quid pro quo already may have become obsolete: with the vast number of extensions carried out so far, coastal states do not have the same incentive to arrive at a compromise and to give rights to others in order to obtain international agreement and recognition of their 200-mile zones [63]. This line of thought may even influence the appraisal of state practice in lieu of the Law of the Sea Convention, i.e., prior to its adoption in 1982.

Generally speaking, the nature of the objective of "optimum yield" is such that national legislation based on this objective [64] may be understood as representing no more than a country's own ideas on a sound resource policy irrespective of the possible requirements of international law.

The Obligation to Avoid Over-Exploitation

We are probably on more firm ground in relation to the obligation not to over-exploit the available resources. This obligation is part of a general principle on conservation, and it has been accorded a prominent place in the different laws and other texts of state practice; it also was an important element of the ideas that were at the basis of the developments that occurred. In this respect, reference can be made to what was said earlier on conservation as an indispensable part of the rationale for extended coastal state jurisdiction.

Is There a Customary Law on the Right of Access for Foreign Vessels?

In the above, we have already considered to some extent the question of whether there is an obligation to allow the fishermen or vessels of other states to take part in the exploitation of living resources within the 200-mile EEZ or fishery zone.

Such an obligation may, on the one hand, be closely connected to the issues that have been discussed: the world's nutritional problems, a possible surplus over the harvesting capacity of a coastal state, and the need to leave that surplus to others in order to attain the objective of optimum utilization. On the other hand, the granting of access to foreign fishermen may be justified it itself, independent of the ideas of full utilization and coastal state harvesting capacity.

The practice of several states has allowed for foreign participation in a far greater range of cases than those provided for by the texts of UNCLOS III. It may seem a paradox, but the result of this may be that there is less possibility of developing a uniform rule of customary law on participation. The fact that several coastal states obviously grant access without feeling bound to apply the Convention's criteria may be interpreted to mean that a coastal state has complete freedom of choice as to whether or not foreign states will be allowed to fish, there being no legal right of access.

Carroz and Savini list three categories of agreements [65]. They are:

- Agreements providing for the phasing out of operations by foreign fishing vessels in newly established zones of national jurisdiction as local fisheries gradually take the place of these vessels;
- Agreements granting reciprocal fishing rights to vessels of both parties in their respective zones of jurisdiction; and
- Agreements prescribing the terms and conditions under which the fishing vessels of one party may operate in waters under the jurisdiction of the other. Most agreements belong to this category [66].

In my view, there is at least one more category, i.e., agreements based on voisinage or on other special concessions granted to neighboring countries or to other members of a regional organization such as the European Economic Community [67]. Here, it is the special relationship between the states concerned that explains the mutual granting of access, whereas the first two categories of agreements, phasing-out and reciprocity, usually relate more directly to interests in natural resources.

Furthermore, the third category of agreements is not of the same order as those on phasing-out, reciprocity, and voisinage. Agreements specifying the conditions for access, licensing, etc., may also cover the other categories listed, e.g., if national legislation only allows reciprocity agreements on the

condition that any rights of access under the agreement are limited to a certain number of vessels that must obtain a license from the authorities of the coastal state [68].

At the same time, phasing-out and reciprocity are only illustrations of the different conditions and considerations that may apply in the bilateral relationship between sovereign states if one of them grants the other access to its fishing zone. Clearly, the above categories are important, but the list is not exhaustive. In state practice, the issuance of fishing permits to foreign vessels may also be a source of revenue, thus furthering the coastal state's economic development in general [69]. A special problem is presented by agreements between a coastal state and private companies or the issuance of permits to foreigners directly on the basis of domestic law. In such cases, the terms and conditions are seldom subject to open publication [70].

Criteria and Conditions for the Allocation of Fishery Rights to Other States

The Criteria and Conditions of the Law of the Sea Convention

In the above, we have reviewed the fundamental provisions of the Convention on the obligation to allow fishing by foreign states in the EEZ. It was unavoidable that in this discussion we already touched upon the basic criteria and conditions for access, but at this stage we intend to examine these criteria and conditions somewhat closer.

It may be said that in general the coastal state has a wide measure of discretion in regard to the distribution of that part of the allowable catch of its EEZ which it cannot harvest itself. The rule on the granting of access to foreign states to the surplus is mandatory -- the coastal state "shall" give access according to article 62, paragraph 2 -- but in the implementation of this basic obligation the coastal state has evidently a certain freedom of action as to which states will be given the right to fish and as to the quotas to be allocated to the different foreign states with respect to the various species and fisheries in the EEZ. However, this right of decision is not purely arbitrary [71]. As is said in article 62, paragraph 3: In giving access to other states the coastal state must "take into account all relevant factors," including the factors mentioned specifically in the same paragraph 3.

That the implementation of the basic obligation to give access to a surplus must be considered from case to case and from one year to the other also follows from the fact that it must be effectuated through "agreements" or other "arrangements" between the coastal state and the other states which obtain a right of access. If no agreement is reached, the coastal state may refuse to give access to the state concerned or it may use the option of an "arrangement" by establishing the quotas unilaterally in its own legislation.

The criteria specifically mentioned in paragraph 3 are the significance of the living resources to the economy of the coastal state concerned, its other national interests, the requirements of developing states in the subregion or region, and the need to minimize economic dislocation in states whose nationals have habitually fished in the EEZ in question or which have made substantial efforts in research and the identification of stocks. This list -- which, as was said, is not exhaustive -- also mentions the provisions of articles 69 and 70 concerning land-locked and geographically disadvantaged states; these provisions would, however, apply anyway, i.e., apart from the reference in paragraph 3.

Articles 69 and 70 and their Relationship to the General Provision of Article 62, Paragraph 2

Apart from reasons of formal presentation, one may wonder as to the need for specific provisions in articles 69 and 70 concerning land-locked states and states with special geographical characteristics. Those cases are to be taken into account under article 62, the general provision on the distribution of a surplus. Articles 69 and 70, with the exception of paragraphs 3 and 4, respectively, are also limited to the surplus. In addition, the substantive right accorded in these articles is no more than participation "on an equitable basis," which might also follow from article 62. As for the other considerations mentioned in articles 69 and 70, they would seem to be covered by the general reference in article 62 to "all relevant factors."

From the legal scholar's viewpoint, the structure may appear unsatisfactory: article 62 contains rules concerning the right to fish for a surplus and its allocation among foreign states, while articles 69 and 70, found much later in the text, deal with the allocation of that same surplus to a specific group of states. This creates questions of interpretation regarding the relationship between articles 69 and 70 and the general surplus rule in article 62. For example, should the states expressly mentioned in articles 69 and 70 be given a preference over other states which may be given rights under article 62, such as those which have traditionally fished within the newly established EEZ? Or is the choice among the different categories of states left to the discretion of the coastal state? It seems difficult to deduce a preference from the simple fact that the land-locked states and the GDS have a double basis for a right of access. In the interests of legal clarity, it would have been better if the provisions on the right of access to a surplus had been consolidated in one article.

It is submitted that articles 69 and 70 must be read and understood against the background of the negotiating history of the Conference. It seems reasonable to argue that the interests of land-locked and geographically-disadvantaged states are among the initial factors to be "taken into account" by a coastal state in the exercise of its discretionary powers concerning the distribution of a surplus under article 62, paragraph 3. As

this provision indeed refers to articles 69 and 70, it is to be expected that a certain allocation under article 62 will, in practice, also suffice to fulfill the requirements of articles 69 and 70, at least in most cases. The language of the Convention leads to the conclusion that land-locked states and states with special geographical characteristics must have a somewhat stronger position in some respects than other possible participants in the fisheries of the EEZ. The states covered by articles 69 and 70 "shall have" a "right" to fish that is not contingent upon a coastal state's interpretation and application of its obligations. Clearly, the stronger language in favor of third-party states in articles 69 and 70 must prevail over that of article 62, which does not formulate the right of participation as a right appertaining to any single state or group of states.

Another difference is that under article 62 the coastal state has a choice between "agreements or other arrangements" -- language that seems to include the somewhat precarious system of fishing rights accorded by unilateral legislation as an alternative to a treaty binding the two governments. Under articles 69 and 70, the terms and conditions must be determined "through bilateral, subregional or regional agreements" [72] and the specific rules of articles 69 and 70 must again prevail. According to this language, there is here a pactum de contrahendo. Relevant in this context are the considerations of the ICJ in the North Sea Continental Shelf Cases and in the Fisheries Jurisdiction Cases of 1969 and 1974 [73] with reference to the basic obligations of states in respect of the peaceful settlement of disputes under article 33 of the UN Charter. Negotiations must be meaningful; i.e., they must be conducted with a view to reaching agreement on a result acceptable to both parties and in accordance with the provisions of articles 62, 69 and 70 of the Convention. If no agreement should be reached after the exhaustion of the obligation to negotiate, the duty to allow participation may probably be discharged through unilateral legislation by the coastal state.

Further Comments Concerning Land-Locked States and States with Special Geographical Characteristics

It appears that the most significant practical effect of articles 69 and 70 will occur in cases where a coastal state, in distributing access to a surplus under article 62, purports to exclude a certain land-locked state or GDS from all fishing within the EEZ. In such a case, the "right" laid down in articles 69 or 70 might be violated. If the quotas are allocated on the basis of all the relevant factors of article 62, this seems prima facie to convey also the idea of "equitable" participation, thus fulfilling the obligations deriving from articles 69 and 70.

Even if a coastal state were to refuse to allocate any portion of a surplus to a given land-locked state, that state would not necessarily be entitled to claim a quota as its individual right in regard to the EEZ of the coastal state in question. What is "equitable" must be considered in reference

to the subregion or region as a whole under article 69, paragraphs 1 and 2 (b), and article 70, paragraphs 1 and 3 (b). If a land-locked state or a GDS has been given sufficient rights of participation in the EEZ of state A, that may be a valid reason for not granting any rights in the zone of state B.

As for the rules on participation beyond the surplus -- article 69, paragraph 3, and article 70, paragraph 4 -- it goes without saying that these have a special standing and cannot be understood as merely specific aspects of the general surplus rule of article 62. However, the rights under paragraphs 3 and 4 are not the same as those of paragraphs 1: the states concerned must cooperate in the establishment of equitable arrangements "as may be appropriate in the circumstances and on terms satisfactory to all parties." Again, the situation in other parts of the subregion or region must be considered, not only the situation in the EEZ of a single coastal state.

Generally, articles 69 and 70 are not limited to developing states. However, this is the case as regards participation beyond the surplus under article 69, paragraph 3, and article 70, paragraph 4. Furthermore, there is a certain discrimination between developed and developing states in that articles 69 and 70 restrict the right of participation of developed states to the EEZ's of other developed states of the same subregion or region under paragraphs 4 and 5, respectively.

Subordination of Articles 69 and 70 to the General Norm of Article 62 on the Basis of Conference History

The negotiations at UNCLOS III seem to confirm the view outlined in the preceding paragraphs that articles 69 and 70 are part of, and are subject to, the general norms on the distribution of resources of article 62 [74]. If articles 69 and 70 contain express terms that are different from those of article 62, articles 69 and 70 prevail. Apart from this situation, the rules of article 62 apply, including the principle that fisheries within the EEZ, even those carried out by vessels of a land-locked state or a GDS, fall under the jurisdiction of the coastal state.

The relationship between the draft article 62 on the one hand and articles 69 and 70 on the other was clarified in the 1976 RSNT by the use of the term "subject to" in the latter two articles: the right to fish of land-locked states and GDS should apply subject to the provisions of article 62. This proviso was important especially as it made the surplus limitation of article 62 binding also vis-a-vis land-locked states and GDS. Because of disagreements on this matter, there was a later amendment in favor of the coastal states that limited the rights of land-locked states and GDS under articles 69 and 70 in express terms to the surplus. This should, however, not result in any change as regards the general subordination of articles 69 and 70 to the conditions of article 62, which had earlier been expressed in a general manner by the formula "subject to."

The Position of Coastal States "Overwhelmingly Dependent"

Article 71 accords a special protection against the application of articles 69 and 70, but not against the general rules of article 62, to a coastal state that is "overwhelmingly dependent" upon the exploitation of the living resources of its EEZ.

Interpretation of the Term "Surplus" [75]

The obligation to give access to a surplus finds its raison d'etre in the need to use all the available sources of protein in the interests of the entire international community and of the developing countries in particular. It seems unreasonable to argue in favor of a right of coastal states to prohibit foreign fishing of a surplus as the needs of a coastal state, which are the basis for the development towards extended fisheries zones and which form an important part of the legal reasoning in support of that development, do not seem to go further than the catch which that state is capable of harvesting. This element in particular is part of the justification for article 62, paragraph 2. It is uncertain to what extent such reasons, relevant as they may be from a de lege ferenda viewpoint, can be regarded as decisive de lege lata in regard to general, non-conventional law. However, as far as the Convention is concerned, they clearly form part of the basic material for the interpretation of its provisions.

It seems evident that the TAC and the harvesting capacity and, consequently, the possible existence of a surplus, must be determined separately in regard to each stock occurring in the EEZ. However, at the same time, account must also be taken of that part of the harvesting capacity which derives from a transfer by the coastal state of fishing effort from one stock to another in its zone, e.g., in view of past over-exploitation of the first stock.

Criteria for Allocation Under Customary Law

As for the law outside a binding conventional arrangement, one may first pose the question, already discussed above, of whether there is any obligation at all on the part of the coastal state to allow resource-sharing within its 200-mile zone. If the answer is in the negative, one may probably also conclude that the coastal state is completely free to decide on the criteria for allocation should it nevertheless open its zone to foreign fishing. However, the possible existence of treaty provisions on national or most-favored-nation treatment must be borne in mind.

Even if it is accepted that, as a result of the development of the 200-mile zones, a coastal state is not completely free to reserve all fishing for its own nationals, it may be questionable whether there are binding rules concerning the criteria and conditions governing access by foreign fishermen. As their participation must in practice take place on the basis of an agreement, it is tempting to cite the observations of the ICJ in the 1969 North Sea Continental Shelf Cases in relation to

the content of the obligation to negotiate a solution on boundary issues. There are, as the Court pointed out, no limitations *per se* as to the considerations which sovereign states may find relevant in the common regulation of their relationship, nor as to the terms and the conditions they might wish to apply [76].

There may be a degree of interdependence between two questions. If there are obligations under customary law to grant fishing rights to, for example, land-locked states or GDS and if such states demand their share, the coastal state will be prevented from making allocations in accordance with other criteria. This will apply at least in regard to that part of the TAC which is taken up by such "mandatory quotas" which in theory might even absorb the entire TAC or the entire surplus.

The right to allocate quotas to other states *per se* would not seem to be anything special in customary international law. The sovereignty of a state over its land and sea territory gives it full freedom of choice as to whether it will exploit the resources found within its territory or refrain from doing so. A state is also the master of deciding whether other states should be invited to join in the exploitation, which states should be given this opportunity, and what conditions to apply. The same should be true in regard to resources subject not to "sovereignty" but to "sovereign rights" -- a situation well known in relation to the continental shelf and now also applying to the economic zone.

The fact that a state has allocated living resources in its EEZ to another state on the basis of certain criteria is *per se* only evidence of its rights and jurisdiction over fisheries within the EEZ. What really needs evidence in, and support from, state practice in order to prove the existence of a separate rule of customary law is the obligation to apply a certain criterion to the exclusion of, or in preference to, another. In particular, it may be of interest to find that a state has refrained from allocating a quota to another state on the basis of a certain criterion. For example, a coastal state has been offered economic aid in return for fishing rights, but instead it has chosen to give such rights to a land-locked state without obtaining any favor in return but on the grounds of that state's special interests and characteristics. Or, one may find evidence in an opposite direction: allocation has taken place without any reference to, or perhaps even contrary to, the principles of the Convention aspiring to become customary law. The coastal state simply sells the right to fish to the highest bidder.

At first, it may seem self-evident that there can be no mandatory rules concerning the criteria for granting access if there is no obligation at all to give quotas to other states. If, for example, the entire TAC can be harvested by the coastal state, there should be no obligation to share the rights of exploitation. Consequently, one may argue, there must also be the freedom not to use a coastal state's full harvesting capacity and, thus, discretion to allocate quotas. But even

this is not as simple as it may seem. It may be argued that the priorities of other states must be taken into account if the interests of a coastal state's population are not so strong as to warrant the full use of its harvesting capacity -- interests that are, after all, the raison d'etre for the establishment of the EEZ. From practice in other fields, one is familiar with the mechanism of the most-favored-nation clause: once a favor is extended to one state, it must also be extended to another state. Certain ideas in relation to articles 69 and 70 may have similar effects if the concept of priority is introduced.

However, it is believed that such a system can only be applied if it has been laid down in a treaty. As far as customary law is concerned, it seems difficult to establish any rule of most-favored-nation treatment or of priority within that part of the TAC which the coastal state is free to reserve for its own fishermen.

The Practice of States

In the 1969 North Sea Continental Shelf Cases, the ICJ had to evaluate agreements offered as evidence of a customary rule on delimitation. It was found by the Court that agreements providing for delimitation on the basis of equidistance were not conclusive evidence of a legal obligation, as they might be the result of convenience and of the views of the parties as to a reasonable and practical solution [77]. The same may be the case with agreements and other arrangements concerning fishing rights. They do not necessarily represent a mandatory rule of law, as opposed to a free choice by the parties based on mutual interests.

It may be expected that state practice in the matter of fishing rights will evolve along patterns that are somewhat different from those of the Convention. While the Convention gives a special preference to land-locked states and places them clearly in a better position than states that have traditionally fished in a coastal state's zone [78], the coastal state may have in practice a greater need to reach an understanding with the latter group of states. Here, it may be of particular relevance that the EEZ's have been established and that practice has developed without awaiting the final outcome of UNCLOS III and the entry into force of the Convention.

In view of the lack of a formal basis for extended fisheries jurisdiction, it was important for coastal states to obtain the recognition of those states that might be in a position to contest the legality of the new zones and cause practical jurisdictional difficulties. Those were primarily the traditional fishing nations of the Convention as such. In the case of the Convention, the relevant considerations were equity, the political situation in the Law of the Sea Conference with its particular emphasis on the needs of developing countries, and the procedural emphasis on consensus.

As the system of optimum yield, harvesting capacity, and surplus is not very clear in the UNCLOS III texts -- particularly in view of a possibility of access when the coastal

state can harvest the entire TAC -- it may become even more difficult to arrive at a firm rule of customary law. At the moment, state practice presents us with a number of cases where the rights of foreign states are laid down in relation to a surplus [79], but it is difficult to find support in state practice for any custom going beyond this. Cases of states with a greater degree of flexibility under their national laws [80] and cases of bilateral agreements going beyond the surplus -- for example, if the parties exchange quotas that are greater than their respective surpluses [81] -- may be explained as the result of convenience. There is no basis for a contention to the effect that we have any firm practice going further than access to a surplus.

As there is a fairly widespread practice in this respect, it might be theoretically arguable that there is an obligation to seek arrangements on the phasing-out, or other forms of accommodation, of foreign interests affected by an abrupt change in fisheries limits. However, it may again be questionable to regard this practice as the expression of a rule of law [82]. Taking the issue further, we may ask whether there is evidence in practice of a minimum "standard of reasonableness" for the exercise of coastal state competences in view of the difficulties caused to foreign fishermen by extended fisheries limits [83]. Here, an interesting feature is the practice of certain Latin American countries on lenient enforcement in a 10-mile belt on either side of a boundary [84].

The Regulatory Powers of the Coastal State

Under the Law of the Sea Convention as well as under customary law, there is no doubt concerning the general principle of coastal state jurisdiction. The coastal state may regulate fisheries within its 200-mile zone as it finds appropriate, it may enforce its regulations, and its courts are competent to decide upon issues there arising.

This also applies if a foreign state is accorded fisheries rights in a zone of extended jurisdiction. It may, however, be that the coastal state and the other state concerned have agreed not only on the right to fish, but also on the regulatory regime applicable to fishery matters. At present, this appears to be a result of convenience and not of any legal obligation.

The fisheries regulations of the coastal state may sometimes seriously hamper or curtail the exercise of fishing rights granted to other states. If there exists a treaty obligation, or an obligation under general customary law, for a coastal state to allow foreign fishing within its 200-mile zone, it seems reasonable to conclude that the regulatory powers of a coastal state cannot be unlimited. For example, it may not freely issue and enforce rules on the construction and equipment of foreign vessels that would make it impossible in practice to enjoy the fishing rights existing under international law.

Article 62, paragraph 4, of the Convention spells out the regulatory powers of coastal states in relation to foreign fisheries in the EEZ in great detail. This provision is not

exhaustive: the powers are listed after the term "inter alia." Interpretation a contrario -- excluding other measures by the coastal state is, therefore, not permissable. However, it seems that some of the specific items mentioned in the sub-paragraphs of paragraph 4 may be considered as more or less exhaustive within their own particular fields. For example, "adequate compensation in the field of financing, equipment and technology relating to the fishing industry" is set out as a possible condition "in the case of developing coastal states." A reasonable interpretation of this provision might be that a similar compensation for the right to fish cannot in principle be demanded by a developed coastal state; otherwise, the reference to developing states in the subparagraph would be without legal meaning.

Another observation is that obviously the coastal state's regulatory powers as laid down in article 62, paragraph 4, are intended to be rather broad. They include, for example, the competence of requiring the landing of all or part of the catch in the ports of the coastal state. Thus, it appears that every less far-reaching measure which would not significantly affect the right to fish is permitted [85].

The Continental Shelf

The Regime of the Continental Shelf and the Right to Fish

In general, the development of the continental shelf as a legal institution is not relevant for fisheries. The rights of coastal states over the continental shelf concern the sea-bed and subsoil and not the superjacent waters. In earlier Latin American Proclamations, there was a tendency to include also the so-called epicontinental sea, i.e., waters overlying the shelf, in the continental shelf doctrine. This view has not been recognized by the majority of other states. It seems that coastal state claims in relation to fisheries as part of the continental shelf doctrine have been superceded by claims to a 200-mile fishing zone -- the latter claims at present being accepted in the general practice of states.

The regime of the continental shelf may affect the right to fish. The erection of installations for the exploration or exploitation of sea-bed mineral resources will in fact prevent fishing at the site of such installations. Furthermore, there is usually a general prohibition for all vessels not connected with exploration and exploitation activities to enter the safety zones around such installations. These zones generally have a radius of 500 meters.

There have also been prohibitions of certain types of fishing operations even beyond the 500-meter safety zone. Such prohibitions may concern the use of bottom trawl gear, purse seine nets, etc., as these may damage sub-sea structures. The competence of the coastal state to establish such rules may seem to derive from the general jurisdiction of the coastal state in respect of continental shelf activities, which may include the taking of reasonable measures for the protection of installations and structures.

The Rule on Sedentary Species

The rule on sedentary species is an exception to the principle that the rights over the continental shelf do not confer upon the coastal state any right to fisheries as such [86].

A well-known historical precedent, which goes back even to Vattel and the 18th century [87], is the recognition that certain pearl fisheries belong exclusively to the coastal state by virtue of long usage. In particular, this has been the case in regard to pearl fisheries off Ceylon (Sri Lanka) and Bahrein beyond the traditional limit of three miles [88].

Presently, a general rule on all sedentary species seems to have become part of international law: these species are included in the general regime of the continental shelf. Article 2, paragraph 4, of the 1958 Geneva Convention on the Continental Shelf states that a coastal state's exclusive right to the shelf comprises the sedentary species. It defines these species as "organisms which, at the harvestable stage, either are immobile on or under the sea-bed or are unable to move except in constant physical contact with the sea-bed or the subsoil" [89]. The same language is used in article 77, paragraph 4, of the Law of the Sea Convention.

As for non-conventional law, it seems likely that the ideas contained in article 2 of the Geneva Convention have acquired the status of general law. Reference here may be made to the 1969 judgment in the North Sea Continental Shelf Cases, in which the Court made a precise distinction between, on the one hand, articles 1 through 3 of the 1958 Continental Shelf Convention and, on the other, provisions such as article 6 on delimitation. Articles 1 through 3, therefore presumably including article 2, paragraph 4, on sedentary species, were regarded as expressive of general international law, valid also vis-a-vis states not parties to the Convention [90].

Anadromous and Catadromous Species

Definitions

Fisheries for anadromous and catadromous stocks have been dealt with specifically in articles 66 and 67 of the Convention. The main issue in relation to these stocks is that they spend part of their life cycle in fresh waters; i.e., within the waters included within the land territory of a state, and part of it at sea. "Anadromous" means "ascending rivers to spawn." "Catadromous" means "descending to lower river or sea to spawn." Salmon is a well-known example of the first species and eel of the second.

The Rules of the Law of the Sea Convention

Articles 66 and 67 are found in the chapter on the EEZ, but they have a far wider scope. In fact, their major impact is that they establish special rules concerning the regime of the high seas: the general freedom of fishing on the high seas does

not apply to these species. The harvesting both of anadromous and of catadromous species may take place "only in waters landward of the outer limits of exclusive economic zones" (article 66, paragraph 3, and article 67, paragraph 2). In the article on anadromous stocks, a certain exception is made for cases where the prohibition to fish on the high seas would "result in economic dislocation for a state other than the state of origin."

The sovereign rights of the coastal state in its EEZ, or a 200-mile fisheries zone, apply in principle to these species. However, there are certain obligations for the coastal state that may go further than those in respect of biological resources in general. Articles 66 and 67 are based on the concept that "primary interest in and responsibility" for anadromous stocks and "responsibility for" catadromous species are vested in one single state or group of states, namely, "states in whose rivers anadromous stocks originate" or "a coastal state in whose waters catadromous species spend the greater part of their life cycle."

The articles also lay down specific obligations of cooperation if more than one state is harvesting these species. Those obligations may possibly be stronger than what is otherwise the case, e.g., with respect to stocks occurring in different EEZ's or in an EEZ and on the the high seas, and they must be based on the concept of primary interest and responsibility as mentioned above.

As for anadromous species, the state of origin even has the power to establish a "total allowable catch for stocks originating in its rivers." This may imply serious restrictions on the otherwise applicable rights of other states to exploit resources found within their EEZ. The Convention here uses the term "total" allowable catch, which obviously also includes catches in the waters of other states; in articles 61 and 62, the Convention refers to "allowable catch," which implies a restriction to the quantities to be taken within a state's own zone.

Article 66, paragraph 3, contains, inter alia, provisions on special considerations to be given to certain states or groups of states. In addition to those states that may have problems as a result of economic dislocation, there are the states "participating by agreement with the state of origin in measures to renew anadromous stocks, particularly by expenditures for that purpose."

Non-Conventional Law

It is doubtful whether the specific rules of articles 66 and 67 can be said to conform to general law. It may be mentioned that for anadromous species there is some evidence of claims to coastal state jurisdiction beyond the 200-mile limit. The USSR Decree of 1976, while conservative in other respects, purports to establish sovereign rights over fish and other living resources in general within 200 miles and over anadromous species of fish within their entire area of migration, except

when they occur within the territorial waters of other states or within economic or fishery zones recognized by the USSR [91].

NOTES

1. In particular on Latin American laws and proclamations, see Ann L. Hollick, "The Origins of 200-mile Offshore Zones," American Journal of International Law, 1977, p. 494 et seq.; Karin Hjertonsson, The New Law of the Sea, 1973.
2. ICJ Rep. 1974, p. 3 and 175.
3. See the reasoning of the ICJ in the 1951 Anglo-Norwegian Fisheries Case, ICJ Rep. 1951, p. 116, in particular at p. 131; also C.A. Fleischer, Fiskerigrensen, folkeretten og den okonomiske sone, 1977, in Norwegian, at p. 64 et seq.
4. Questions concerning the relevance of the reasoning in the two 1974 ICJ judgements in the Icelandic cases in the present situation may require special consideration.
5. The importance of this issue -- jurisdiction over fisheries and biological resources in the 200-mile zone -- is borne out by the fact that more than 90 percent of the world's catch of fish is deemed to be taken within 200 miles from the coast. See, inter alia, Ross D. Eckert, The Enclosure of Ocean Resources -- Economics and the Law of the Sea, Hoover Institution Press, Stanford University, California, 1979, p. 116.
6. Fisheries Case, United Kingdom vs. Norway, ICJ Rep. 1951, p. 115, 132.
7. See note 3.
8. See on state practice, inter alia, UN Legislative Series, National Legislation and Treaties Relating to the Law of the Sea, ST/LEG./SER.B/19, 1980; C.A. Fleischer, "State Practice in Zones of Special Jurisdiction," in: Law of the Sea Institute, 13th Annual Conference, Mexico City, 15-18 October 1979.
9. ST/LEG/SER.B/19, note 8, p. 253, 241; 45; 192; 195; 192.
   United Kingdom Fishery Limits Act, 1976, ST/LEG/SER.B/19, note 8, p. 213; 93, 7, 15; 228; 130.
   Fishing Zones of Canada Order 1977, made under the Territorial Sea and Fishery Zones Act, 1964-65, as well as later orders; ST/LEG/SER.B/19, note 8, p. 233 et seq.; U.S. Fishery Conservation and Management Act, 1976, Public Law 94-265, approved April 13, 1976.
10. United Nations Legislative Series, Laws and Regulations on the Regime of the High Seas, ST/LEG/SER.B/1, p. 6, 16.
11. See ST/LEG/SER.B/19, note 8, p. 63, Tokelau (Territorial Sea and Fishing Zone) Act, 1976; and p. 65, Territorial Sea and Exclusive Economic Zone Act, 1977.
12. ST/LEG/SER.B/19, note 8, p. 4; 47, 50; 85, 88; 120, 126; 215.

13. Ibid., p. 491.
14. See note 9.
15. Interesting observations from a USSR viewpoint may be found in the article by F. Kovalvov, "The Economic Zone and its Legal Status," International Affairs, February 1979, p. 58 et seq.
16. E.g., the law of Portugal, reproduced in ST/LEG/SER.B/19, note 8, p. 93. See also Carroz and Savini, "The New International Law of Fisheries Emerging from Bilateral Agreements," Marine Policy, 1979, p. 79 et seq., at p. 83, concerning the 1978 agreement between Canada and the European Economic Community.
17. Public Law 94-265, approved April 13, 1976, sec. 202.
18. See also C.A. Fleischer, "The Right to a 200-Mile Exclusive Economic Zone or a Special Fishery Zone," San Diego Law Review, 1977, p. 548 et seq. As for the opposite view, see, inter alia, J.C. Phillips, "The Exclusive Economic Zone as Concept in International Law," International and Comparative Law Quarterly, 1977, p. 585 et seq., who states in note 1 at p. 585: "It should be briefly pointed out that the concept of an exclusive zone, of whatever distance, has no present standing in international law." The reason given is that it "appears clearly" from the two 1974 ICJ judgements.
19. Garcia Amador, The Exploitation and Conservation of the Resources of the Sea, 1959, translation from Spanish, p. 81, quoted to this effect, inter alia, by this author in Fiskerijurisdiksjon, 1963, in Norwegian, p. 93.
20. ST/LEG/SER.B/1, note 10, p. 6 and 16.
21. See ICJ Rep. 1969, p. 3, 22 (North Sea Continental Shelf Cases.)
22. See article 2 of the 1958 Geneva Convention on the Continental Shelf and article 77 of the 1982 Law of the Sea Convention.
23. See C.A. Fleischer, op. cit., note 18, p. 548, 567.
24. According to the Convention of 1982 the maximum limit for the territorial sea is 12 nautical miles.
25. United Nations Legislative Series, National Legislation and Treaties Relating to the Territorial Sea, the Contiguous Zone, and the Continental Shelf, the High Seas and to Fishing and Conservation of the Living Resources of the Sea, ST/LEG/SER.B/15, p. 45.
26. ST/LEG/SER.B/19, note 8, p. 215, 223.
27. Ibid., p. 430 (Agreement USA-Mexico) and 436 (US-Spain); Carroz and Savini, op. cit., note 16, p. 83.
28. See Carroz and Savini, op. cit., note 16, p. 79 et seq.
29. Ibid., p. 83.
30. The operative provisions may be of particular significance, as opposed to the preamble. See the Agreement between the US and Mexico of November 24, 1976, which states in the preamble that Mexico will "exercise sovereign rights," while the operative article II/article I allows for fishing rights of vessels of the United States in "the Zone" established by Mexico.

31. See Blix, Treaty-making Power, 1960, p. 119; Lachs, "Recognition and Modern Methods of International Cooperation," British Yearbook of International Law, 1959. See also Mugerwa, in: Max Sorensen et al., Manual of Public International Law, 1969, p. 281.
32. Most agreements seem to take the establishment -- or the intended establishment -- of a zone of special jurisdiction as the point of departure and purport to lay down conditions for the exercise of certain fishing rights in the zone. See, e.g., the 1977 USA-Spain Agreement reproduced in ST/LEG/SER.B/19, note 8, p. 436, which starts with "acknowledging" the US fishery management authority; and the 1976 Canada-Spain agreement, where it is considered in the preamble that Canada "proposes to extend its jurisdiction" and where "account is taken of" traditional Spanish fishing interests, Ibid., p. 422.
33. See on the development and content of special jurisdiction in the 200-mile zone in general, C.A. Fleischer, op. cit., note 3; see also the discussion in: Fiskerijurisdiksjon, 1963, in Norwegian, and Fiskerijurisdiksjon i Norges okonomiske sone, Institut for Fiskerifag, Series D, no. 2/80, 1980, pp. 4-25, in Norwegian.
34. See thus, e.g., the Bahamas, Fisheries Resources (Jurisdiction and Conservation) Act, 1977, sect. 6, reproduced in ST/LEG/SER.B/19, note 8, p. 179; Cuba, Act of February 24, 1977, concerning the Establishment of an Economic Zone, art. 2, Ibid., p. 190; the Federal Republic of Germany, Proclamation on the Establishment of a Fishery Zone of December 21, 1976, sect. 1, Ibid., p. 211; India, Territorial Waters, Continental Shelf, Exclusive Economic Zones and Other Maritime Zones Act, 1976, art. 7, Ibid., p. 47; Mexico, Act of February 10, 1976, and paragraph 8 of article 27 of the Constitution, Ibid., p. 233; Pakistan, Territorial Waters and Maritime Zones Act, 1976, sect. 6, Ibid., p. 85; Sri Lanka, Maritime Zones Law, 1976, sect. 3, Ibid., p. 120; and even the USSR, Decree of December 10, 1976, on Provisional Measures to Conserve Living Resources and to Regulate Fishing in the Sea Areas Adjacent to the Coasts of the USSR, sect. 2, Ibid., p. 253. See also some bilateral agreements such as: Fisheries Agreement between Mexico and Cuba of July 26, 1976, art. II, reproduced in ST/LEG/SER.B/19, note 8, p. 425; and the Agreement between Spain and Canada, Ibid., p. 422.
35. ST/LEG/SER.B/19, note 8, p. 253.
36. Ibid., p. 179 and 180.
37. Ibid., p. 217.
38. Ibid., p. 33.
39. Ibid., p. 245.
40. Ibid., p. 66; see also the 1977 Territorial Sea and Exclusive Economic Zone Act using the wording "young or fry or spawn," Ibid., p. 66.
41. In particular, species of tuna seem to have attracted attention in this connection.

42. ST/LEG/SER.B/19, note 8, p. 217; see the exceptions made in the enforcement order of June 17, 1977, Ibid., p. 225.
43. See Fishery Conservation and Management Act, 1976, sect. 103, according to which the US exclusive fishery management authority does not include "highly migratory species of fish;" and e.g., the US-Spain treaty reproduced in ST/LEG/SER.B/19, note 8, p. 436, art. II, 1 and 7, excluding "highly migratory species" from the term "living resources over which the United States exercises fishery management authority" and thereby from certain provisions of the treaty, but not from the definition of "fish," see art. II, 2.
44. ST/LEG/SER.B/19, note 8, p. 180.
45. On the interpretation of the provisions of the 1982 Law of the Sea Convention and of the preceding negotiating texts, see, inter alia, J. Carroz, "Les Problemes de la Peche a la Conference sur le droit de la Mer et dans le Pratique des Etats," Revue generale du droit international, 1980, p. 705; C.A. Fleischer, op. cit., note 3; C.A. Fleischer, op. cit., note 18; D.M. Johnston, Regionalization of the Law of the Sea, 1978; J.C. Phillips, op. cit., note 18; Rahmatullah Khan, "The Fisheries Regime of the Exclusive Economic Zone," Indian Journal of International Law, 1976, p. 169 et seq.
46. On the term "surplus," see J. Carroz, "Le nouveau droit des peches et la notion d'excedent," Annuaire Francais de Droit International, 1978, p. 851; J. Carroz, op. cit., note 45.
47. North Sea Continental Shelf Cases, ICJ Rep. 1969, p. 3, 42 et seq.
48. ST/LEG/SER.B/1, note 10, p. 6 and 16.
49. ST/LEG/SER.B/1, note 10, p. 48 and 112.
50. United Nations Legislative Series, Supplement to Laws and Regulations on the Regime of the Territorial Sea, ST/LEG/SER.B/8, p. 41.
51. See the reasoning of the ICJ in the North Sea Continental Shelf Cases, note 47.
52. ICJ Rep. 1974, p. 3 and 175.
53. Ibid.
54. Thus, Norway in 1976 denounced its membership in the North East Atlantic Fisheries Commission.
55. See E. Miles, "Changes in the Law of the Sea: Impact on International Fisheries Organizations," Ocean Development and International Law, 1977, p. 409 et seq.
56. In the Convention the term "allowable catch" is used without the addition of "total"; see article 61 and 62. In the opposite sense, article 66 on anadromous species which allows the establishment of a "total" allowable catch covering different harvesting areas.
57. ICJ Rep. 1974, p. 3, 29 (paras. 67 and 68).
58. On the concept of "shared resources" in general, see W. Riphagen, "The International Concern for the Environment as Expressed in the Concept of the 'Common Heritage of Mankind' and of 'Shared Natural Resources,'" in Trends in

Environmental Policy and Law, 1980, p. 343 et seq. See on common resources and joint exploitation also Ian Brownlie, "Legal Status of Natural Resources in International Law (Some Aspects)," Academie de Droit International, Recueil des Cours, t. 162, 1979-I, p. 245 et seq., in particular p. 289 et seq. At p. 290 Brownlie mentions "conservation and joint development of fisheries in carefully defined areas" using as an example the 1975 Japan and People's Republic of China Agreement on Fisheries concerning the Yellow and East China Seas; US Department of State, Bureau of Intelligence and Research, Office of the Geographer, Limits in the Seas, No. 70.

59. See UK Fishery Limits Act, 1976; Fishing Territory of the Kingdom of Denmark Act, 1976; Fishing Zones of Canada (Zones 4 and 5) Order, 1977, made under the Territorial Sea and Fishing Zones Act, 1964-65, as well as later orders; the 1976 Maritime Jurisdiction (Exclusive Fisheries Limits) Order of Ireland, reproduced in ST/LEG/SER.B/19, note 8, p. 213.
60. ST/LEG/SER.B/19, note 8, p. 211.
61. See US Fishery Conservation and Management Act, 1976, sect. 201 (d) on the "total allowable level of foreign fishing"; USSR Decree of 1976, reproduced in ST/LEG/SER.B/19, note 8, p. 253; Mexico's Act of 1976 concerning the Exclusive Economic Zone, articles 6, 7 and 8, Ibid., p. 233; New Zealand's Territorial Sea and Exclusive Economic Zone Act, 1977, Ibid., p. 65; the Act of 1976 relating to the Economic Zone of Norway, sect. 4, Ibid., p. 241; Portugal's Act of 1977, article 5, Ibid., p. 93.
62. See also the preamble of the 1958 Convention of Fishing and Conservation of the Living Resources of the High Seas, which refers to modern techniques, etc., "Increasing man's ability to meet the need of the world's expanding population for food."
63. See C.A. Fleischer, "The 1977 Session of the United Nations Law of the Sea Conference," 3 Environmental Policy and Law, 1977, p. 100, 105, where it is pointed out that "there was earlier a question of recognition" of the right to an EEZ and of "permitting" the interested coastal states to establish such zones, but that the land-locked, etc., states are no longer in a position to claim rights of participation in return for their "recognition" or "permission."
64. See e.g., US Fishery Management and Conservation Act, 1976, sect. 2 (b) 4, on plans to achieve and maintain "the optimum yield from each fishery."
65. Carroz and Savini, op. cit., note 16.
66. Ibid., p. 82.
67. The basis for mutual fishing rights is here not a treaty, but Community Regulations by the EC Council, in particular Regulation No. 2141/70 of October 20, 1970. See on this Regulation, inter alia, C.A. Fleischer, L'acces aux lieux de peche et le Traite de Rome, Revue du Marche Commun, No.

141, 1971; and D. Vignes, "La reglementation de la peche dans le Marche Commun au regard du droit communautaire et du droit international," 16 Annuaire Francais de Droit International, 1970, p. 829 et seq.

68. For example, the legislation of the USSR of 1976 provides that foreign fishing is to be carried out solely on the basis of agreements and in accordance with permits issued by USSR authorities within the limits of certain catch quotas, sect. 3-6, ST/LEG/SER.B/19, note 8, p. 253 and 254. Similarly, the 1977 law of the Bahamas specifies in sect. 9 that every foreign state party to a treaty must submit an application for a license in respect of every fishing vessel wishing to fish in the exclusive fishery zone, Ibid., p. 182.
69. See, inter alia, Miles, op. cit., note 55, p. 428, in particular on the use of extended jurisdiction as a means of deriving foreign exchange or other economic rent for the area of the Fishery Committee for the Eastern Central Atlantic (CECAF) -- a practice to which non-locals have accommodated themselves.
70. Carroz and Savini, op. cit., note 16, p. 79, 82.
71. The idea that the coastal state must use its discretion "in a reasonable manner" -- in particular when imposing conditions -- is suggested by Phillips, op. cit., note 18, p. 604.
72. See Phillips, op. cit., note 18, p. 603.
73. ICJ Rep. 1969, p. 3 and ICJ Rep. 1974 p. 3 respectively. See also decisions by the Permanent Court of Justice referred to in ICJ Rep. 1969, p. 3, 47-48, as well as Fisheries Jurisdiction (U.K. v. Iceland), Interim Measures, Order of 12 July 1973, ICJ Report 1973, p. 303.
74. See also remarks by Fleischer, op. cit., note 18, p. 549, 564 et seq.
75. See Carroz, op. cit., note 46, p. 851 and op. cit., note 45, p. 705.
76. ICJ Rep. 1969, p. 3, 50.
77. ICJ Rep. 1969, pp. 43-45.
78. See article 62, paragraph 3, of the Convention where the need to minimize economic dislocation is mentioned as one factor to be taken into account in the allocation of the surplus, while land-locked and geographically disadvantaged states are accorded special rights under articles 69 and 70 -- since ICNT/Rev. 1 of 1979 even beyond the surplus.
79. Examples of such legislation mentioned in FAO Doc. COFI/78/In#. 9, p. 5, are the laws of the US, Portugal, the USSR, Mexico, Fiji, the Gambia, New Zealand, and Norway. However, as for Norway, see note 82.

80. E.g., the legislation of Norway, which empowers the King to issue regulations on the allowable catch and on access for foreign fishermen to "allotted shares of the allowable catch" -- not only to the surplus, St/LEG/SER.B/19, note 8, p. 241.
81. This may be an element in reciprocity arrangements, where it may be convenient to give a quota to another state in order to obtain concessions in return and transfer part of the harvesting capacity to areas under control of that other state. In this connection, it might, of course, be argued that the harvesting capacity of the first coastal state was thereby being reduced; an argument that might, however, cause difficulties in regard to third states wanting to claim the surplus (or quasi-surplus) thus created.
82. Phasing out over a 10-year period was, as is well known, an important element in the discussion at UNCLOS I-II and the ensuing practice of the 12-mile special zone. An objection to invoking this practice as evidence of a legal obligation is precisely that it was connected closely to the 12-mile limit and the special political, moral or legal obligations which some states then felt. Consequently, the relevance in the new 200-mile situations may be open to doubt.
83. See Phillips, op. cit., note 18, p. 604. As to a standard of reasonableness, see also in general Myres McDougal and William T. Burke, The Public Order of the Oceans, 1962, p. 14 et seq., 28, 37 et seq., 579, 759, et seq.
84 See article 2 of the agreement of August 23, 1975, between Ecuador and Colombia, ST/LEG/SER.B/19, note 8, p. 398.
85. See concerning a possible standard of reasonableness, McDougal and Burke, op. cit., note 85; Phillips, op. cit., note 18. In general the coastal state must have a fairly wide measure of discretion under customary law as well as under the Law of the Sea Convention; see G. Ulfstein, op. cit., note 45, p. 183 and J. Evensen, "The Emerging Law of the Sea," Studia Diplomatica, vol. XXVIII, 1975, s. 600; Khan, op. cit., note 45, p. 169: "Vague provisions about the 'rights' of others."
86. See R. Young, "Sedentary Fisheries and the Convention on the Continental Shelf," American Journal of International Law, 1961, p. 360 et seq.
87. Vattel, Droit des gens, 1773, quoted by Colombos, The International Law of the Sea, 6th ed., 1967, p. 404.
88. Colombos, op. cit., note 89, p. 404 et. seq.
89. See Young, op. cit., note 88, p. 365, 368.
90. ICJ Rep. 1969, p. 3, 39.
91. ST/LEG/SER.B/19, note 8, p. 253. See also the similar provision in section 102 (2) of the US Fishery Conservation and Management Act, 1976.

THE TAKING OF LIVING RESOURCES: EXPECTATIONS AND REALITY*

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INTRODUCTION

The impact of Extended Marine Jurisdiction (E.M.J.) upon the economics of fisheries has been broad and extensive, if not revolutionary. In this paper, we do not attempt to survey the expected and actual impact of E.M.J. upon all of the many and varied fisheries of the world. Rather, we restrict ourselves to the impact of E.M.J. upon fisheries of developed coastal states, leaving to others the task of analyzing the impact of E.M.J. upon fisheries in the developing world.

We narrow our topic even further by focusing upon the experience of North America (exclusive of Mexico). Having said all of this, however, we would argue that the lessons from the North American experience should have applicability, not only to other developed areas such as Western Europe, but to the developing countries as well.

One might add in passing that, among coastal states, the United States and Canada have a relative abundance of technical and management skills pertaining to fisheries. If, for a variety of economic and institutional reasons which we examine in this paper, these two countries have not moved toward efficient use of their fishery resources, then it is possible to assume that these reasons (the central problems in managing fisheries) are endemic in fisheries throughout the world.

NORTH AMERICAN FISHERIES AT THE DAWN OF EXTENDED MARINE JURISDICTION

Both Canada and the US formally implemented the fisheries aspects of E.F.J. -- Extended Fisheries Jurisdiction -- during the first quarter of 1977. The areas of greatest importance in the newly established American Fishery Conservation Zone consist of: (1) the waters off Alaska (Bering Sea, the waters around the Aleutian Islands, and the Gulf of Alaska), and (2) the waters off the Atlantic coast, particularly those off New England. The area of single greatest importance in the newly established Canadian Exclusive Economic Zone consists of (3) the waters off the Atlantic coast, particularly those off Labrador and Newfoundland.

It is not unreasonable to say that the fishing industries in all three areas were either depressed or stagnant prior to

the implementation of E.F.J. [1]. Indeed, in Atlantic Canada the groundfish industry, the mainstay of the fishing industry as a whole, had gone through a period of severe crisis in which widespread bankruptcy was averted only by a "bailing out" operation by the Canadian government, which cost the government Can.$130-$140 million in aid over a two-three year program (Canada, Environment Canada, 1976, p.23).

The argument was made that the unsatisfactory state of the fisheries in all three areas could be attributed in large part to the activities of distant-water fishing fleets subject to non-existent or ineffective regulation. In the northwest Atlantic prior to E.F.J., the regulatory body was the International Commission for the Northwest Atlantic Fisheries (ICNAF). It is fair to say that in its early years, essentially the period 1951 to the 1970's, the Commission was not effective in its management of the stocks. By the 1970's, the work of the Commission had improved, as did the quality of output from its scientific staff. However, the improvement came too late. By the middle of the 1970's, the forces of nationalism in both countries were moving inexorably towards E.F.J.

In the US, the point about the impact of foreign fleets was made explicitly in the Fishery Conservation and Management Act of 1976, the legislation through which American E.F.J. was implemented:

> Many coastal states are dependent upon fishing and related activities and their economies have been badly damaged by the overfishing of fishery resources at an ever-increasing rate over the past decade. The activities of massive foreign fishing fleets ...have contributed to such damage ...[2].

The argument is not without substance. It is weakest when applied to the Alaskan area, but even here it cannot be dismissed out of hand. The major Alaskan fisheries were, and are, salmon, shellfish (crab and shrimp) and halibut, in that order. Salmon was subject to the threat of high seas fishing, but this problem had presumably been dealt with by the International Convention for High Seas Fisheries of the North Pacific Ocean. Foreign fishing hardly constituted a serious threat to the shellfish resources. On the other hand, the halibut fishery was affected seriously, it was believed, by distant-water fleets exploiting low valued groundfish, such as pollock, off Alaska and taking large halibut by-catches (Crutchfield, 1981).

The case against distant-water fleets off Atlantic Canada was much more substantial. A large Newfoundland based inshore groundfishery was threatened with near extinction in the mid-1970's as a consequence of distant-water fleet exploitation of the groundfish resources offshore. This experience plus similar, albeit less drastic, experiences elsewhere in the Atlantic region resulted in the Canadian federal government coming under political pressure to introduce E.F.J. unilaterally

(Munro, 1980). A similar situation -- pressure put on the stocks by large foreign fleets -- encouraged the US Congress to enact the FCMA of 1976.

The central management problem of fisheries, domestic or international, is that the fish stocks are common property. Fishermen have no property rights to the resource and, therefore, have no incentive to conserve them. It has long been known that fishery resources having commercial potential, but not subject to economic controls, will invariably be over-exploited in an economic, if not biological, sense (Gordon, 1954). Thus, it could be expected that if important international fishery resources off North American coasts were subject to ineffective control, they would be over-exploited as distant-water fleet activity expanded, as indeed it did between the late 1950's and early 1970's.

One of the major arguments advanced by purely market-oriented economists for E.F.J. is that it would serve to mitigate the common property problem (see Eckert, 1979). Fishery resources, heretofore international common property, would now become, in all or in part, subject to the ownership of individual coastal states [3]. Thus, one can understand why coastal states, such as the US and Canada, should have expected that E.F.J. would do much to ameliorate the conditions of their fishing industries. The resources would be rebuilt and prosperity would follow as a natural consequence. As the Canadian federal Minister responsible for fisheries stated after E.F.J. had been implemented:

> ...for fishermen, the future Zone became an ideal .... we were going to replenish our depleted fish stocks; fishing and fish processing were to become thoroughly profitable enterprises adding to our wealth, stimulating industry and creating jobs along our shore....The Zone was to make all these wonders possible....It seemed that they (the foreign fishing fleets) were the cause of all our problems [4].

As indicated, E.F.J. served to postpone the impact of the common property problem. E.F.J. did not, however, eliminate the problem. A hitherto international fishery resource would, once it was encompassed within a coastal state zone, still retain common property characteristics, as it would now constitute the common property of fishermen within the coastal state. Given the history of coastal state management of fisheries in North America, this fact provides much reason for concern [5].

An additional problem associated with coastal state ownership of the resource is the ambiguity in the concept of full utilization of the resource in a physical sense. With a single stock, the concept is straightforward and is equal to the maximum sustainable yield (MSY). In a multispecies fishery with complex predator-prey relationships, MSY would involve the idea of maximizing the yield from the biomass [6]. However, if the coastal state has tastes and preferences that only cover part of

the biomass; e.g., its consumers want haddock and not squid, part of the biomass will not be harvested. If the coastal state also rationalizes the management of the fishery and restricts the entry of capital and labor to realize the maximum net economic yield, an amount of fish less than MSY, then the stocks are further "underutilized." Thus, the problem of maximizing the flow of protein from the living resources of the ocean involves reconciliation of coastal state preferences and management objectives with world food needs.

Finally, there is another issue which is of fundamental importance, which in this paper we can only call to the reader's attention. The assumption made by Eckert and other market-oriented economists is that moving from ICNAF or other international management systems to coastal state supervision of the resource will lead to greater efficiency in the use of capital and labor in exploiting the resource. There is no evidence on this point. Obviously, it may or it may not be true, but in either case, analysis of the theory of organizations is necessary to gain greater insight into the conditions of efficient management.

An examination of the histories of the troubled North American fisheries reveals that many of their difficulties were in fact attributable directly to the policies, or lack thereof, of the coastal states. The authorities proved incapable of dealing effectively with the problems created by the common property nature of the resources.

Canadian and American authorities definitely recognized the need for resource conservation. What took them longer to realize fully was that resource conservation through harvest quotas, escapement targets, and gear restrictions is not sufficient in economic terms. If the authorities attempt to conserve and stabilize a particular resource by restricting total harvests but make no attempt to limit the number of fishermen and vessels competing for the allowable harvest, then the fishery is certain to experience a build-up of redundant labor and capital. The result will be that much, if not all, of the net economic benefits from the fishery will be dissipated. Moreover, since it often proves easier for labor and capital to enter a fishery than to leave it, the fishery will prove to be highly vulnerable to periods of general recession once the redundancy has become extensive.

The management problem goes beyond the necessity for the management authorities to realize the need for economic controls. First, the operational side of any limitation of entry and fishing effort is complex. There are difficulties and inequities involved in all control systems, i.e., there is no simple solution to the problem of "how" to limit entry. Second, there is a political problem in that movement toward greater economic efficiency usually means a reduction in employment, a political and economic problem regulators do not want to face. So while many individuals in the fisheries service and the fishery industry, in both Canada and the US, realize the need to face up to the common property problem, they are prevented from

doing so by political and economic issues, primarily the employment problem.

The consequences of the common property aspects of fisheries being ineffectively dealt with by coastal state authorities were clearly demonstrated, and well documented, in the case of the Alaskan fisheries. Consider the halibut and salmon fisheries. The halibut fishery, which the Alaskans had fished jointly with the Canadians as a transboundary resource, had been subject to extensive resource depletion prior to the 1920's. In response, the Americans and Canadians established the International Pacific Halibut Commission, and through the commission worked towards a restoration of the stocks. Until the foreign by-catch became an issue in the 1960's, the program had been deemed a success in biological terms. No serious attempts were made, however, to limit the fleet size. The economic consequences were disastrous and manifested themselves well before the 1960's (Crutchfield and Zellner, 1962).

The potentially wealthy Alaskan salmon industry provides another example of resource management that was reasonably successful in biological terms, but unsuccessful in economic terms, because no effective steps were taken to inhibit the expansion of redundant labor and capital in the industry (Crutchfield and Pontecorvo, 1969).

Although the degree of documentation on domestically inspired common property problems is not as great in the Atlantic Canada fisheries, there is nonetheless substantial evidence that redundancy of labor and capital was widespread throughout the fisheries and that prosperity in the fisheries had been only temporary in the years before the distant-water fleet problem arose (Mackenzie, 1979; Donaldson and Pontecorvo, 1980).

The histories of fisheries in New England and the maritime provinces differ in detail, but they follow essentially a similar path; a path that leads historically from an initial coastal subsistence fishery to a market-oriented commercial activity. In both countries, the fisheries have been plagued by a host of problems: the instability caused by the common-property condition of the resource and the small size of the economic units involved in the fisheries, which has meant inadequate financing and marketing skills and all the management difficulties of small businesses. Furthermore, the limited size of the market for fresh fish and foreign competition in frozen products were additional barriers to the development of a stable industry.

For the New England fishermen, there have been periods of prosperity, e.g., during World War II when the real price of fish and shellfish rose rapidly. The fishermen expanded output, entry took place, and the industry was very profitable as consumers shifted from meat to fish. After the war, when normal patterns of demand for food emerged, the over-expanded industry fell into a depressed state from which it only emerged in the 1960's. As the data in Table 1 below suggest, the boom/bust cycle has been repeated, and by the late 1970's and early

1980's, the industry is again suffering as the increase in fish prices and landings has not been sufficient to compensate for the additions to capital and labor that have taken place in response to E.F.J.

Thus, if coastal states, such as the US and Canada, acquire through E.F.J. control over fishery resources which had been subjected to over-exploitation, it is not sufficient for the coastal state authorities to rebuild the resources. If the authorities do nothing to prevent an expansion of redundant labor and capital in the fisheries as the stock restoration occurs, then the economic benefits from coastal state management will prove to be ephemeral.

E.F.J. meant more than bringing under coastal state management fishery resources currently of importance to coastal state fishing industries. It meant as well that fishery exploitation opportunities that had been enjoyed solely by distant-water nations would now come under the control of coastal states. In other words, there would be a transfer of resource wealth. Thus, for example, there exists in the waters off Alaska large groundfish resources other than halibut. Prior to E.F.J., annual harvests on the order of 1,500,000 tons had been taken, all but one percent of which were accounted for by distant-water nations (Munro, 1983). After E.F.J., the groundfish resources came under US control.

Such transfer of wealth could obviously be expected to result in an enhancement of the flow of coastal state benefits enjoyed from fisheries. What seemed equally obvious, in North America at least, is that these benefits would be realized through a displacement of foreign fleets by domestic harvesters and processors. In the US, a national fisheries plan prepared by the National Marine Fisheries Service in anticipation of E.F.J. stressed the scope for domestic fishing industry expansion provided by E.F.J. (US Department of Commerce, 1976, p. 40 ff). Furthermore, the F.C.M.A. emphasized the importance of utilizing the expansion possibilities provided by E.F.J. [7]. In Canada the federal Fisheries Minister stated, in looking forward to E.F.J., that:

> Canada is not only going to reach out and encompass all of the living resources on her continental shelf and slope, we are going to make sure they are harvested by Canadians in Canadian-owned vessels and processed in Canada as well [8].

There are, however, two serious drawbacks to this approach to realizing benefits from newly acquired fishery resources. In both the US and Canada, the stated goal of fisheries management is that of maximizing the net benefits from fisheries for American/Canadian society at large [9]. If one attempts to replace distant-water fleets on a wholesale basis, this may run counter to the stated goals of fisheries management. Potential benefits to society from the newly acquired resources may in fact be dissipated as a consequence of the policy.

Under article 56 of the Convention (United Nations, Third Conference on the Law of the Sea, 1982) the coastal state is given virtual *de facto*, if not *de jure*, ownership rights to living resources within its zone [10]. It is true that under articles 61 and 62, the coastal state is to determine the appropriate Total Allowable Catch (TAC) for each fishery in its zone, estimate its own harvesting capacity and then grant distant-water nations access to the "surpluses," i.e., the differences between the coastal state's harvesting capacity and the TAC's. Thus, it might seem reasonable that coastal states would want to move towards eliminating these surpluses. It is, however, also true that article 62 allows the coastal state to impose a very broad range of terms and conditions upon distant-water nations seeking access to these surpluses. Included is the right to impose fees and taxes. Thus, in no sense are coastal states expected to distribute harvest rights among distant-water nations *gratis*.

In light of these facts, it may be to the coastal state's advantage to encourage ongoing distant-water fleet participation in its fisheries if the object of fisheries management is, in fact, to maximize the benefits from the fishery for society at large. This can be seen most clearly if we think of a coastal state permitting distant-water participation in its fisheries as importing, harvesting or processing services from the distant-water nation(s).

The second problem involves the level of utilization of the resource. If there is little demand in the coastal state for the product from the stocks harvested by the foreign fleets, and if the fishermen in the coastal state do not respond to the investment opportunity created by the elimination of foreign fleets because of high production costs, economic risk, the lack of the necessary technology, etc., then the resource may be underutilized with catch well below MSY.

A key aspect of fisheries management is ensuring that any given level of harvest is taken and processed at lowest cost. In certain instances, it may be less costly for the coastal state to import distant-water fleet services than to provide these services domestically. For example, suppose that the form of distant-water nation participation being contemplated involves distant-water fleet harvesting of a coastal state fishery resource with the harvests being delivered to onshore plants [11]. If the ex-vessel price paid to the distant-water fleet owners proves to be less than domestic unit harvest costs, then the *national* benefit from the fishery will be enhanced by using distant-water nation harvesting services.

In the example cited, it is obvious that the coastal state would be importing distant-water nation services. Although less obvious, it would also be true that the coastal state would in effect be importing distant-water nation services if the arrangement involved coastal state fleets harvesting the resources for delivery to distant-water nation processing vessels or if the arrangement involved both distant-water nation harvesting and processing [12] (Munro, 1982; 1983).

The argument on behalf of ongoing distant-water nation participation in coastal state fisheries is, thus, really just the economist's argument for free trade. In certain circumstances, distant-water nations may have a comparative advantage vis-a-vis the coastal state in the provision of various fishery exploitation services. Hence, the coastal state will enhance the national benefits it can expect to enjoy from the fishery resources by importing the appropriate distant-water nation services, rather than by attempting to provide the services domestically [13].

If within coastal state fisheries the comparative advantage lies with domestic harvesters and processors, then obviously there will be no case for ongoing distant-water nation participation [14]. Where it is argued, however, that domestic fleets should replace distant-water ones, even when the comparative advantage lies clearly with the latter, then the arguments should be seen for what they are, namely, arguments for the protection of one or more sectors of the domestic fishing industries.

Many of the protectionist arguments will be found to be simply arguments in favor of managing the fisheries for the benefit of the domestic fishing industry, even though the consequence of so doing may be to reduce the total benefits from the fisheries enjoyed by society at large. It is this possibility that may lead to underutilization of the resource. There are, however, two arguments for protection that cannot be dismissed out of hand, even if one's goal is to maximize the national benefits from coastal state fisheries. These arguments are the infant industry and the employment arguments. Both arguments are of utmost relevance to North American fisheries under E.F.J. and, one can assert, to many coastal state fisheries throughout the world.

The infant industry argument states that a particular country, while appearing to have a comparative disadvantage in the production of a particular good or service, may in fact have a latent comparative advantage in the production of the aforementioned good or service. Production does not take place because domestic firms attempting to become established would face overwhelming competition from firmly entrenched foreign rivals. However, if the infant domestic industry were given temporary protection to allow it to pass through the necessary development and learning stage, the latent comparative advantage would become revealed. The protective barriers would then be found to be redundant. Note that this argument assumes that the protected industry can reduce its cost of production to the point where it can become competitive in world markets.

When applied to fisheries, the argument could be formulated as follows: Prior to E.F.J., major international fisheries included in the coastal state's E.E.Z. may have held little or no interest for the coastal state fishing industry, and thus were left to be exploited by distant-water nation fleets. The fisheries may have required specialized vessels and/or gear and, as an international fishery, may have been subject to inadequate

management. Hence, the risk in investing in the vessels/gear would have seemed prohibitively high to the domestic industry. Distant-water fleets, geared to move throughout the world, would be subject to much less risk. Indeed, the distant-water fleets may have engaged in what was believed to have been the common practice of "pulse fishing" (Clark, 1976, p. 174). Pulse fishing involves exploiting a fishery resource heavily and then abandoning it, perhaps for several years, until it has recovered.

Now that the fisheries are under coastal state management, the argument continues, they pose far less risk to the domestic industry. Fishermen and companies would be prepared to undertake the necessary investment, except that they cannot compete with the well established distant-water fleets. If the coastal fishermen and companies were protected until they had passed through the necessary stage of learning and adjustment, the coastal state's comparative advantage, now latent, would be revealed. The protection would take the form of assuring domestic harvesters and processors that, as their capacity increased, the amount of distant-water fleet activity that was permitted in the interim would be reduced as the domestic industry acquired the requisite technology and skills to harvest the resource.

As we have indicated, both American and Canadian governments see the benefits of newly acquired resources being realized primarily through the expansion of their respective domestic industry. It is clear that a central argument advanced in support of this policy, implicitly if not explicitly, is the fisheries' version of the infant industry argument (Munro, 1983).

Economists have been prepared to concede that the infant industry argument is legitimate in the sense that the maturation of such industries could improve the general welfare of the country concerned. They do insist, however, that there are important caveats which must be recognized. The caveats apply with undiminished force to the use of the argument in the area of fisheries. The first is that it is very difficult to determine *a priori* which "infants" do in fact have a reasonable chance of achieving maturity. There is always the risk of giving protection to, and encouraging the development of, an industry in which the country has a permanent comparative disadvantage. Once the industry is established, it proves extremely difficult politically to reverse the error by removing the protective barriers and allowing the industry to wither. The industry thus becomes a permanent burden to the economy.

Even where one can be certain that the infant will achieve maturity, the wisdom of the policy is still open to doubt. One has to weigh the future benefits from developing the latent comparative advantage against the temporary costs of protection. There is no assurance that the present value of the future benefits will be greater than the current costs.

The second argument -- the employment argument -- is very straightforward. By hindering the importation of goods or

services, more jobs will be created domestically. While the argument, when applied to fisheries, does not have universal applicability in the North American context, it does apply with considerable force to Atlantic Canada, where unemployment is both chronic and severe, and to New England, where pockets of relatively immobile ethnic groups conduct certain fisheries. The argument is strengthened by the fact that the portion of Atlantic Canada that has been influenced to the greatest degree by E.F.J., the province of Newfoundland and Labrador, has the highest rate of unemployment.

Three counter arguments to the employment argument can be advanced.

First, before using protective measures to cure unemployment, one has to ask whether there are not other methods of dealing with the unemployment problem that will cause fewer distortions, i.e., measures that are better for the individuals involved and less costly for the entire nation.

Second, the use of protection brings with it the threat of retaliation against the export sector, which will lead to offsetting employment losses. In the case of fisheries, this argument has been illustrated by the Atlantic Canada experience. Here, the relevant export sector is within the fishing industry itself. In terms of output, the Atlantic Canada fishing industry is highly export-oriented and hence is vulnerable to retaliation. Restrictions on distant-water fleet activities in the Canadian zone have in fact brought forth threats of market closure to Canadian fish products.

The final counter-argument to be considered rests upon the fact that the fishing industry is dual sectored. Efforts to promote employment in one sector through protection may undermine employment opportunities in the other sector. Thus, suppose, for example, that the authorities refuse to sanction distant-water nation harvesting for delivery to onshore plants in order to promote domestic employment afloat. The higher domestic harvesting costs could lead to a reduction in employment opportunities in the processing sector [15].

In summary, the two coastal states expected that E.F.J. would:

(a) alleviate the problems of their domestic fishing industries by allowing programs of stock restoration. Stocks upon which the domestic industries were currently dependent had been heavily depleted by distant-water fleets. The coastal state authorities would now be given the power to rebuild the stocks; and
(b) add to coastal states' resource wealth by bringing under coastal state control fishery exploitation opportunities which hitherto had served only the interests of distant-water nations [16].

We have argued that after the advent of E.F.J., there was the risk that the benefits from (a) might prove to be ephemeral and that there was the further risk that the benefits from (b)

might be dissipated in all or in part as a consequence of protectionism. All three areas of North America particularly affected by E.F.J. provide illustrations of these problems. However, Atlantic Canada and New England provide particularly striking examples of the stock restoration problem, while Alaska provides an equally striking example of the newly acquired fishery wealth and protectionism problem. We consider each of these examples in turn.

ATLANTIC CANADA, NEW ENGLAND, E.F.J. AND THE RESTORATION OF FISHERIES RESOURCES

In our earlier discussion, we made reference to a major Newfoundland inshore groundfishery whose very existence had been threatened by distant-water harvesting. The resource upon which this fishery is dependent is a complex of cod stocks extending from southern Labrador to southeastern Newfoundland, popularly referred to as northern cod. It constitutes the single most important resource base for the Newfoundland fishing industry and constitutes the single most important Canadian resource acquisition under E.F.J. We use it here as the focus for the discussion.

The northern cod fishery is divided into distinct inshore and offshore segments. Prior to E.F.J., the Canadian fishing industry had shown little interest in the offshore fishery. Such northern cod that was caught by Canadian vessels offshore was almost entirely in the form of a by-catch. The inshore segment, on the other hand, constituted the heart of the labor-intensive and labor-absorbing Newfoundland inshore fishing industry.

In the late 1950's, the offshore fishery, which had in the past been exploited by distant-water nations such as Spain, Portugal and France, began expanding rapidly as new distant-water participants, e.g., the Soviet Union and West Germany, entered. Offshore harvests expanded rapidly and peaked in the late 1960's. Then they steadily declined as a consequence of stock depletion.

Biologists do not fully understand the relationship between the offshore and inshore fishery. Nonetheless, it appeared that the expanded offshore exploitation had a serious impact on the inshore fishery. Inshore harvests, which had been on the order of 170,000 tons in the mid-1950's, steadily declined as the offshore sector expanded and reached a low in 1974 when the harvests were only slightly in excess of 35,000 tons (Munro, 1981). The worsening condition in the inshore fishery led to an exodus of fishermen. It is estimated that their number fell from a peak of 13,300 in the mid-1960's to about 6,500 in the mid-1970's (Munro and McCorquodale, 1981).

By 1974 the entire Atlantic groundfish industry was in severe difficulties and became the object of a federal government financial rescue operation.

The Canadian authorities also responded to the crisis by insisting within the body responsible for the management of

fisheries in the international segment of the Northwest Atlantic, ICNAF, that a program of groundfish restoration be commenced. Particular emphasis was given to the northern cod resource.

The program was initiated and implemented by a reduction in offshore fishing effort. After E.F.J. came into force, the stock restoration program was carried out with increased vigor. The program appeared to be successful, at least as it applied to northern cod. Stock density increased; catch per unit of effort improved; and the allowable offshore harvests, sharply reduced at the commencement of the program, steadily increased. The inshore sector harvests showed marked improvement.

In early 1979, the federal Minister of Fisheries reported that 1978 had been a bonanza year for the Canadian fishing industry on both the Atlantic and Pacific coasts. An important contribution to the prosperity on the Atlantic coast was the large increase in cod harvests, most of which could be attributed to the revival of the northern cod resource. "The year 1978 has proven that Canadians are beginning to reap the benefits linked with careful regulation of the fisheries," stated the Minister [17].

By 1981 the Canadian Atlantic fishing industry as a whole, particularly the groundfish sector, was in a severe crisis. Yet again, the federal government was called upon to engage in a rescue operation. Of course, the year 1981 and subsequent years were ones of severe recession. Nonetheless, it is abundantly clear from the report of a task force which the government set up to investigate the Atlantic fishing industry [18] that a major cause of the problem lay with the common property nature of the fisheries and the inadequate manner in which the common-property-induced problems had been addressed.

To return to our northern cod example: the inshore sector population of fishermen had, it will be recalled, declined from a peak of 13,300 to a low of 6,500 in the mid-1970's. As the benefits of the stock restoration program became manifest, the inshore population expanded. It is estimated by the Canadian federal government that over the years 1976-1979 the number of man-years devoted to the inshore fishery increased at an average annual rate of 38-39 percent. By 1980 the number of fishermen had increased to almost 23,000, a number 73 percent larger than the peak employment in the 1960's (Munro and McCorquodale, 1981, p. 52).

While one can argue that <u>some</u> increase in the number of fishermen and vessels was necessary to accommodate the increased harvest opportunities, there seems little doubt in retrospect that the increase in numbers was in fact grossly excessive (Munro and McCorquodale, 1981; Canada, Task Force on Atlantic Fisheries, 1982).

Eventually, the authorities introduced a comprehensive licensing and limited entry program. The complete program was not put in place, however, until 1980. Once the horse had galloped off and vanished, the barn door was firmly bolted.

Emergence of excess capacity occurred not only in the harvesting sector, but in the processing sector as well. The boom mentality of 1977-1978 led to an expansion of plant capacity, particularly in that part of Newfoundland dependent upon northern cod. A useful measure of capacity in the processing of groundfish is the amount of freezing capacity. It is reported that between 1974 and 1980, groundfish freezing capacity for Atlantic Canada as a whole increased by 150 percent (Canada, Task Force on Atlantic Fisheries, p. 31). By 1981 the processing sector was in severe difficulties.

Thus, in summary, while northern cod and other resources subject to depletion prior to E.F.J. were successfully restored, ineffective control was exercised over the common-property-induced expansion in the harvesting and processing sectors as harvest opportunities improved. As a result, by the early 1980's the Atlantic fishing industry -- particularly the groundfish sector -- was highly vulnerable to a general economic downturn. The downturn occurred in 1981, and the predictable crisis emerged in the industry. As in the years immediately prior to the implementation of E.F.J., extensive government assistance was required if widespread bankruptcies were to be averted [19].

The situation in New England followed the same basic pattern. The heavy fishing by foreign fleets was concentrated on squid and hake stocks little used by US fishermen. However, through the by-catch, the foreign fishing effort helped reduce the stocks of flounder and haddock, central elements in the New England catch. Initially through ICNAF, and after the coming of E.F.J. domestically, a serious conservation effort to protect and restore the flounder and haddock was instituted. As was true in Canada, and as is indicated in Table 1, the partial recovery of the stocks and the economic expectations engineered by E.F.J. led to extensive entry by capital and labor, a situation that by the 1980's was already indicating another cycle of boom and bust.

We may characterize or crudely model the condition of the New England fisheries, primarily those associated with Georges Bank, just before E.F.J. as follows:

1. There was a large catch by foreign fleets. These fleets contained large mother ships which dwarfed the smaller New England vessels and added to the image of a complete takeover of traditional New England fisheries. This was compounded by conflict between the foreign fleet and the offshore lobster fishermen over gear allegedly destroyed by the former. The bulk of the catch by foreigners was of stocks largely ignored by US fishermen (squid, hake). But despite the basic complementarity of the fishing effort, the size, the by-catch, and the potential flexibility of the foreign fishing power was sufficient to make it a real threat to New England.
2. The impact of the foreign fleets, both real and potential, gave rise to the expectation that if the foreigners could

be driven out and the "important" stocks rebuilt, the New England fishermen would benefit from much larger catches.

3. The expectation of large economic benefits for both the fishermen and the country became an important political argument in the struggle to gain E.F.J. and, as indicated above, those feelings were incorporated in the F.C.M.A. Act of 1976.

Unfortunately, as the economic analyses of fisheries have documented repeatedly, elimination of one class of competitors is not sufficient to rationalize a fishery. A satisfactory solution would have required the F.C.M.A. to solve the common property problem -- to extend regulation to the US fleet. By driving out the foreigners, the 1976 Act did effect an enclosure, but by failing to generalize the enclosure it left the fishery as vulnerable to economic failure as before.

Table 1 clearly suggests how the common property condition of the resource has driven the structure of the fishery in recent years. In 1977 expectations were for rapidly expanding catch and profits. By 1981 these expectations had led to a 53 percent increase in the number of vessels (138 percent in the largest class) and a 64 percent increase in crews (164 percent in the largest vessels).

However, the increases in capital and labor did not yield the expected returns. In 1972 dollars, the value of the catch rose only 30 percent and was essentially unchanged from 1979-1981. If one relates the total number of vessels to the value of catch -- a crude measure of the impact of these changes -- one finds that in 1977 the return per vessel was 123,500,000 / 836 = $147,700, while by 1981 it had declined to $125,600. Returns per crew member show similar results.

Careful analysis of this problem would require more refined measures than are presented here, but this calculation is sufficient to indicate the failure to realize the high level of expectations engendered by the coming of E.F.J [20].

ALASKAN FISHERIES, E.F.J. AND THE PROTECTION OF COASTAL STATE FISHING INDUSTRIES

We have asserted at earlier points in the paper that both the American and Canadian authorities have taken an essentially protectionist stance towards their domestic fishing industries. In the case of the Americans, the protectionism is clearly reflected in the underlying legislation governing post-E.F.J. fisheries off Alaska and other segments of the American Fisheries Conservation Zone. In the basic legislation -- the F.C.M.A. of 1976 or, as amended, the Magnuson Fishery Conservation and Management Act -- an implicit acceptance of the fishery version of the infant industry argument seems pervasive. The aim of the legislators appears to be clearly that of achieving the maximum expansion of the domestic industry and thus, by implication, the maximum contraction of the present distant-water fleets in the US zone (Crutchfield, 1980; Young, 1982) [21].

Table 1

IMPACT OF EXTENDED FISHERIES JURISDICTION ON NORTHEAST FISHERIES
1977-1981

	A		B		C	
	VALUE OF CATCH		NUMBER OF VESSELS		NUMBER OF CREW	
	1972 dollars (000)					
Year	Total	Groundfish	Total	Greater than 151 tons	Total	Greater than 151 tons
1977	$123,500	$53,600	836	71	3878	613
1978	151,700	62,700	881	72	4049	645
1979	162,300	64,800	1,107	109	5180	971
1980	163,800	64,500	1,260	155	6230	1435
1981	$160,400	$66,600	1,277	169	6347	1617

D

Change 1977-1981

	A		B		C	
1977-1981	+30%	+24%	+53%	+138%	+64%	+164%
1977-1981	+36,900	+13,000	+441	+98	+2469	+1004

E

Gross Returns Per Unit - Capital & Labor

	A/B	A/C
1977	$147,700	$31,800
1978	$171,100	$37,500
1979	$146,600	$31,300
1980	$130,000	$26,300
1981	$125,600	$25,300

One important feature of the legislation is that the responsibility for the preparation of the management plans to govern fishery resources within the American zone is placed in the hands of eight Regional Councils, each council representing a cluster of states with fisheries interests [22]. Members on each council consist of state appointees, federal appointees, and the regional director of the National Marine Fisheries Service. An analysis of the membership of the councils suggests that they are dominated by the industry and that hence "the focus in the ... Councils is on the producer, his needs and his interests" (Pontecorvo, 1977, p. 655). Thus, almost by definition, the Councils add to the protectionist thrust of the legislation [23].

The protectionism embodied in the F.C.M.A. 1976 is buttressed by two other pieces of legislation. The first is an early piece of legislation -- the Nicholson Act, 46 USC Sec. 251 -- which forbids the landing of fish in American ports by foreign vessels. This eliminates the possibility of joint venture arrangements in which foreign vessels harvest the coastal state resource and deliver the harvest to onshore processors [24]. The second is a 1978 amendment to the F.C.M.A., popularly referred to as the Processors' Preference Amendment (PL95-354). The purpose of this legislation is to discourage the reverse form of joint venture activity in which coastal state vessels harvest the relevant resource for delivery to foreign vessels having processing capacity. While the amendment has certainly not prevented such arrangements, it can be argued that it acts as a constraint upon them (Munro, 1983).

It is worth noting that both the Nicholson Act and Processors' Preference Amendment illustrate the fact that the fishing industry is multi-sectored and that attempts to protect one sector will in all likelihood come at the expense of the other. Thus, if one were to apply the Processors' Preference Amendment with vigor, it would almost certainly impede the growth of the domestic harvesting sector.

Alaska, with its immense groundfish resource heretofore unexploited by the American fishing industry, was clearly the region in which the infant industry argument had its greatest relevance to US fisheries. It was indeed believed at the commencement of E.F.J. that foreign fleets would in reasonable time be replaced almost entirely by American harvesters and processors (Stokes, 1981, p. 571). So important were the opportunities for expansion that they were given specific mention in the F.C.M.A. [25].

Since 1977, however, the validity of the infant industry argument in the context of Alaskan fisheries has become increasingly open to question [26]. The prospects for an expanded domestic processing sector are particularly dubious.

The key groundfish species, pollock, is processed either into fillets for an essentially world market or into surimi (fish paste) for the Japanese market. In order for American processors offshore or onshore to use the pollock harvests for fillet production profitably, the <u>real</u> price of pollock fillets

would have to rise by 20 to 25 percent. There appears to be little possibility of that occurring in the foreseeable future (Crutchfield, 1982, p. 87).

If the American processors were to turn to producing surimi, a necessary condition, given the requirements of the Japanese market, would be that the Americans acquire factory ships [27]. Acquisition of such vessels would not, however, guarantee that the American product would gain acceptance in the Japanese market. Recent studies on Alaskan fishery development prospects conclude that given the magnitude of the investment required and given the uncertain market reception of American-produced surimi, American entrepreneurs would, in the foreseeable future, view such ventures as prohibitively risky (Alaska Fisheries Development Foundation, 1982, pp. 90-93; West Coast Fisheries Development Foundation, 1982, p. 6.17).

In response to the disappointing prospects for American processing of the groundfish harvests, American authorities have been giving increasing attention to joint ventures under which US trawlers deliver fish to foreign vessels with processing capacity. This move does not mark a retreat from the original infant industry version of the development of the Alaskan fisheries. It should not be seen as abandonment of protectionism. Rather, it should be seen as the adoption of a second-best policy by the authorities so that at least one sector of the domestic industry will enjoy expansion.

That protectionism is still very much alive is evidenced by the fact that the distant-water nation of paramount importance, Japan, is engaging in the joint ventures under duress. Since the advent of E.F.J., the Japanese had received large so-called "direct" groundfish allocations which allowed them both to harvest and process the resource. In contrast to distant-water nations of lesser importance in the region, e.g., South Korea, the Japanese had expressed no interest in joint ventures.

The allocations to Japan had been based on what one might call the historic fishing rights principle. With the passage of the American Fisheries Promotion Act in 1980 (AFPA; PL 96-561), the principle was abandoned for what we shall term the commensurate benefit principle, in which allocations to distant-water nations were to be made according to the benefits the latter could offer the US. In other words, the allocations were to be used as bargaining counters or "chips."

With the AFPA having been passed, the Americans exerted pressure on the Japanese to enter into joint ventures by threatening the Japanese "direct" allocations (Ishida, 1982). Annual allocations which hitherto had been given on a once-yearly basis were now subdivided or staggered within each year, with the clear understanding that the size of later allocations in each year would be dependent upon the degree of "cooperation" forthcoming from the Japanese. The Japanese acquiesced and by June of 1982 had agreed to enter into joint ventures with targets of 120,000 tons for 1982-1983 and 200,000 tons for 1983-1984 [28]. There were suggestions from the American side that total joint venture targets for all distant-water nations would

rise to 850,000 tons [29]. If the target were to be realized, the distant-water nation partner of central, if not overwhelming, importance would be Japan.

The Japanese maintain that they are experiencing losses on the joint ventures and hence view the joint ventures as a form of tax which they must endure in order to obtain direct allocations of groundfish. They argue as well that the system of staggered annual direct allocations creates serious and costly planning difficulties for them (Munro, 1983).

The Japanese claim that they are experiencing losses on the joint ventures has been challenged (Munro, 1983). Be that as it may, one can argue that the present system does hold certain risks for the future. At the present time, the Japanese, like many other distant-water nations, have excess vessel capacity as a result of the widespread implementation of E.F.J. Consequently, their bargaining power vis-a-vis the US and other coastal states is limited.

Obviously, however, this is a transitory phenomenon. If the present system of expanding joint ventures plus limited direct allocations for the Japanese is not successful, in the sense that it proves to be mutually profitable for Japan as well as the US, then one of two results is likely. Either the Japanese will succeed over time in finding alternative employment for fleets currently operating in Alaska or, if this proves infeasible, the Japanese will not engage in fleet reinvestment when the existing vessels come to the end of their economic lives. In any event, there could well be a significant contraction in Japanese fleet activity in Alaskan waters.

If this contraction were to occur, the consequences could be severe. The future prospects for American processing of Alaskan groundfish are, as we have suggested, very uncertain. Finding distant-water replacements for the Japanese would be difficult at best. Thus, there would exist the strong possibility that the resource would be "underutilized" in the sense that harvests would be far below their historic average. This would imply a loss of potential benefits to the US from the resource, as well as a loss of protein in the world.

Several American economists -- e.g., Crutchfield (1980) and Stokes (1981) -- have urged that greater attention should be given to direct allocations to distant-water nations and have explored means of ensuring that such fisheries become truly remunerative for the US. Their arguments are persuasive, but if they are to be accepted, it will require that the US modify, if not abandon, its protectionist stance.

CONCLUSIONS

In this paper, we have discussed the benefits that developed coastal states expected to enjoy from Extended Fisheries Jurisdiction. North America served as our example.

In both Canada and the US, it was believed that the difficulties of their domestic fishing industries could be explained in part by the fact that certain key resources upon

which the industries were dependent had the status of international common property. As a consequence, the resources had been overexploited.

It was believed that, once these resources were under coastal state control, the resources would be restored and the domestic fishing industries would enjoy prosperity. The reality is that E.F.J. changes the focus of the common property problem but does not eliminate the problem. Unless this fact is understood, the benefits of the aforementioned resource restoration will prove to be transitory.

Both coastal states expected that, as a consequence of E.F.J., they would enjoy a stream of fishery benefits over and above those directly associated with stock restoration. It was expected that these benefits would be realized through an expansion of domestic harvesters and processors as they replaced distant-water fleets in the 200-mile zones.

The reality has been, first, that the ability of domestic entities to replace distant-water fleets is more limited than originally anticipated, and, secondly, that the very policy of wholesale replacement of distant-water fleets may well be inconsistent with the goal of managing fisheries for the benefit of the coastal state society at large.

We argued that the aforementioned coastal state policy implies in fact that newly acquired fishery resources should be managed for the benefit of the domestic fishing industry. What is desirable for the domestic fishing industry is not necessarily what is desirable for society at large. Indeed, we have suggested that the policy could well lead to the loss of substantial fishery benefits for society at large.

E.F.J. brings with it the promise of significant gains for coastal states. These states have unquestionably received transfers of substantial resource wealth. Whether the promise will be fulfilled, however, depends on coastal state fishery management policies. If the policies are misguided, then the promise held out by E.F.J. will be lost, perhaps forever.

NOTES

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1. In the US, the National Marine Fisheries Service commented that large segments of the US harvesting industry were in a chronically depressed state; US Department of Commerce, 1976, p. 26.
2. F.C.M.A., 1976, Section 2(a) (3). In Canada, during a debate on E.F.J. in the Canadian House of Commons in June 1975, Walter C. Carter, an M.P. from Newfoundland, argued

that the Newfoundland fishing industry faced total collapse as a consequence of overfishing by foreign fleets in waters off Newfoundland. Lloyd R. Crouse, an M.P. from Nova Scotia, stated that "... every foreign nation under the sun appears to be taking advantage of our fisheries resources and raping, pillaging, and plundering our stocks ..." Canada, House of Commons Debates, Vol. 119, June 19, 1975, p. 6920 and p. 6935.

3. This has to be qualified by the fact that some of the resources acquired by the coastal states would be transboundary in nature, i.e., jointly owned.
4. Canada, Department of Fisheries and the Environment, 1975, p.2.
5. For an analysis of fishery management at the state level, see J.L. McHugh and Jay J.C. Ginter, "Fisheries," MESA New York Bight Project, New York Sea Grant Institute, Albany, N.Y., January 1978.
6. See John Donaldson and Giulio Pontecorvo, "Economic Rationalization of Fisheries: The Problem of Conflicting National Interests on Georges Bank," Ocean Development and International Law Journal, Vol. 8, No. 2, pp. 149-169.
7. F.C.M.A. Section 2(a) (6).
8. Cited in Tomlinson and Vertinsky, 1975, p. 2570.
9. See F.C.M.A. Section 2(a) (5); Section 2(a) (18) (A); Canada, Department of the Environment, 1976, p. 53.
10. With the qualification about transboundary resources.
11. This form of arrangement is illegal in the US but, on the other hand, is legal in Canada.
12. Coastal state benefits from the fishery would take the form of payments received from the distant-water nation(s) in cash or kind.
13. Some of the factors giving rise to distant-water nation(s) comparative advantage will be peculiar to the fishery. For example, if in encouraging a domestic fleet expansion in a newly acquired fishery the coastal state authorities would prove powerless in preventing a build-up of redundant labor and capital, then a case could be made for relying upon the services of distant-water fleets; Munro, 1983.
14. Politically, it might be necessary to phase out distant-water fleets rather than evicting them at once.
15. Either the plant throughout will be more expensive, which will reduce the profitability of the processing sector, or the authorities will attempt to compensate for the relatively high domestic costs by moving towards great stock density. In the harvesting of many species, e.g., groundfish, the denser the stock, the lower the harvesting costs. Greater stock density can, however, easily lead to lower sustainable harvests and thus fewer employment opportunities in the processing sector; Munro, 1980.
16. Expectations (a) and (b) are obviously not mutually exclusive. For example, gaining control over the aforementioned exploitation opportunities may well enhance the coastal state's stock rebuilding program. Gaining

control over stocks of current importance to the domestic industry does itself constitute resource wealth acquisition.

17. Canada, Fisheries and Oceans, February 16, 1979, p. 3.
18. Task Force on Atlantic Fisheries.
19. In fact, bankruptcies were not averted. By the end of August, 1983, three major Newfoundland fishing companies had gone into liquidation.
20. By way of passing, we might note that within Western Europe, the coastal states comprising the E.E.C. appear to have made even less progress than the US or Canada. Due to the difficulty of formulating a meaningful cooperative fisheries management policy, the E.E.C. countries have been unable even to implement a program of effective stock restoration; Butlin, 1983.
21. When the Fisheries Conservation Zone was established, the Americans claimed no more than management rights within their zones. This had the inevitable consequence of strengthening the forces of protectionism within the US. The American position on management versus ownership rights changed with the passage of the American Fisheries Promotion Act (PL 96-561); Munro, 1983.
22. E.g., the New England Council includes the five New England states having coastlines; the North Pacific Council includes Alaska, Washington, and Oregon.
23. Having said all of this, we should point out that in Canada, which did not have the equivalent of Regional Councils and in which the authorities took an ownership view of resources acquired through E.F.J., the authorities appeared to be not much less protectionist than their American counterparts.
24. Unless subterfuge is used, e.g., delivering the harvests via a third country.
25. F.C.M.A. Section 2(a) (7); Section 2(b) (6).
26. See Munro, 1983 and Stokes, 1981.
27. I.e., the pollock would have to be processed upon capture, as opposed to being processed onshore.
28. US/Japan Meetings on Joint Venture Fisheries, "Memorandum of Discussions," mimeo, June 1982.
29. Natural Resource Consultants, US/Japan Meetings on Joint Venture Fisheries, "U.S. Background Document No. 2," 1982.

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COMMENTARY

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I would like to begin with a general comment, namely that we should not expect logically certain characteristics to come out of a major global law-making conference such as UNCLOS III. Among the characteristics that we should not expect to ensue in the 1980's would be a document conducive of total uniformity. That might have been the reasonable expectation in an earlier age fifty years ago, even twenty years ago. It would even seem that it was in fact part of the rationale of global law-making diplomacy to produce conformity through resulting uniformity of state practices. If that were ever true -- if ever that were realistic -- it most certainly is not realistic today.

I would begin with that premise and proceed from there to suggest that if we are looking to future state practice under the economic zone regime or, for that matter, under the other regimes of extended jurisdiction, we would assume a degree of diversity to emerge in state practice. One may not wish to applaud diversity as a value to be sought after, but I think we should expect, as a matter of realism, that diversity will assuredly occur. Our concern should be not to have complete uniformity of state practice, but to discourage states from departing unnecessarily and unreasonably from the kind of expectations produced on paper in the law-making convention. That seems to be not a matter of semantics, but a fundamental distinction from an earlier period of history.

If we pursue the meaning of this, presumably we would have to say that diversity is to be expected more in some areas of extended jurisdiction than in others. There would probably not be a great deal of diversity in the development of national systems for petroleum and other non-living resources within national waters for the reason that technology is not extremely diverse in off-shore activity. There seems little reason for extraordinary discrepancies to arise in that part of state practice under the economic zone regime. But if we look, on the other hand, at fishery development and management, there is a great diversity in the technology available and in the expectations of coastal communities and so on. Therefore, inherent in that sector of the regime is, I would suggest, that a degree of variability is to be expected in the ways in which the coastal state will develop its own national system, in tolerable conformity with the language of the law-making Convention.

Likewise, in the context of the regulation of scientific research and in the regulation of shipping for the purposes of environmental protection and so on, one must expect a degree of diversity, partly because of the ambiguity and flexibility of the language of the relevant economic zone provisions of the Convention.

This would be my major point: that we should expect variable state practice. I think it naive in 1983 to suggest universal principles should be expected to come out of state practice in this context. Why should we look for universal principles to come out of state practice? I think we must go back to the theory of international law and ask yourselves whether this is likely and desirable. I would have thought that universal principles are things that get written down and then are put to the test of practice and not the other way around. Despite the difficulties of negotiating universal principles on paper we should not pass the burden over to where it does not belong. I do not want to seem to over-argue for variability because obviously there is a point where excessive strain would be placed on the system of international law. But we do not live in a romantic age and we should not have unrealistic classical expectations of total uniformity around the world in state practice.

I would suggest, moreover, that the language of UNCLOS III does not lead us to expect universal state practice. The language of UNCLOS III -- unlike the language of earlier efforts to develop the international law of the sea -- is permeated with relative rather than absolute values, it expresses conditional and qualified terms rather than unconditional and unqualified ones, it consists of complex and not simple ideas and institutions, and it is framed around distinctions that are pluralistic and no longer dualistic, as in the classical heritage of legal thought. The passion that we have had for precision and certainty in the past has been forced to yield to the need for flexibility. And that means nothing unless it means there must be a degree of variable practice in the real world outside.

That is my comment on the legal side, except that one rider might be attached, namely that I can think of two scenarios of divergence in the working out of economic zone systems around the world.

One scenario which would endear itself perhaps to those of us who still like the contract or legislative model of law-making in the international community would be that it makes a difference whether a coastal state is or is not a party to the Convention. That, of course, is possible in certain ways, but if we are talking about the economic zone regimes specifically and the development of national systems of regulation and legislation, I would not have thought that this is the primary determinant in variation of state practice -- whether or not the coastal state is a party to the Convention. I would think it more likely that the primary determinant in the opening up of some degree of divergence in state practice would rather be the national need, for internal reasons, to vary the institutional arrangements that the coastal state must make, albeit in general conformity with the language of the Convention. This will result in a number of ad hoc variations that should be kept in check and that should always be subject to the test of conformity with the framework, i.e. the economic zone provisions

of the Convention, whether or not the state is a party to that Convention. It should make little, if any, difference in my opinion whether a state is or is not a party to the Convention. One way or the other, it should be held up to the same standard of compatibility as far as development of economic zones systems is concerned.

Finally and very quickly, the question of the taking of living resources. I am familiar with the difficulties in North America that were discussed and explained here, and one thought occurred to me in listening. It is a little provocative, but it seems to me perhaps worth considering. It has been discovered in North America, and I suspect elsewhere, that ultimately the problem in increasing the efficiency of fishery development and management under the new law of the sea is one of political will. This has been mentioned by both speakers. Whether one is talking about Atlantic Canada or New England, we can easily think of examples of the failure of political will. This is perhaps one of the hidden consequences of extended jurisdiction around the world. It is less easy now for professional politicians to pass off the political challenge of making difficult and hard decisions that will not be popular in sectors of the electorate.

In older times it was relatively easy to blame it on the foreigners, to point the finger foolishly, irrationally, or even legitimately, in their direction. Now that is no longer so easy. Domestically, politicians will now be held answerable for their decisions or the lack of decisions. If we are talking about the input and the allocation of labor and capital to increase the efficiency of the fishing industry, people will get hurt if the economically appropriate decisions are made. Politicians do not like to make decisions that will hurt people; they tend to avoid that and put it off. So I think that it is one of the consequences of extended jurisdiction that unfortunately we greatly politicized the art of rational decision-making in fishery development and management. At the moment North America does not provide any great reason for optimism that politicians are ready to grasp that nettle. It may be that in other political systems, socialist systems, it will be much easier to grasp the nettle, but certainly in capitalist systems I suspect that this will continue to be for some time a very difficult matter and that ideology will be more of a factor in fishery management decision-making than it has been in the past.

HISTORIC COMPROMISE OR PARADIGM SHIFT? NAVAL MOBILITY VERSUS CREEPING JURISDICTION IN THE 1982 U.N. CONVENTION ON THE LAW OF THE SEA

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INTRODUCTION

In the almost ten years which led up to the signing, and in some cases non-signing, of the 1982 UN Convention on The Law of the Sea, the public discussion of the law of the sea was sometimes akin to watching Hamlet without the Prince. The naval factor was not at centre stage -- or did not seem to be -- and so an essential part of the plot seemed to be missing. Consequently, it was entirely appropriate that the Twelfth Annual Conference of the Law of the Sea Institute in 1978 should have placed "military implications" among the "neglected issues" of the Third United Nations Conference on the Law of the Sea (UNCLOS III). As the paper presented on that occasion showed at inordinate length, there was indeed a great deal left to be discussed [1].

The fact that the naval dimension did not seem to play its full part in the public discussion does not mean that the matter was unimportant. Nor did its general neglect by the growing number of specialists in law of the sea matters mean that the subject did not receive appropriate attention from naval establishments, particularly in the case of the traditional naval powers [2]. Through the 1970's the changing law of the sea was a concern to all those governments with an interest in deploying warships at some distance from their own coastlines. These governments included not only the traditional naval powers -- Britain and the United States -- but also the Soviet Union, whose expanding military reach was one of the most salient features of strategic affairs through the 1970's.

NAVAL INTERESTS

Although the naval dimension of UNCLOS III demanded less space in the public record than such problems as those relating to sea-bed mining, naval factors did help to determine the policies of some states, including some of the most important. It is appropriate, therefore, to begin with a survey of the interests of the naval powers, namely those states at UNCLOS III which wanted to ensure that the outcome did not interfere with their aim of ensuring maximum naval mobility.

The military priorities of the major naval powers are readily apparent and they were frankly outlined at the start of 1980 by Elliot L. Richardson, the former Special Representative of the President for the Law of the Sea Conference and the

former Head of the US delegation to UNCLOS III [3]. As a former Secretary of Defense, Richardson was more sensitive than most delegates to the naval dimension of the problem and so his words -- and worries -- deserve special attention. Furthermore, although his arguments were specifically concerned with the needs of the United States, they were also relevant to a greater or lesser extent to all the other naval powers. For present purposes, therefore, the US can be regarded as the paradigmatic naval power. This was brought out in practice by the close identity during UNCLOS III between the US and Soviet positions [4]. For the superpowers -- as for the lesser naval powers -- their interest in continued naval mobility was for them much more of a core interest than the constraining of that mobility was for those states with little or no interest in displaying naval power beyond their own coastal waters.

According to Richardson, the United States had five main naval interests during the final stages of negotiating the text of the UN Convention [5]:

The Problem of the Territorial Sea

The US position was to establish a 12-nautical-mile maximum for the territorial sea in order to undercut those coastal states which were claiming sovereignty beyond 12 miles. The US worry arose from the fact that already by 1974, when UNCLOS III began, 76 countries claimed territorial seas ranging from 12 to 200 nautical miles, as compared with the traditional limit of 3 nautical miles. To make matters worse, in the following six years another 25 countries increased their claim, thereby indicating the way in which the very process of law-making in this area not only legitimises changes but also generates them. Of these 101 states with extensive claims for the territorial sea, about three-quarters favored a 12-mile limit. Making matters worse for the naval powers were some of the proposals which accompanied the claims. As Richardson put it [6]:

> In addition to new territorial limits, certain of these claims call for prior notification to or authorization by the coastal state for the passage of warships or nuclear-powered ships, thus significantly restricting the traditional right of innocent passage.

Nor was this all. As will be seen later, the claims regarding the territorial sea also had major implications for the passage of warships through straits.

Historically, naval mobility had been served by the doctrine of the "freedom of the seas." This had given warships -- and in time aeroplanes -- complete freedom of movement outside the narrow zones designated as "territorial sea." Within territorial seas the movement of foreign warships was governed by the concept of "innocent passage." This gave surface warships the right to transit, without prior notification, but "innocence" required that the transit be not prejudicial to the "peace, good order, or security" of the

coastal state. However, submarines and aircraft were not given the same freedom: innocent passage did not embrace the right of overflight or of submarines to travel submerged [7]. While a 12-mile territorial sea was not ideal from the naval viewpoint, the fact was that by 1980 only 23 states still adhered to the traditional 3-mile limit. The new Convention, therefore, offered the naval powers one way to try to stop the further qualitative and quantitative creep of the concept of the territorial sea, which, if it occurred, would pose a serious threat to naval mobility.

The Problem of International Straits

Among the several problems it would create, a creeping territorial sea would threaten to restrict access through straits whose passage had previously been "free." Indeed, 63 out of 116 of the world's straits -- including some of the most important, would be affected by a 12-mile territorial sea [8]; they would lose their high seas corridor. Consequently, the United States wanted to ensure "free and unimpeded passage" through straits used for international navigation. In the process of trying to achieve this, the new concept of "transit passage" emerged. In Richardson's words [9]:

> Transit passage is the freedom of navigation and overflight for the purpose of continuous and expeditious passage of the strait. The right of free passage applies to all ships whether on the surface or submerged and includes the movement of ships and aircraft in military formations as required by the circumstances.

Coastal states would, therefore, not be permitted to control the transit of foreign warships. They could not "suspend or hamper any critical element" of transit passage, whether it be submerged, on the surface, or in the air. However, what Richardson considered to be the "legitimate interests" of the coastal states would be protected, namely their interests in safety and pollution.

The issue of transit through straits was a matter of concern for the US Navy and even more so for the geographically disadvantaged Soviet Navy [10]. If it happened that the straits states came to be in a position to claim that their straits would be subject to the right of "innocent" rather than "transit" passage, the implications for naval mobility would be far reaching. Richardson expressed it from the US perspective [11]:

> On that argument, the legal right to overfly a strait could be gained only with coastal state consent, submarines would be obliged to travel on the surface, and surface assets would be subject to varying assertions of coastal-state regulatory power. All the world's most important straits would be subject to

> these restrictions .... The result could seriously impair the flexibility not only of our conventional forces but of our fleet ballistic missile submarines, which depend on complete mobility in the oceans and unimpeded passage through international straits. Only such freedom makes possible the secrecy on which their survivability is based.

As with the problem of the possibility of a creeping territorial sea, therefore, the governments of the United States and the other naval powers saw the Convention they hoped would emerge from UNCLOS III as a legal barrier against the prospect which was threatening their long-existing navigation rights.

Archipelagos

Under the concept of the "archipelagic sea" certain states sought new regulatory powers over extensive areas of ocean -- those between and around the state's island territories. In response to this the United States and the other naval powers wanted a guarantee of freedom of navigation and overflight through archipelagos "on terms equivalent to transit passage through straits." The difference between passage through archipelagos and straits -- in Richardson's words -- was that sea-lanes through archipelagic seas "instead of being determined by the configuration of the land, would be defined by courses and distances, with a right of deviation up to 25 miles on each side of this axis." Basically, the naval powers were willing to accept some limits on access in order to ensure a satisfactory transit agreement.

Exclusive Economic Zones

In some ways the most notable innovation of UNCLOS III was the growth and legitimisation of the concept of the EEZ, which gave coastal states sovereign rights over the living and non-living resources within the zone. As a result of this extension of coastal state jurisdiction approximately 40 percent of the surface of the oceans came under the authority of national governments. While this new concept was gestating, the naval powers feared that national control over this vast area would not remain limited to economic matters: [12]

> If this vast area ever comes to be regarded by coastal states as subject to their sovereignty for purposes of regulating navigation and overflight and related activities, the result would be to curtail drastically what Professor Bernard H. Oxman has aptly called "the sovereign right of communication."

Consequently, the naval powers wanted to ensure that the Convention preserved the freedom of navigation and overflight within the EEZs.

Richardson made clear that the freedoms in question "both within and beyond 200 miles" must be <u>qualitatively</u> and <u>quantitatively</u> the same as the traditional high-seas freedoms:

> they must be qualitatively the same in the sense that the nature and extent of the right is the same as the traditional high-seas freedoms -- they must be quantitatively the same in the sense that the included uses of the sea must embrace a range no less complete -- and allow for future uses no less inclusive -- than traditional high seas freedoms.

In the EEZ, as elsewhere, the naval powers hoped to use the Convention to slow, or preferably stop, the growth of what were regarded as unacceptable claims.

Settlement of Disputes

In view of the changing maritime environment, and the uncertainties and problems which would result, the US Government wanted not only its navigation rights secured, but it also wanted "the right to bring suit against a state that interferes with navigation or overflight." This was of lower priority than the other interests, but it was Richardson's expressed hope that the possibility of suit on claims would "strengthen the advocates of reason and restraint within foreign governments" when they contemplated eroding high-seas freedoms. The right to bring suit, it was argued,

> would help relieve us of having to choose between acquiescence and defiance each time a claim is made .... It would give us an important new option in our efforts to control and discourage such claims.

Again, the United States saw the Convention as a means of creating a legal environment in which US perceptions of its rights would be "essentially unchallenged" [13].

THE ISSUE OF NAVAL MOBILITY

The reasons for the conservative position of the naval powers on matters affecting warship navigation are quite obvious. Some have already been mentioned [14]. The basic problem was that the process of creeping jurisdiction threatened the traditional assets of warships as instruments of foreign policy in peacetime. Clearly, international legal constraints are less important in war, when the coast states are prepared to accept in order to carry out a particular act increase significantly.

If surface warships had been about to go out of business in the 1970's, then the issues raised by creeping jurisdiction would not have been important; but despite the escalating costs and growing vulnerabilities of warships, this was definitely not the case. Indeed the opposite was true. By the turn of the 1970's /1980's it was apparent that there would be a greatly expanded US naval programme under the Reagan Administration, while the signs were becoming clearer of an even more powerful

Soviet naval challenge for the 1990's [15]. Nor were warships, including surface ships, going out of business elsewhere. In 1982 the recovery of the Falkland Islands by British forces underlined for at least this "medium maritime power" that surface warships were indispensable for some tasks. Without such ships, including organic air power, the Islands could not have been retaken and British military and political credibility could not have been restored. Appropriate warship construction is also taking place in smaller non-traditional naval powers such as India and Brazil [16]. Indeed, there is a general trend towards naval modernization in most parts of the world and certainly in those of any strategic significance [17]. Obviously, states which have an interest in using the sea -- and UNCLOS III has raised awareness in this respect -- also have an interest in having some capacity to prevent that usage being challenged. Hence, the continuing relevance of conventional seapower. This requires, from the maximalist perspective of the United States, "the capacity to project force to any part of the globe where significant U.S. interests or responsibilities are challenged" [18].

Surface warships have traditionally possessed a range of special qualities as instruments of foreign policy. These can be summarised as versatility, controllability, mobility, projection ability, access potential, symbolism, and endurance [19]. Several of these qualities would remain essentially unchanged if creeping jurisdiction at sea went unchecked. Warships would still have considerable endurance, for example, but it is equally apparent that some of the traditional advantages would be threatened. It would no longer be the case that "the sea is one," as the old British Admiralty adage put it, and with this loss of freedom of access, the advantage of mobility would be impaired. Richardson has expressed the maximalist US position on this matter as follows [20]:

> Our economic well-being ... is continually more dependent on overseas trade and more vulnerable to distant political developments. The combined result is to compel increased reliance on the strength, mobility and versatility of our armed forces. To fulfill their deterrent and protective missions these forces must have the manifest capacity either to maintain a continuing presence in farflung areas of the globe or to bring such a presence to bear rapidly. An essential component of this capacity is true global mobility -- mobility that is genuinely credible and impossible to contain.

In practice a naval power requires that its sea and air units have access to maritime areas of national interest "without at any time being obliged either to defy some challenge to their right to do so or to make a vast detour in order to avoid such a challenge" [21]. Important aspects of the peacetime utility of warships require "rules of law compatible with the routine deployment of ships and planes."

For the traditional maritime powers freedom to use the sea was believed to be essential for the continued use and effectiveness of naval diplomacy [22]. Any restrictions to that freedom were seen as increasing the costs of using the instrument. In Richardson's view this would probably involve "some form of political, military, or economic concession" to coastal states or competition between naval powers for influence over strategically located states [23]. In addition, it might sometimes be necessary for a naval power to be heavy-handed in order to secure maritime access. And in this regard the former US Secretary of Defense recognised, as have others, that the Soviet Navy faces greater geographical disadvantages than its US equivalent. As a result, if transit through particular waterways were not to be respected under "binding legal arrangements," then Richardson argued that the Soviet Union "will feel compelled to bring to bear whatever resources may be necessary to win control over the chokepoint" [24]. But the US Navy also faces problems in this regard and several US spokesmen have accepted that assertive naval behaviour might be necessary in order to ensure that their own interpretation of the law was upheld [25].

Overall, those states wanting maximum freedom of navigation for warships saw themselves at the top of a slippery slope during UNCLOS III. If their naval interests were to be upheld, they had to use the Conference and its eventual convention to block the proliferation of maritime claims. As Richardson succinctly put it [26]:

> the superpowers have trouble enough in an increasingly pluralistic world without being forced into marginal conflicts over the peacetime movement of their military forces.

Consequently, the naval powers attempted to use UNCLOS III as a means of ensuring legal protection for those well-established rights which were coming under challenge through the 1970's as a result of nations seeing contiguous seas as legitimate extensions of their territory. If the naval powers could not get the law on their side, then they would be faced by the need to secure their interests by power and in the face of the claims of most of the world community. "The result," as Richardson explained, "will be expensive not only to our bilateral relationships but to our reputation as a well-intentioned and law-abiding member of the world community" [27]. The effects of such a development could not be precisely forecast, but they would so obviously be negative that this was an outcome to UNCLOS III which would be worth avoiding if at all possible.

THE CONVENTION

After having established the naval interest in UNCLOS III, it is now necessary to examine whether the Convention, which was

opened for signature in December, 1982, was a disappointment or a success. One hundred and nineteen governments put their names to the Convention and it will go into force after one year following its ratification by sixty states. This seems certain, but the status of the regime will remain problematical because seventeen states abstained, while the US and three others declined to sign. It is significant, however, that the attitude of those who decided not to sign was determined by other than naval considerations. This included the US. When, earlier, President Reagan had listed his objections to the draft Convention, he had conspicuously avoided any reference to its navigational provisions.

At the outset it should be stressed that from the perspective of the major naval powers there is no doubt that the military interest was well served by the 1982 Convention. This is evident from the following enthusiastic words of Commander Dennis R. Neutze, who at the time was Legal Adviser to the Deputy Chief of Naval Operations in the US Navy [28]:

> The treaty process has resulted in a rather clear victory for proponents of naval mobility. Not only do the navigational articles define a regime that is generally satisfactory from a naval perspective, but the action taken on amendments to the text clearly defines the outer limit of coastal state authority.

The US Navy -- and therefore all the lesser navies whose needs are not so extensive -- had every reason to feel satisfied at the outcome, for what Neutze called "the text and (the) rejection of efforts to amend it" secured the aims which Richardson had outlined so frankly in 1980.

In terms of the naval interest there were seven main achievements in the Convention:

Territorial Sea

A 12 nautical-mile territorial sea was established with a right of "innocent passage" for ships of all nations.

Straits

A right of "transit passage" was established, which includes both submerged transit and overflight.

EEZ

Coastal states were granted the exclusive right to manage the living and non-living resources of the sea within a 200-mile EEZ. However, all other states were granted freedom of navigation and overflight, as well as freedom to lay submarine cables and pipes.

Continental Shelf

Coastal states were granted the exclusive right to manage the living and non-living resources of the continental shelf. The shelf would extend to at least 200 miles and out to 350 miles or even beyond under special circumstances.

Archipelagos

The concept of "archipelagic seas" was validated, which gives island states wide regulatory powers over the waters around and between them. However, "archipelagic sea-lanes passage" was granted for the ships of all other states.

High Seas

It was confirmed that all states were to enjoy the traditional freedoms of navigation, overflight, scientific research and fishing on the high seas.

Disputes

It was agreed that states be obliged to settle by peaceful means their disputes over the interpretation or application of the Convention.

As a result of these agreements, the Convention was a legal endorsement of traditional expectations and practice regarding naval mobility. In particular, the major objectives of the US Navy were secured. As a result of the UNCLOS III process, Commander Neutze concluded that the outcome should [29]:

- Slow the proliferation of excessive maritime claims;
- Provide a legal yardstick against which the validity of maritime claims can be judged;
- Provide a more stable environment in which to plan and conduct future naval questions; and
- Permit the conduct of naval operations in most cases without the political costs we now pay in exercising our navigational freedoms.

In general terms, the Convention validated the freedoms traditionally enjoyed by the naval powers. The only noteworthy change was the extension of the territorial sea, but this in itself is an insignificant change, since it merely entails an extension of the right of "innocent passage" from 3 to 12 miles. In any case, as was made evident earlier, a 12-mile territorial sea was rapidly becoming the norm of customary international law.

Furthermore, this relatively insignificant change was more than compensated for in the eyes of naval establishments by the extension of the "transit passage" provision to straits. This represented a gain on what existed previously, since it permits both submerged transit and overflight and permits transit not merely in the high-seas corridor, but anywhere within the strait. In any case, the difference between 3 and 12 miles is of minimal significance in modern naval operations because of the range of weapons and the speed of the systems involved [30].

Overall, what the Convention achieved was a nice compromise between traditional naval interests and contemporary political and economic aspirations regarding the sea. To put it another way, the Convention represented a satisfactory resolution of the tension, actual and potential, between naval mobility and creeping jurisdiction. The naval powers wanted to legitimise

the maximum freedom of navigation, which included innocent passage through territorial waters, unimpeded transit through straits and archipelagos, and "high seas" freedom elsewhere. Threatening this there was a growing swell among the international community in favor of greater control over adjacent waters for a range of political, economic, and environmental purposes, a trend which has been felicitously described as a "maritime territorial imperative" [31]. The 1982 Convention legitimised creeping jurisdiction over about 40 per cent of the oceans while maintaining the essential features of global naval mobility.

As a result of the UNCLOS III compromise, naval mobility seems assured for the life of the Convention, even though the Government of the US -- in a last-minute fit of "every man for himself" -- decided to reject the Convention which it had helped to construct over such a long period. Naval mobility seems assured as a result of the work of UNCLOS III, but international politics are not always what they seem, and UN Conventions are certainly no exception. It will, therefore, be necessary for the naval powers to be wary about their navigation rights in the years ahead. Their satisfaction will ultimately rest on the practice which will follow the coming into force of the Convention and not simply on the words of the document itself. This need for caution was clearly underlined by Commander Neutze soon after the Convention was opened for signing. While expressing himself well content with its provisions regarding naval matters he was nevertheless wary [32]:

> The navigation articles do not impose unreasonable burdens on the naval powers, nor adversely affect legitimate interests of the coastal states. In the final analysis, the degree to which each of the conflicting interest groups has been successful will depend as much on how the treaty's ambiguities are resolved as on its literal language.

AMBIGUITIES IN THE CONVENTION

Not surprisingly, the 1982 UN Convention on the Law of the Sea does indeed contain "ambiguities," as Commander Neutze suggested. This could not be avoided in such a complex document, cobbled together by so many different nations. After close examination of the text the surprise is that there are so few "ambiguities" -- that is, provisions with more than one possible interpretation or which are vague or uncertain of meaning. Such provisions could be possible trouble-spots in the years ahead. In addition to any problems which might arise as a result of these, there is also the possibility of trouble being directly caused by disputes over the drawing of demarcation lines. However, since for the most part it is not expected that the latter will in fact be of any great significance [33], this potentially troublesome set of implications in the Convention will be ignored.

Preamble

To the extent that the Preamble represents the "spirit of the Convention," it should be noted that its ideological flavour closely reflects its origins in the outlook of the developing states which gave UNCLOS III its momentum, the pro-New International Economic Order thinking which was prominent in the 1970's, and the ritualistic peaceful incantations of any United Nations forum. Consequently, it is stressed in the Preamble that the Convention should contribute to "the maintenance of peace ... for all peoples of the world," promote the "peaceful uses of the seas and oceans," and assist the "strengthening of peace, security, co-operation and friendly relations among all nations."

It is possible that those in future who would use warships for coercive purposes may have to face the prospect of having this Preamble thrown at them. In practice, however, states bent on the pursuit of vital national interests will determine their policy on the basis of more important considerations. Since states will remain the arbiters of their own interests and behaviour and since all governments regard their own policy as synonymous with a policy of peace, they will not be deterred. However, if the Preamble is waved high as a standard of international maritime behaviour, it could well do something to discredit the Convention in the eyes of the naval powers -- as the United Nations itself has been discredited in the eyes of some of its more important members as a result of the hostile rhetoric of Third World members. Another prospect, over the very long term, is that the Preamble will be a milestone in a paradigm shift in law of the sea matters, reflecting a gathering consensus among the international community regarding the military use of the oceans. This extra cost might tip the scales against peacetime naval missions and so constitute "a kind of *de facto* arms control" [34]. Even so, when it comes to vital issues for the naval powers, the Preamble will merely be, to update a pertinent comment of Sir Charles Webster, a scrap of paper across the opening of a missile tube.

Part II Section 3: Innocent Passage in the Territorial Sea

Article 18 on the meaning of passage stipulates that passage must be "continuous and expeditious" and it explains what this entails. Clearly there is little scope for disagreement as to what is "expeditious" in particular cases. More serious is the scope for disagreement in article 19 when it states that passage is innocent "so long as it is not prejudicial to the peace, good order or security of the coastal state." Obviously these words are wide open to the possibility of different interpretations, honest and otherwise. In practice, however, the problem can be circumvented by naval powers by having their warships avoid the territorial sea, though they may be reluctant to do this for fear of setting a precedent. Article 19 lists twelve criteria for assessing the meaning of "innocent." These criteria include:

- Matters concerning the character of the mission of the warships concerned -- are they threatening or using force against the coastal states or are they violating the principles of the UN Charter?
- Matters relating to the actual activities of the ships during passage -- are they practising with weapons or are they gathering information?
- Matters relating to environmental, fishing, and research activities by the ships -- is there any "wilful and serious" pollution?
- Finally, the rather open-ended provision against "any other activity not having a direct bearing on passage." There is obviously some basis here for any state which wishes to challenge the passage of warships of another state, since warships are invariably "collecting information" of one sort or another. In practice such a challenge is unlikely to happen and, if it were to, the chances would be that a hostile relationship already existed between the states concerned, in which case the concept of "innocent passage" would have already been made strategically meaningless.

One problem faced by the coastal state in monitoring the innocent passage provision is that of determining whether a violation has taken place, for example, by the undertaking of any "research ... activities." This problem is even greater in the case of article 20 on submarines and other underwater vehicles since detecting illegal submerged passage will be difficult for most states, even the technologically advanced, as recent episodes in Scandinavian waters have shown. It will obviously be easier to identify foreign nuclear-powered surface ships and perhaps even ships carrying nuclear substances (article 23); their passage might become threatened in time if the relevant "international agreements" came to include the spread of "Zones of Peace." The legitimation of this idea could strengthen the hands of those states wishing to hinder the transport of nuclear materials in whatever form.

Part III Section 2: Transit Passage through Straits used for International Navigation

Article 38 on the right of transit passage grants "all ships and aircraft" the right of transit passage, as defined in the article. Again, there is room for disagreement in particular cases on the question of whether the passage of a warship, or ships, is "solely for the purpose of continuous and expeditious transit." A more serious source of contention would be disagreement as to whether ships and aircraft operating under this right were fulfulling their duties as specified in article 39. Of particular note in this respect is the duty to refrain from "any threat or use of force against the sovereignty, territorial integrity or political independence of States bordering the strait, or in any manner in violation of the principles of international law embodied in the Charter of the United Nations." Transit passage does not allow "research or

survey activities" without prior authorization, but here again there is some scope for disagreement since, as was mentioned earlier, warships are invariably involved in "research or survey activities" of one kind or another and this is particularly important for submarines. The problem for straits states, as for coastal states in the territorial sea, comes in determining whether a violation has actually taken place.

Part III Section 3: Innocent Passage

The same problems attach to innocent passage through straits as were discussed in relation to innocent passage through territorial waters.

Part IV: Archipelagic States

Article 58 on the right of innocent passage gives archipelagic states the right to "suspend temporarily in specified areas of its archipelagic waters the innocent passage of foreign ships if such suspension is essential for the protection of its security." This provision could be used to limit navigation in specific instances, and each state is the arbiter of what is "essential" for its protection. This does something to limit the force of article 53 on the right of archipelagic sea-lanes passage, which gives archipelagic states the right to designate sea lanes and air routes for the passage of "all ships and aircraft." Submarines are not mentioned in article 53 and for this reason there is a view that "the language of the treaty is not entirely clear in this respect" [35]. However, this interpretation also holds that it was "generally understood by Conference participants that the right of archipelagic sea-lanes passage includes submerged transit as well as the right of overflight." What is "generally understood" in international forums is, of course, always open to subjective interpretation and re-interpretation. There is, therefore, some scope for dispute, but precedent, difficulty of detection, difficulty of interception, and naval power interest are likely to ensure in practice that what is not prohibited is permitted on the issue of submerged transit and overflight.

Part V: Exclusive Economic Zone

Article 56 on the rights, jurisdiction, and duties of the coastal state in the exclusive economic zone gives the coastal state the right to fix "installations and structures" in its EEZ. These could be designed and placed in such a way as to seriously interfere with submarine navigation. This could take place regardless of the Convention, but the difference is that the naval power is now limited in what it can do within 200 miles by way of survey and research without the authorization of the coastal state. Furthermore, strategically placed chains of artificial islands, installations, and structures could be employed in a fashion which would severely limit the access potential of foreign warships [36]. And foreign states could not reply in kind against the coastal state (article 60). But the operating principle is that all ships and aircraft should

enjoy the freedoms of navigation and overflight referred to in article 87 on the freedom of the high seas. This implies that what is not prohibited within the EEZ is permitted -- and what is not prohibited is wide.

As Elizabeth Young pointed out in relation to one of the earlier drafts of the Convention, the silence of the document hides a number of rights for navies, such as the right to conduct naval exercises within the EEZ of other states and the right to hold weapons tests there [37]. These "military exclusions" make article 88 on the reservation of the high seas for peaceful purposes sound like a pious piece of rhetoric. But as the EEZ is not the same as "high seas," there is a sense in which the Convention could be said to have strengthened the duty to maintain the peaceful uses of the oceans in those areas designated "high seas" over those designated "EEZ," since there is not a specific commitment to peaceful uses in the latter. This was not the intention of the framers. However, some qualification of the earlier argument is suggested by article 59 on the basis for the resolution of conflicts regarding the attribution of rights and jurisdiction in the exclusive economic zone, since this provision leaves somewhat open the question of "what is not prohibited." The article states that in cases where the Convention "does not attribute rights or jurisdiction" to the coastal or other states within the EEZ and "a conflict arises between the interests of the coastal state and any other State or States" the conflict should be resolved

> on the basis of equity and in the light of all the relevant circumstances, taking into account the respective importance of the interests involved to the parties as well as to the international community as a whole.

This could mean everything or nothing, but it does give some scope for states to question warship activity within their EEZs if they feel strongly about it. In response, for example, to naval manouevres in its EEZ, a state could claim that the Convention did not "attribute rights" on the matter. Article 87 on the freedom of the high seas might be the naval power's defense, but in reply it might be argued that it does not apply, since the EEZ is not the same as high seas (article 86). In this case a "creative ambiguity" could arise as a result of the sui generis character of the EEZ -- to be discussed later.

A more direct problem than the one just considered is the possibility of disputes over the rights of "geographically disadvantaged states" (article 70) and over matters of EEZ demarcation (article 74). The likelihood of direct violence over such matters in most parts of the world seems low [38].

Part VI: Continental Shelf

Article 77 on the rights of the coastal state over the continental shelf gives the coastal state sovereign rights "for the purpose of exploring" the continental shelf, as well as

exploiting its natural resources, but the exercise of these sovereign rights over the continental shelf "must not infringe or result in any unjustifiable interference with navigation or other rights and freedoms of other States" (article 78). The meaning of "unjustifiable interference" could be a matter for varied interpretation, but since the coastal state is granted the exclusive right to construct and to authorize and regulate the construction, operation and use of artificial islands, installations and structures on the continental shelf (article 80), it is in effect given a license to develop the continental shelf in ways which could have some military significance. In some areas the islands, installations, and structures could be strategically placed in such a way as to monitor submarine transits, not to mention surface traffic. Whether this is "unjustifiable" could be a matter of dispute, but even the possibility that the islands, installations and structures might be so used might prove a serious deterrent to a state interested in transiting submarines and having no desire to reveal their presence -- the normal practice.

Part VII Section 1: High Seas -- General Provisions

Article 87 on the freedom of the high seas states that the high seas are "open to all states." Five freedoms are specified: navigation, overflight, the laying of submarine cables and pipelines, the construction of artificial islands and other installations, fishing, and scientific research. But this list is not all-encompassing, since it is preceded by a sentence stating that the freedom of the high seas "comprises, inter alia, both for coastal and land-based states ..." The phrase "inter alia" obviously leaves open the use of the high seas for other unspecified purposes, including the traditional businesses of warships. Characteristically, a discreet veil had to be drawn across this rather crude, but essential, form of international intercourse. However, the freedom of the military instrument in the high seas would seem to be countered by the immediately following article 88, which concerns the reservation of the high seas for peaceful purposes. It is the shortest article in the Convention, but in spirit it is the most far-reaching, since it apparently challenges the historic role of oceans as mediums for warfare. The article states, "The high seas shall be reserved for peaceful purposes."

For a long time to come such a declaration can only be regarded as a resounding platitude of no practical relevance. Any state can justify any action and call it "peace": wars are fought in the name of "peace" and all nations see themselves as the most peaceful. However, despite the inherent problems of definition -- "peaceful" being a notoriously slippery concept -- and the political problems it would entail, a state could decide to invoke article 88 against those who deployed warships on the high seas for purposes they did not accept. Such a possibility is not likely, but there could be barrack-room states, as well as individuals. Their arguments would have to rest on the "spirit" of the Convention, since the document itself does not

equate warships and non-peaceful purposes, although it does not -- cannot -- say this openly. Article 95, for example, recognizes that warships will use the high seas by granting them "complete immunity" from the jurisdiction of any state other than the flag state. Evidently, the Convention accepts that warships are not exclusively engaged in activities which are synonymous with the "threat and use of force."

Part XI Section 2: Principles Governing the Area

Articles 138 and 141 on the general conduct of states in relation to the Area and the use of the Area exclusively for peaceful purposes both stress the use of the Area "in the interests of maintaining peace and security" and "for peaceful purposes." This theme is repeated in article 143 which states that marine scientific research in the Area "shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole." This might be seem to rule out military activity, an interpretation which is reinforced in article 147 which reserves "exclusively for peaceful purposes" the use of installations in the Area. However, all this is rather academic, since it is presently difficult to conceive any military requirement for activity there. As elsewhere, article 145 on the protection of the marine environment could conceivably be used as an excuse for trying to control the passage of ships carrying nuclear materials, were a more environmentally sensitive international community to emerge.

Part XIII: Marine Scientific Research

Article 238 gives all states the right to conduct marine scientific research, but article 240 on the general principles for the conduct of marine scientific research declares that such research shall be conducted "exclusively for peaceful purposes." Again "peaceful" is undefined, but presumably is not to be understood as simply being synonymous with "non-military activity" since this would prohibit a wide range of essential military tasks, notably the research necessary for submarine and anti-submarine warfare. This question of research is of some sensitivity in the territorial sea, where article 245 reserves for the coastal state the right to regulate, authorize, and conduct marine scientific research there. This provision should be of no small interest to the state or states which have been conducting clandestine submarine operations in the territorial waters of Norway and Sweden in recent years.

Coastal states have the same authority over marine scientific research in their EEZ and on their continental shelves (article 246), except in the latter case it is stated that coastal states shall "in normal circumstances, grant their consent" to such projects on the understanding that they be carried out "exclusively for peaceful purposes and in order to increase scientific knowledge of the marine environment for the benefit of all mankind." Again, it can be expected that some states will wish to conduct clandestine "research" in such areas in disregard of the Convention: some navies need extensive

environmental intelligence and must occasionally conduct electronic surveillance. In such cases governments will not be inclined to pay attention to article 248, by which states have to give a full description of "the nature and objectives" of their project [39]. Because of the absence of a clear dividing line between "peaceful" and other types of "marine scientific research," this is an area to which one might expect blind eyes to be turned.

Part XV: Settlement of Disputes

Article 279 on the obligation to settle disputes by peaceful means requires the parties to the Convention to "settle any dispute between them concerning the interpretation or application of this Convention by peaceful means," preferably by "peaceful means of their own choice" (article 280) or, failing this, by the procedure laid down in Part XV. This gives states the right to bring suit against unreasonable claims, as Richardson wanted. But it is a two-edged sword: it also gives unreasonable states the opportunity to bring suit against the conservative states on law of the sea matters.

Part XVI: General Provisions

Article 301 on the peaceful uses of the seas stipulates that parties to the Convention, in "exercising their rights and performing their duties" under it, must "refrain from any threat or use of force against the territorial integrity or political independence of any state." This article at last fleshes out the meaning of "peaceful" in a way which is not done elsewhere, in the sense that it refers to the "threat and use of force." However, this is unlikely to be any serious restraint on military activity, since the right of the "threat and use of force" in self-defense is enshrined in the UN Charter and all states see, and certainly tend to justify, their own military activity in terms of national self-defense.

THE CONVENTION IN GENERAL

From this review of the Convention from the perspective of its possible military implications, four clear conclusions emerge. First, an examination of the detail of the text, including possible ambiguities, reveals nothing which need change the earlier general conclusion to the effect that the Convention should satisfy the naval powers. Second, the text does reveal some uncertainties and room for interpretation, but not to any significant extent. Indeed, since the subject matter is complex, since words are not perfect tools, and since the Convention was the product of negotiations between the whole of the international community, the document is remarkable for its relative precision. The most slippery concept is "peaceful," but if this could be universally defined and its manifestations universally accepted, there would hardly be a need for the Convention -- or even the United Nations itself. Thirdly, the text in detail proves to have been a masterly compromise between

the interests of the naval powers and the rest. Both can live with the outcome. Despite earlier fears among naval establishments about some of the possible results of the UNCLOS III process, the long labour has, militarily speaking, merely produced a mouse. Four, in the near and immediate term, whatever the words of the Convention, what happens in practice will be the touchstone of success from the perspective of naval interests. And what happens in practice will depend on the way coastal states choose to interpret the Convention and the way the naval powers respond in their operational practices. The major naval powers are well aware of this. As Commander Neutze warned early in 1983 [40]:

> the clearest interpretation of the ambiguous language of the treaty will be the actual operational practices of those who base their navigational rights on its provisions .... It is important that all naval powers, including the United States, demonstrate clearly -- through their operational practices over the next few years -- their understanding that the language of the treaty has no significance on naval mobility .... In order to take advantage of the many positive benefits that the treaty's language portends for the future of naval mobility, the United States must continue to operate its forces in a manner that ensures the treaty's language is properly interpreted and demonstrates to the world community that the United States is firmly resolved to maintain its navigational freedoms.

Under the assertive title "Whose Law of Whose Sea?" Commander Neutze was indicating that, although the US Government had not signed the Convention, it did not intend that its view of the "Law" should cease to operate and that when it came to naval mobility, the sea still belonged to the naval powers.

In the short run, therefore, the outcome of UNCLOS III is reasonably satisfactory from the viewpoint of the future of naval mobility. Naval strategists will find it easy to adapt to the Convention, whether or not particular naval powers sign it, because the Convention very much promises to allow business as usual. They will, however, be watchful of the possibility that any "ambiguities" might be exploited to their disadvantage or, worse still, that particular states take the law into their own hands for unilateral purposes. The determination of the US in this regard is beyond doubt. In the years ahead its Navy will show operational vigilance and, if necessary, its actions will be confrontational. One sign of the times, before the Convention was signed, was the incident in August, 1981, between US and Libyan aircraft in the Gulf of Sidra, when the US contested Libya's claim to sovereignty over the Gulf [41]. If the well-established freedom of the seas has to be bought by vigilance and violence it will be -- and the US Navy will bear the brunt [42].

If in the near future the outcome of UNCLOS III seems reasonably satisfactory for the naval powers, this might not be the case in an undefinable "longer term." The problems which might arise in this regard will be the result of the norms and attitudes which have been generated, and to a degree legitimised, by the UNCLOS III process and the Convention which finally emerged. Some agreements between states, like some great paintings or great pieces of literature, can change the way we think about the world. The agreements which set up the League of Nations and the United Nations were of this type, as was the Treaty of Rome. These agreements gave concrete form to ideas, even dreams, and aspects of international politics were never the same again. After the League Covenant, it was almost unthinkable that international society should not have a global multi-purpose organization.

It may be that the 1982 UN Convention on the Law of the Sea will have a similar catalytic effect on the way international society looks at the sea. Already it has drawn attention to the sea in international politics, even for those many states which have not been particularly maritime-minded in the past. UNCLOS III has helped to legitimise the apparently irreversible "territorialisation" of the oceans -- that is, the filling out of the sea with national rights and duties. The chief innovation in this process was the introduction and acceptance of the EEZ concept, which almost overnight extended a new form of national jurisdiction over one third of ocean space. As a result of this and other developments, the threat of "creeping jurisdiction" -- as "territorialisation" is more commonly known -- will be a fact of naval life for the foreseeable future. New psycho-legal boundaries are growing up across the oceans, lines about which there is a national sense of possession, as well as towards which there is an economic interest [43]. Although the process has a long way to go and its evolution might be fitful, we can expect that the oceans will become filled out with administration, as were the empty continents over the last two or three centuries.

THE FUTURE

In terms of the naval interest the process of territorialisation poses two types of challenge. The first is relatively direct and concerns the problem of naval mobility if the growth of national control over different patches of ocean comes to include a demand for increased control over the movement of warships and aircraft [44]. A second, and even more distant, challenge is represented by the possibility of a paradigm shift implied in the frequent stress on the "peaceful" uses of the sea in the 1982 Convention, backed up by the spirit of the doctrine of "the common heritage of mankind" [45]. While the idea of a paradigm shift will seem fanciful to most people at present, our historical imaginations should at least recognize the possibility. The stress on the "peaceful" uses of the ocean might in the course of time prove to be as significant

a milestone in the history of naval power as were the lone voices who first called for an end to colonial power.

The idea of a paradigm shift is for the distant future -- if at all. For the foreseeable future there is no doubt that great powers will continue to see an interest in projecting power by sea to all parts of the world, while lesser powers will have similar but more limited ambitions. Whether the interests which go with these ambitions will be challenged depends upon many factors. The expectations of the actors will not be the least important. If trouble at sea is expected it is more likely to occur. But the oceans need not become a "troubled common"; they could see a period of tranquil development under a spirit of international cooperation. Alternatively, it might not be this way. The spirit of the "common heritage" could be threatened by the narrow spirit of "every man for himself." If, under US provocation, this meaner spirit does prevail, greater pressures could arise against the naval interest. It is possible to imagine, for example, that Third World countries might become more obstructionist on the issue of naval mobility if they become severely disappointed at the results of the Convention and have other grievances against those developed states which are also naval powers.

If this were the case, the present satisfaction of the naval powers in the naval mobility aspects of the Convention gives others a real point of leverage regarding the future evolution of the law of the sea. In an "anarchical society" things of value are ipso facto potential hostages. The 1982 Convention is obviously not sacrosanct. It was negotiated as a package. If the US and others chose to unravel one part of it, there is no reason why others should not unravel the rest and begin negotiating again. Few would want to reopen the issues of UNCLOS III from the start so soon after finally bringing the 1982 Convention to some sort of completion. But such a possibility might appeal to some energetic members of international society during some moment in an acrimonious future.

One possible focus of trouble from creeping jurisdiction concerns the future character of the EEZ. According to some authorities, this zone is sui generis, since it is neither high sea nor territorial sea. However, this view has been strongly challenged by traditionalists, who have argued that the EEZ is essentially an area of high seas which has now become subject to certain limited jurisdictional rights "which are in the nature of police rights rather than sovereignty" [46]. The EEZ is thus seen as having the residual character of high seas. But why this should be so may not always be self-evident to those unschooled in Anglo-American navalist traditions. If the EEZ is sui generis, why should it not take on the emerging character of the territorial sea rather than have the residual character of the high seas?

Without doubt, coastal states are likely to want a bigger say in the course of time in what happens in their maritime backyards. It would be surprising indeed if this did not in

turn direct the thinking of at least some of them, as it has only done fitfully so far, towards the goal of greater control over foreign warships and aircraft in, over or under adjacent waters. At an early stage in UNCLOS III Mark Janis pointed out that economic concerns were the major preoccupation for most states [47], but that with the settling of these issues, it was likely that national security issues would come to the fore. Were the sea-bed mining issue to be resolved, we would potentially be in that position, and it would not be difficult to guess the directions in which the arguments might go. Already in the mid-1970's some Third World spokesmen claimed that the support of the naval powers for a narrow territorial sea represented not so much a defense of the internationality of the oceans but more a tactic by which they could legally place their warships as close as possible to the shores of coastal states. As ever, while the mighty are concerned with "freedom to ..." the weak are anxious about "freedom from ..." The latter's anxieties could lead them to try to put pressure on naval mobility by attempting to exploit some of the ambiguities in the text. In the course of this, as Richardson foresaw, some coastal states might make naval access dependent upon an agreed stance on a particular foreign policy issue [48]. Further pressure might be exercised by attempts to amend the existing Convention. This would be all the more likely if, as was suggested earlier, the naval powers were not seen to be playing ball in the economic or other dimensions of the problem.

Possible directions for amendments can be seen in some of the proposals discussed at the end of UNCLOS III, which Commander Neutze said would have been "disastrous to naval mobility" had they been passed [49]. These "eleventh hour" amendments included an attempt supported by Romania and others to alter article 21 regarding innocent passage in such a way that it would have created a "warship notification regime"; a proposal by Spain that military aircraft transiting over straits must comply with International Civil Aviation Organization procedures involving checking in with coastal state flight-following procedures; and a Turkish proposal to rescind the prohibition against reservations to the Convention unless expressly permitted by other articles, which would allow coastal states to select only those parts of the Convention it chose to accept. With varying strength these amendments were defeated, but each received a not insignificant amount of support. They might have been defeated in UNCLOS III, but they or their like will be seen again.

CONCLUDING REMARKS

For the moment the 1982 UN Convention has placed limitations on the way in which creeping jurisdiction might inhibit traditional naval mobility. A nice compromise was reached between the naval powers and others and both can live with it if they so wish. Consequently, in the years ahead naval strategy will develop -- as ever -- more as a result of changes

in technology and domestic politics than as a result of changes in the law of the sea. But if, as was suggested, the long-term effect of UNCLOS III will be to change the way nations regard the sea as a resource and object of politics, then navies will one day have to face the prospect of major adjustments. As the feeling of "territorialisation" or "propertisation" grows -- as it seems bound to -- the map of the oceans will become characterised by a patchwork of changed psycho-legal boundaries. If international law-making and nationalistic-territorial attitudes toward the sea proceed hand in hand, as they did in the 1970's, the consequences for routine naval mobility could be profound.

This need not rule out warships as instruments of foreign policy. It could in fact make their use more selective and more salient [50]. This will depend on how far creeping jurisdiction develops and on its precise character. It will also depend on whatever technological and political factors are then shaping naval strategy. These are inherently unpredictable and are for the distant future. All that can said now is that it is still open whether the nice compromise embodied in the 1982 Convention will evolve into a historic compromise, with a life of indefinite duration, or whether it will come to be seen as the catalyst in a paradigm shift regarding the military uses of the oceans, leading to a progressive erosion of former freedoms of navigation. In short, the long-term naval significance of UNCLOS III is not yet evident and cannot be accurately predicted. It will only become evident in the light of the terms of the Conventions produced by UNCLOS IV, V, VI, etc., in the decades and half-centuries ahead.

NOTES

1. Ken Booth, "The Military Implications of the Changing Law of The Sea," in: John King Gamble Jr., ed., Law of the Sea: Neglected Issues, Honolulu, Law of the Sea Institute, University of Hawaii, 1979, pp. 328-397. These matters and those dealt with in this paper will be examined more comprehensively in: Ken Booth, Law, Force, and Diplomacy at Sea, London, George Allen & Unwin, forthcoming.
2. For example, the United States Naval Institute Proceedings (hereafter USNIPs) provided a number of articles on the subject over the years and they were generally of a high standard. Among the most recent see, inter alia, Thomas A. Clingan Jr., "The Next Twenty Years of Naval Mobility", USNIPs, May 1980, pp. 82-93; Cdr. Frank B. Swayze, "Negotiating a Law of the Sea", USNIPs, July 1980, pp. 33-39; Cdr. Dennis R. Neutze, "Whose Law of Whose Sea?", USNIPs, January 1983, pp. 43-48.
3. Elliot L. Richardson, "Power, Mobility, And The Law Of The Sea", Foreign Affairs, Spring 1980, pp. 902-919. See also

Mark W. Janis, Sea Power and the Law of the Sea, Lexington, Mass., 1976. For an explanation of important differences, see Elizabeth Mann Borgese and Viktor Sebek, "Red Seas and Blue Seas: Soviet Uses of Ocean Law," Survival, vol. XX, 1976, pp. 252-262.

4. Richardson, op.cit., p. 910.
5. Ibid., pp. 915-916 unless otherwise stated. To show that Richardson's position was representative of the naval powers, compare D.P. O'Connell, "Transit rights and maritime strategy", RUSI Journal, June 1978, pp. 11-18.
6. Richardson, op.cit., p. 904.
7. Ibid., p. 905.
8. Neutze, op.cit., p. 47.
9. Richardson, op.cit., p. 915.
10. Ibid., pp. 905, 912.
11. Ibid., p. 905.
12. Ibid., p. 906.
13. Ibid., p. 914.
14. Interestingly, Richardson said nothing about any possible military interests relating to the sea-bed. For a summary of the military aspects of the changing law of the sea insofar as the sea-bed is concerned see Booth, op.cit., pp. 354-346.
15. See, for example, Michael MccGwire, "Soviet Naval Doctrine and Strategy", pp.125-181, In: Derek Leebaert, Soviet Military Thinking, London, George Allen and Unwin, 1981; James L. George, ed., Problems Of Sea Power As We Approach The Twenty-First Century, Washington D.C., American Enterprise, Institute for Public Policy Research, 1978.
16. See, for example, Joel Larus, "India: The Neglected Service Faces The Future", USNIPs, March 1981, pp. 77-83; Dominigos P.C.B. Ferreira, The Naval Power of Brazil: An Emerging Power at Sea, National Security Affairs Issue Paper Series, 83-1, Washington D.C., National Defense University Press, 1983.
17. See, for example, Barry M. Blechman and Robert P. Berman, eds., Guide to Far Eastern Navies, London, Seeley, Service and Co. Ltd., 1979; Lee Dowdy, Ken Booth and Jane Davis, Regional Navies Of The Indian Ocean, London, Macmillan, forthcoming.
18. Richardson, op.cit., p. 906.
19. See K. Booth, Navies And Foreign Policy, London, Croom Helm, 1977, pp. 33-36.
20. Richardson, op.cit., p. 907.
21. Ibid., p. 908.
22. This concept is discussed in Booth, Navies and Foreign Policy, chapter 2.
23. Richardson, op.cit., p. 910.
24. Ibid., p. 914.
25. Ibid., p. 902; Neutze, op.cit., p. 48.
26. Richardson, op.cit., p. 911.
27. Ibid., p. 909.
28. Neutze, op.cit., p. 48.

29. Ibid., p. 46.
30. Booth, "The Military Implications Of The Changing Law Of The Sea", pp. 362-370.
31. Hedley Bull, "Sea power and political influence", in: Power At Sea, I: The New Environment, Adelphi Papers No. 122, London, IISS, Spring 1976, p. 8.
32. Neutze, op.cit., p. 46.
33. Barry Buzan, A Sea Of Troubles? Sources Of Dispute In The New Ocean Regime, Adelphi Papers, No. 143, London, IISS, Spring 1978.
34. Elizabeth Young, "New Laws for Old Navies: Military Implications of the Law of the Sea", Survival, November/December, 1974. p. 262.
35. Neutze, op.cit., p. 45.
36. Article 60, paragraph 7 is a partial check on this, but it refers only to "recognized sea lanes essential to international navigation."
37. Elizabeth Young, "Jurisdiction At Sea", World Today, June 1978, p. 200.
38. Buzan, op.cit.
39. See also Article 268.
40. Neutze, op.cit., p. 48.
41. See Commander Dennis R. Neutze, "The Gulf of Sidra Incident: A Legal Perspective," USNIPs, January 1982, pp. 26-31.
42. Neutze, "Whose Law of Whose Sea?" p. 48; Richardson, op.cit., p. 902.
43. See Ken Booth, "Naval Strategy And the Spread Of Psycho-Legal Boundaries At Sea," International Journal, 1983, vol. XXXVIII, pp. 373-396.
44. The direct military consequences of creeping jurisdiction were dealt with at length in Booth, "The Military Implications Of The Changing Law Of The Sea."
45. See the articles 136, 140, 150.
46. O'Connell, op.cit., p. 16.
47. Janis, op. cit., pp. 79-80.
48. Richardson, op.cit., pp. 907-910.
49. Neutze, "Whose Law Of Whose Sea," pp. 45-46.
50. Booth, "The Military Implications Of The Changing Law Of The Sea", especially pp. 357-376.

THE EFFECT OF EXTENDED MARITIME JURISDICTIONS

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INTRODUCTION

Since the early 1970's, there has been a surge of national legislations to extend seaward many types of maritime jurisdictions. A survey of these trends indicates that from 1969 to 1982 approximately 81 laws or decrees have been issued which have created or altered the territorial sea. In 42 laws, fishing zones have been created or extended; and in about 54 laws, an exclusive economic zone has been established (Table 1) [1].

Table 1

National Maritime Legislations

Claim	1969-73	1974-78	1979-82
Territorial Sea	40	36	5
Fishery Zone	13	26	3
Economic Zone	2	39	13

Source: Office of The Geographer, U.S. Dept. of State

Much has been written on the reasons for the increased number of claims over the world's maritime space. This aspect of the maritime claim trend will not be the topic of this paper. Generally, it can be assumed that nationalistic concerns have underlain most maritime claims. More precisely, the trend towards the 200-nautical-mile economic zone has resulted from the desire by the world's coastal states to place known or potential offshore resources under national control.

One perhaps unanticipated result of this phenomenon of extended national maritime jurisdiction has been the increased value of coastal ownership and, more importantly, ownership of offshore islands. Land having a coastline has gained a new significance to countries if for no other reason than to provide the geographical and legal basis from which to generate the various maritime zones. Pieces of territory, which previously had not figured in a country's economic development scheme, now have become of increased national importance. Surveying the globe, one soon realizes that there are many contested coastal and insular areas which would affect offshore jurisdictional claims. Examples can be found in almost every region of the world. On every continent and in every major water body, there

exist competing sovereignty claims over territory. An attempt has been made in this paper to categorize by region most of these "known" sovereignty disputes. The modifier "known" is added since it would be difficult to present an all-inclusive listing of sovereignty disputes. In some areas where many may think no dispute exists, problems may merely be latent, similar to a dormant volcano.

The origin of many of the sovereignty disputes dates to a time in history which preceded the recent demand for, and interest in, ocean resources. In disputes where the land itself has intrinsic value, where people live and where a viable economy may exist, or where the sovereign integrity of one or both states is at issue, the interest in the marine resources becomes of secondary concern to the parties involved. A number of these types of disputes can be identified from Table 2, particularly those disputes involving coastal areas of continents. In other areas, the sovereignty disputes have remained latent, mainly because the value of the territory has been of local or regional concern and not of national interest. The maritime zones generated from many of the disputed territories are likely to be more highly valued than the land itself. Due to the newly-gained interest in the oceans, many of these latent or simmering disputes have been rekindled. As in the case of the Falkland Islands (Islas Malvinas), around which there may be potentially valuable marine resources, this rekindling, unfortunately, can erupt into a full-scale war.

Table 2.
Known Coastal and Insular Sovereignty Disputes

	CLAIMANTS	TERRITORY
	North Atlantic Ocean	
1.	Canada-Denmark (Greenland)	Hans Island
2.	Canada-United States	Machias Seal Island, North Rock
3.	Guyana-Venezuela	Essequibo Region
	Caribbean	
4.	Belize-Guatemala	Belize
5.	Belize-Honduras	Sapodilla Cay
6.	Colombia-Nicaragua	Roncador Cay and Serrana Bank
7.	Haiti-United States	Navassa Island
	South Atlantic Ocean	
8.	Argentina-Chile	"Beagle Channel Islands" (Lennox, Nueva, Picton)
9.	Argentina-United Kingdom	Falklands Islands (Islas Malvinas)

Mediterranean and Black Seas

10.	Morocco-Spain	"Spanish North Africa" Incl. Ceuta and Melilla
11.	Romania-U.S.S.R.	Snake Island (Ostrov Zmeinyy)
12.	Spain-United Kingdom	Gibraltar

Persian Gulf

13.	Bahrain-Qatar	Hawar Islands
14.	Iran-Iraq	Shatt al Arab
15.	Iran-United Arab Emirates	Abu Musa, Tunb As Sughra, Tunb Al Kubra
16.	Kuwait-Saudi Arabia	Kubbar, Qaruh, and Umm Al Maraden Islands

Indian Ocean Region

17.	Bangladesh-India	South Talpatty Island (New Moore Island)
18.	Comoros-France	Mayotte Island
19.	Madagascar-France	Europa, Bassa da India, Juan de Nova, Glorieuses Islands
20.	Mauritius-France	Tromelin Island
21.	Mauritius-United Kingdom	British Indian Ocean Territory

East Asian Seas

22.	China-Japan	Senkakus
23.	China-Philippines	Spratly Island Group
24.	China-Vietnam	Spratly Island Group and the Paracel Islands
25.	Indonesia-Malaysia	Lititan and Sipandan Islands
26.	Japan-Korea, Rep. of	Liancourt Rock (Tok-to, Takeshima
27.	Japan-U.S.S.R.	"Northern Territories" (Etorofu, Kunashiri, Shikotan and Habomai Islands)
28.	Kampuchea-Thailand	Ko Kut Island
29.	Kampuchea-Vietnam	Phu Quoc, Puola Wai and nearby Islets
30.	Malaysia-Philippines	Amboyna Cay, Commodore Reef and nearby Islets
31.	Malaysia-Singapore	Batu Puteh (Pedra Branca Island)
32.	Philippines-Vietnam	Spratly Island Group

Pacific Ocean

33.	France-Vanuatu	Hunter and Matthew Islands

The intent of this paper will be to present the state of affairs as best is known to this author. First, a survey and categorization will be given of the known sovereignty disputes

which are affected to differing degrees by the development of the new law of the sea. Second, a few comments will be made on the language of the new treaty and its possible impact on sovereignty disputes. Finally, a few examples will be given on how some states have dealt with situations similar to some of the disputed areas.

Unfortunately, there are a surprisingly large number of lingering controversies. A full analysis of the origins of all the disputes, or of merits of the particular states' positions, will not be attempted in this paper. Each dispute warrants more attention than can be given in a general paper such as this one. It should certainly be recognized and stressed that the paramount rule in international law is that states solve any disagreement by mutual and amicable agreement. While examples of some solutions can be given, countries should be encouraged to be innovative in reaching agreement on difficult problems.

THE DISPUTES

The lists and descriptions which follow are intended to be thorough but not exhaustive. "Historic" disputes often have a way of reappearing in areas where no conflicting claims were thought to exist. Thus, some areas which deserve the label "in contention" may inadvertently be omitted from these lists. Other areas which are listed as being in dispute indeed might not be classified as such by others, and perhaps even by one or both of the parties involved. Therefore, in playing the numbers game of counting and listing the disputes, the analyst always encounters differing interpretations.

Since the focus of this paper is on the effect of extended maritime jurisdictions on land sovereignty disputes, problem areas involving only land-locked regions will not be considered. Table 2 provides a listing of 33 known sovereignty disputes involving coastal and insular areas. The contested areas have been grouped according to the water body which would be affected by an extension of maritime jurisdiction from the territory in question.

Forty-two different countries comprise the line-up of claimants, with France leading the list, being associated with four disputes that all involve non-metropolitan islands (Table 3). Map 1 depicts the location of these 33 disputes.

Of the 33 listed disputes, the majority -- 28 -- involve islands while only five concern coastal regions of continents. As noted earlier, many of these disputes have more of an historical or political overtone than a marine resource emphasis. While some of the insular disputes may fit into this category, this characterization is certainly true of the coastal disputes involving the following countries:

Guyana-Venezuela
Belize-Guatemala
Morocco-Spain
Spain-United Kingdom
Iran-Iraq

COASTAL AND INSULAR TERRITORIAL DISPUTES

505913 (545039) 9-83

Map 1


tates Government has not recognized
tion of Estonia, Latvia, and Lithuania
t Union. Other boundary representation
arily authoritative.
Arctic Ocean
Finland
Sweden
Soviet Union
Mongolia
China
North Pacific Ocean
Japan
Turkey
Iraq
Iran
Afghanistan
Pakistan
India
Libya
Egypt
Saudi Arabia
Chad
Sudan
Ethiopia
Somalia
Kenya
Zaire
Tanzania
Angola
Zambia
Zimbabwe
Botswana
South Africa
Lesotho
Swaziland
Madagascar
Comoros
Indian Ocean
Sri Lanka
Bangladesh
Burma
Thailand
Philippines
Hong Kong (U.K.)
Brunei (U.K.)
Singapore
Malaysia
Indonesia
Australia
Papua New Guinea
Solomon Islands
Vanuatu
Fiji
New Zealand
N. Korea
S. Korea
-Central African Republic
-Federal Republic of Germany
-German Democratic Republic
-People's Democratic Republic of Yemen
-United Arab Emirates
-Yemen Arab Republic
▲ Location of Dispute
August 1983

Table 3
Countries Associated with
Coastal and Insular Disputes

Number of Disputes				
4	3	2	1	1 (con't.)
France	China	Argentina	Bahrain	Guatemala
	Japan	Belize	Bangladesh	Guyana
	Malaysia	Canada	Chile	Haiti
	Philippines	Iran	Colombia	Honduras
	United Kingdom	Kampuchea	Comoros	India
	Vietnam	Mauritius	Denmark	Indonesia
		Spain	Korea, Rep. of	Iraq
		USSR	Kuwait	Saudi Arabia
		USA	Madagascar	Singapore
			Morocco	Thailand
			Nicaragua	UAE
			Qatar	Vanuatu
			Romania	Venezuela

In the Spain-United Kingdom contest over Gibraltar, for example, the strategic location at the entrance of the Mediterranean may be an important aspect, but the limited maritime area off Gibraltar's shores certainly is offset by other considerations. The Belize-Guatemala dispute may be viewed as a one-sided affair. While Belize maintains its sovereign integrity, it is Guatemala which, for historic and marine-related reasons, claims the borders of Belize. The other three coastal disputes cited above also have much more at issue than just marine resources and maritime area.

GEOGRAPHY OF THE DISPUTED ISLANDS

The geography of the disputed islands varies substantially from one case to the next. Essential to any in-depth discussion by the claimants on the treatment of these islands would be a full understanding of the geographical situation such as location, size, population, vegetation, coastlines and economy. Location, for example, can be viewed in different ways: the actual location of the island on the surface of the earth and its relative location with respect to (a) the claimants, (b) marine activities such as fisheries and shipping routes, and (c) submarine features such as the continental shelf. A disputed island which sits astride a major shipping route above a potentially resource-rich continental shelf immediately off one claimant's coast, yet far away from the other claimant's coast, may be viewed differently than an island situated in a relatively remote area of the ocean.

Size of the island may be a factor. An island's size may be the first indicator of whether or not it could sustain human habitation. The size of the disputed islands listed in Table 2 range from islets which are mere dots on a map, or land which just recently has emerged in a deltaic region, to rather large islands which support a viable population and economy. Historical usage of an island or of the waters and sea-bed surrounding the island by one or both claimants may suggest possible access and management schemes.

It is not within the scope of this paper to analyze specific geographical characteristics for each disputed territory. The above elements merely illustrate that each contested area is geographically unique and that these geographical aspects may provide a clue on how the claimants resolve their differences.

THE 1982 CONVENTION ON THE LAW OF THE SEA AND SOVEREIGNTY DISPUTES

A short answer to the question of what effect the new Law of the Sea Convention has on the resolution of sovereignty disputes would be, "none." Article 298 of the Convention, regarding submission of delimitation disputes to third-party dispute settlement procedures, states [2]:

> that any dispute that necessarily involves the concurrent consideration of any unsettled dispute concerning sovereignty or other rights over continental or insular land territory shall be excluded from such submission.

To have attempted to place mandatory dispute settlement of sovereignty issues in a law of the sea treaty most likely would have failed. As one author has recognized, "Indeed it would be beyond the substantive scope of the Convention to determine the status of land territory" [3]. A dispute settlement article on sovereignty would have presupposed a direct link between the dispute and the maritime rights and duties covered by the Convention -- a direct link that may not be there in many of the territorial disputes.

Having said this, what then is the relevance of the new Convention to territorial disputes? For a number of the disputes listed in Table 2, particularly those involving continental coastal areas, the Convention may not be the appropriate legal reference. However, an appreciation of what the disputed territories may or may not be entitled to under the new Convention could assist in the resolution of the disputes.

Probably the single most important provision in the Convention in this respect is article 121, "Regime of Islands." An understanding of this article by affected parties may be critical in the resolution of some of the current disputes. The article states the following [4]:

1. An island is a naturally formed area of land, surrounded by water, which is above water at high tide.
2. Except as provided for in paragraph 3, the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions of this Convention applicable to other land territory.
3. Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.

Unfortunately, the final wording of this article remained unchanged from the original draft text [5]. Soon after the Informal Single Negotiating Text (ISNT) was published in 1975, the late Dr. Hodgson, then The Geographer at the US State Department, and I wrote a paper giving a geographical analysis of Second Committee articles [6]. The concerns and ambiguities noted then regarding this article still exist.

Paragraph 1 of article 121 is identical to article 10, paragraph 1, of the 1958 Convention on the Territorial Sea and the Contiguous Zone. The one sentence is quite clear: any naturally formed area which is above water at high tide is considered an island. In certain circumstances, there may be an issue as to what "naturally formed" means or there may be a technical issue of what is meant by "high tide." But assuming these elements are understood, there is no further qualifier to what defines an island: it is a piece of territory above water at high tide. There are no further standards, no dimensions of length, width, area, height, location, vegetation, flora, fauna, climate, population, etc., which a piece of land must meet to fulfill the requirements of an island.

Article 121, paragraph 2, is a mix between article 10, paragraph 2, of the 1958 Convention and a qualifying provision introducing the next paragraph. Article 121, paragraph 3, is the element that may be the focus of future arbitrations. Seven years ago, Hodgson and I argued that this paragraph be eliminated "as being impossible to administer" for geographical reasons. In the alternative, we suggested that an objective definition be given as to what constituted a rock under this provision [7]. Unfortunately, no further description was added to the article.

For those who have not focused on this fine point in the treaty, a summary of this analysis might be useful [8]. Two questions immediately are raised by article 121, paragraph 3: (a) what distinguishes a rock from an island, and (b) what is meant by "cannot sustain human habitation or economic life of their own?"

Criteria have been developed, based on area, in which a distinction is made among the terms rocks, islets, isles, and islands. Hodgson, in discussing this issue in relation to maritime boundary delimitation, gave each category the following values [9]:

1. rocks: less than .001 square mile;
2. islets: between .001 and 1 square mile;
3. isles: greater than 1 square mile but not more than 1,000 square miles; and
4. islands: larger than 1,000 square miles.

It is unclear whether the drafters of article 121 had either an areal system in mind or some other criteria when using the term "rock." But as the article now stands, there is no clear distinction between a rock and an island.

As to the second question on the meaning of "cannot sustain human habitation or economic life of their own," it appears that to qualify, the rock must meet either one of the two criteria. As was noted in the earlier study on the subject, "the definition does not refer to uninhabited rocks but rather to uninhabitable rocks." Thus, if a rock could sustain human habitation, by whatever means, it could have an economic zone and a continental shelf. Governments could go to great expense and effort to place a small population on a small piece of real estate. Other than size, is there much difference between a rock and a larger island or even a coastal continental region which cannot sustain human habitation? There are many coastal areas worldwide which, for one physical reason or another, cannot support human life without external support. Yet there are no restrictions on states establishing maritime zones from these inhospitable regions.

What exactly is "economic life?" Must there be a viable economy or vegetation and fresh water, or could a lighthouse sitting atop a rock and adding value to the area for shipping or recreational purposes be considered as having an "economic life?" It seems as though article 121, paragraph 3, was drafted with the following idea: "I cannot exactly define what I mean, but show me an offshore territory and I will let you know if it is a paragraph 3 rock." This lack of objectivity may only lead to further disputes, rather than leading to solutions. And this article will affect situations involving non-disputed islands as well. Although an uninhabitable island may not be contested, the maritime zones developed from it may overlap a neighboring state's maritime jurisdiction.

Of the 33 disputes listed in Table 2, there may only be a few situations where this article would possibly make a difference. First, only a few of the islands listed are uninhabitable, and second, only those territories facing a large expanse of area would be able to generate a full 200-nautical-mile zone. As shown on Map 1, most of the disputed islands are either located in semi-enclosed seas, which by the geography of the area, particularly the distances to neighboring coasts, would inhibit maritime extensions, or they are situated near non-disputed territories, thereby lessening the impact of the disputed island on the generation of a maritime zone. The extreme example would involve those islands facing open ocean, such as some of the islands in the British Indian Ocean Territory, some of the dependency islands of the Falkland

Islands (Islas Malvinas), and Hunter and Matthew Islands in the southwest Pacific Ocean. The uninhabited Hunter and Matthew Islands illustrate a possible effect of article 121, paragraph 3. A full 200-nautical-mile zone could be generated to the southeast of these islands (Map 2). Both islands are similar in size; Matthew Island, for example, is of volcanic origin, conically-shaped and only about 500 meters in diameter and 177 meters high [10]. If the islands were not allowed, under the paragraph 3 provision, to be the bases from which the coastal state (either France or Vanuatu) could develop a 200-nautical-mile zone, the zone would be pulled back by perhaps as much as 105 nautical miles.

DISPUTED ISLANDS AND MARITIME BOUNDARY DELIMITATION

Another vital issue facing coastal states will be the effect of disputed islands on maritime boundary delimitation. Again, the new Convention -- not unlike the 1958 Conventions -- does not provide a conclusive answer to this question.

An earlier draft of the Convention did contain a reference to disputed territories. Article 136, paragraph 2, of the ISNT stated [11]:

> Where a dispute over the sovereignty of a territory under foreign occupation or colonial domination exists, the rights referred to in paragraph 1 shall not be exercised until such dispute is settled in accordance with the purpose and principles of the Charter of the United Nations.

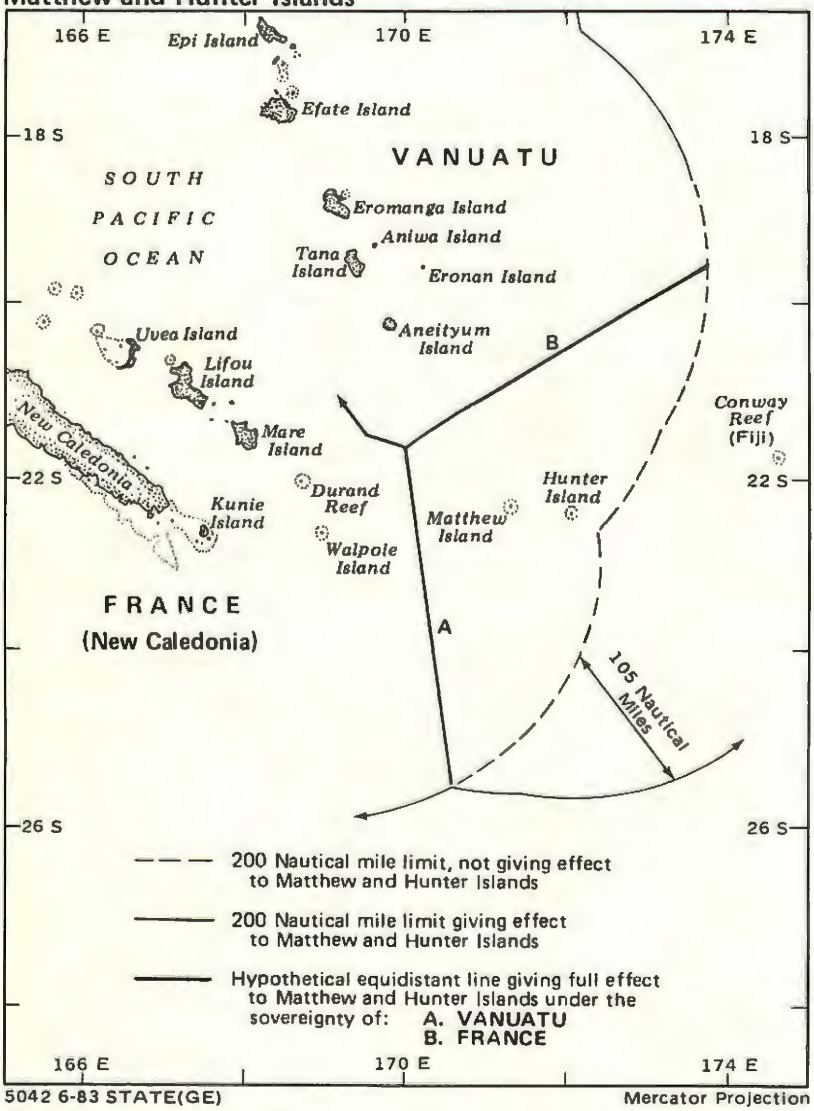
Paragraph 4 of this same article stated [12]:

> References in this article to a territory include continental and insular territories.

An analysis made at the time suggested that this provision could create more conflict since some countries could find it advantageous to place a claim on a territory so that, as a disputed territory, it would not have an economic zone [13]. Article 136 was deleted in its entirety prior to the drafting of the final Convention. With the deletion of this provision, there is no statement in the Convention on the treatment of disputed territories with respect to the rights and duties cited under the Convention.

Where then does that leave a coastal state which wants to set its maritime limits so that it can proceed with a rational and peaceful development of offshore resources? Because of the high expenditures associated with offshore development, particularly with hydrocarbon exploration and exploitation, companies normally will not be interested in areas where clear legal title cannot be assured. Given the fact that any discussion of possible resolutions assumes a certain amount of political will among the parties involved, it is suggested that certain of the above disputes could be resolved without

Matthew and Hunter Islands



Map 2

necessarily placing clear title on the territory in question to either party. It is recognized, however, that clear title to one or the other claimant may be the only solution in some of the situations.

It appears, however, that in many of the disputes, the focus is on maritime area generated by the particular disputed territory. In this connection, the disputed area may also limit the maritime jurisdiction extension of the claimant that did not have sovereignty over the territory in question. This is likely to be one of the reasons many of these disputes have been dormant for so many years. Prior to the recent trend of extended maritime jurisdiction, many of the disputed areas, particularly some of the islands, had very little value. The limited maritime zones did not overlap each other. With the development of the economic zone concept and the broadening of the concept of the continental margin, all coastal states now have maritime jurisdictions that abut at least one other country's maritime jurisdiction.

All of the disputed territories are located in areas where full 200-nautical-mile extensions would overlap the other claimant's claim [14]. Little assistance is provided in the relevant boundary provisions in the Convention: article 15 (territorial sea), article 74 (economic zone), and article 83 (continental shelf). Article 15 states [15]:

> Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two States is measured. The above provision does not apply, however, where it is necessary by reason of historic title or other special circumstances to delimit the territorial seas of the two States in a way which is at variance therewith.

With the exception of a few minor words, this article is identical to article 12, paragraph 1, of the 1958 Convention on the Territorial Sea and the Contiguous Zone. Except for the noted variance for reason of historic title or other special circumstances, countries may not, in areas of disagreement, extend their territorial sea beyond an equidistant line.

The provisions for delimiting boundaries between states' economic zones and continental shelves parallel each other with identical wording. The articles 74 and 83 state [16]:

> 1. The delimitation of the exclusive economic zone (continental shelf) between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in article 38 of the Statute of the International

Court of Justice, in order to achieve an equitable solution.

2. If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.
3. Pending agreement as provided for in paragraph 1, the States concerned, in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation.
4. Where there is an agreement in force between the States concerned, questions relating to the delimitation of the exclusive economic zone (continental shelf) shall be determined in accordance with the provisions of that agreement.

Although concrete guidance is not given on how to arrive at a solution in a particular situation, the ambiance of understanding and cooperation is certainly suggested in the above paragraphs. Given the numerous circumstances encountered worldwide -- ranging from geographical and historic differences to differing economic and political systems -- it would have been difficult, if not impossible, to have anticipated and to cover in a general treaty all the different types of issues that might arise in each case.

What is important about the delimitation articles is that a framework for amicable solutions has been created. Paragraph 2 refers parties which are unable to arrive at a solution to Part XV of the Convention on the settlement of disputes. Paragraph 3 urges the states to proceed in a manner which will not make a situation worse during the interim.

As states attempt to work out differences over sovereignty issues, they may find not only a number of paths of dispute settlement available, but also a number of workable delimitation methodologies. Delimitation schemes are only limited by the imagination of the parties. If the political will exists, a solution should be attainable. It is believed that certain boundary or joint development schemes could be developed in such a way so as to defuse the sovereignty problem. The following is a sampling of agreed arrangements in which islands have been treated in special ways. Two of the examples involved islands in dispute.

CANADA-DENMARK (GREENLAND)

The first dispute listed in Table 2 is between Canada and Denmark over Hans Island. Hans Island is situated in the Nares Strait, north of the 80 degree North parallel of latitude. Because of a question of sovereignty over the island and because

the island would distort an otherwise equitable boundary, the countries, in their 1973 agreement, decided to ignore the island completely. One point of the continental shelf boundary falls on the south coast of Hans Island. Another point falls on the north coast. There is no boundary between the two points [17].

ITALY-TUNISIA

The 1971 agreement between these two states created a continental shelf boundary which, with a notable exception, follows an equidistant line. It was recognized that four Italian islands -- Pantelleria, Linosa, Lampedusa, and Lampione -- constituted a special circumstance due to their proximity to the Tunisian mainland. Although disregarded in the calculation of the remainder of the boundary, each island was given a territorial sea and contiguous zone. With the exception of Lampione, the islands also received a one-nautical-mile belt of continental shelf [18].

AUSTRALIA-PAPUA NEW GUINEA

In this imaginative 1978 agreement, the states overcame a difficult issue concerning the fact that about 15 Australian islands are situated in the northern part of the Torres Strait immediately off the Papua New Guinea coast [19]. The treaty solved the sovereignty questions over these islands by creating: (a) a sea-bed resources delimitation line; (b) a fisheries resources delimitation line; and (c) a protected zone. The Australian islands located north of the sea-bed resources line received only a three-nautical-mile territorial sea, except where a boundary situation called for less (Map 3). No continental shelf or economic zone was allocated to these particular islands. IRAN-SAUDI ARABIA

One issue solved in this 1968 continental shelf boundary agreement was the sovereignty over two islands located in the middle of the Persian Gulf. Article 1 of the agreement recognizes the "sovereignty of Saudi Arabia over the island of Al'Arabiyah and of Iran over the island of Farsi" [20]. Each island receives a 12-nautical-mile territorial sea, and an equidistant line was established where the two islands' territorial seas overlapped. Then the parties created a continental shelf boundary ignoring these two islands.

JOINT DEVELOPMENT ZONES

In certain of the cases where disputed islands pose the main hurdle to offshore development, the creation of a joint development zone may be an appropriate avenue to follow. Although no sovereignty issues have yet been resolved in this manner, it may be a possibility worth consideration in certain situations. Japan and the Republic of Korea were the first states to establish a joint development zone in their 1974

agreement. The two states created the joint zone in lieu of a maritime boundary in the East China Sea. The entire area of this zone encompasses approximately 24,100 square nautical miles (82,663 square kilometers). Exploratory activity in this area has commenced.

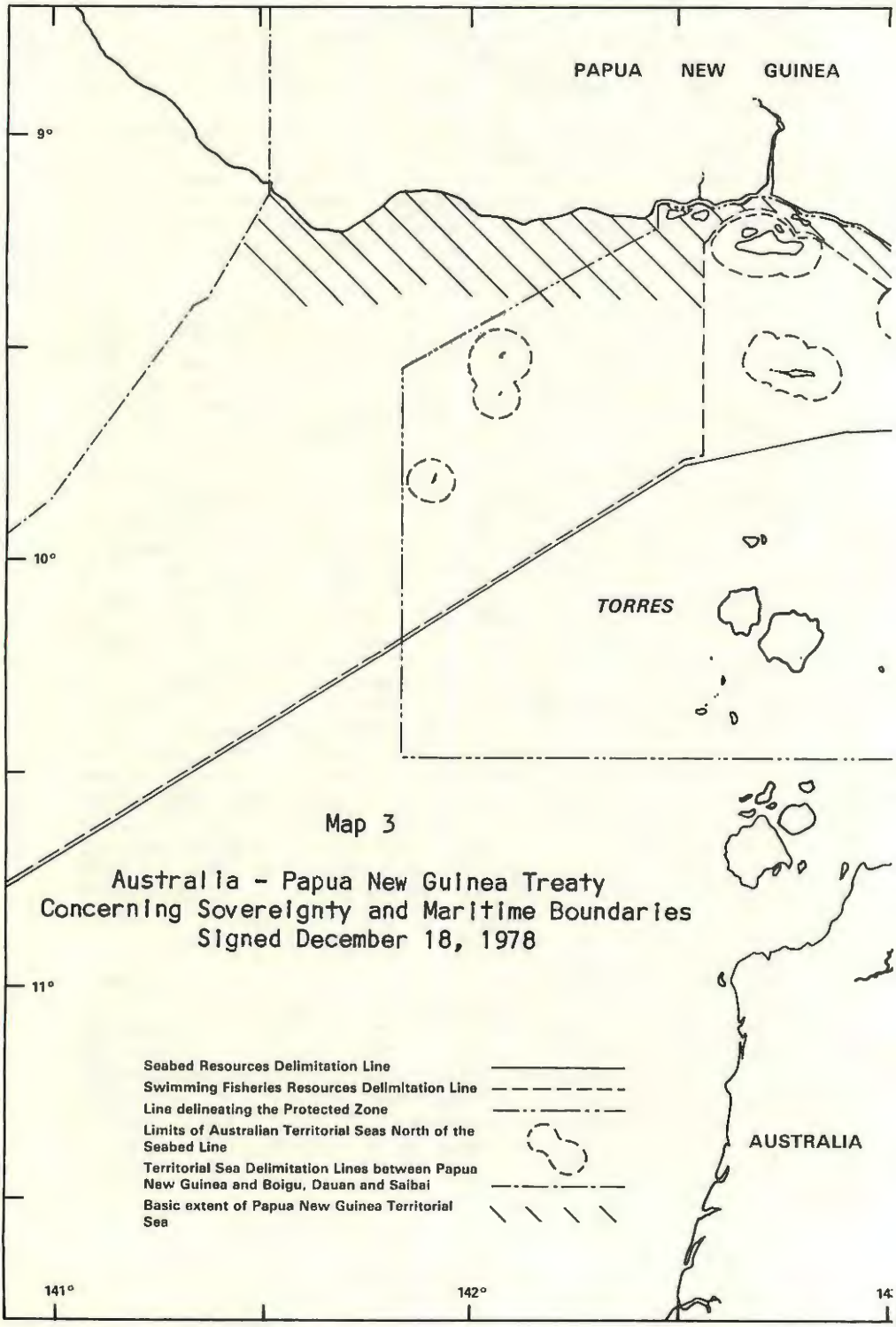
In 1979 Malaysia and Thailand signed a Memorandum of Understanding which created a joint authority for the exploration of sea-bed resources in the Gulf of Thailand. In 1981 Norway and Iceland created a joint development zone in an area between Iceland and Jan Mayen in the North Atlantic Ocean.

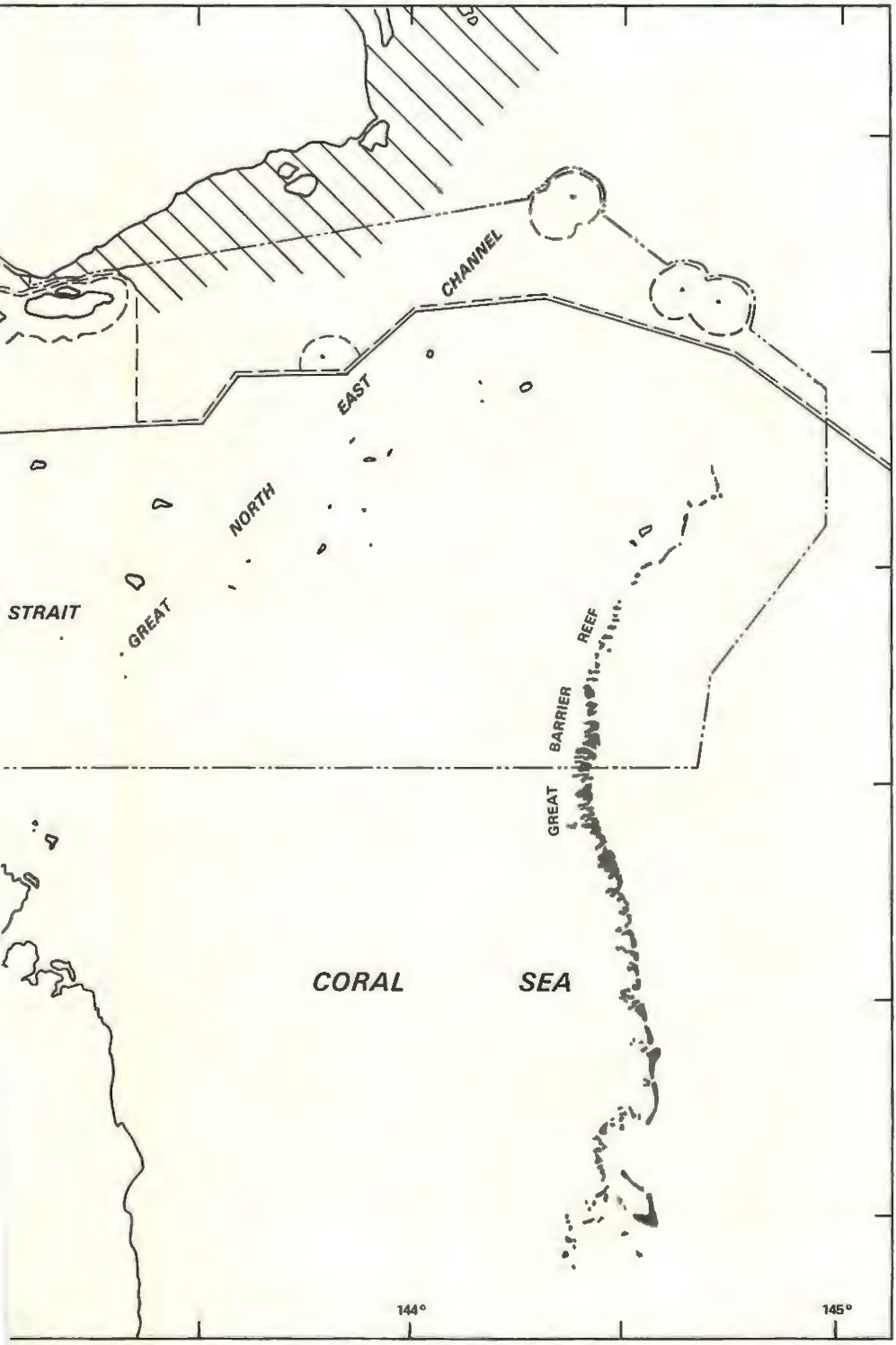
CONCLUSION

The 33 disputes listed in this paper are all unique. Each dispute has a different history, a different geography, and, perhaps most important, a different political intensity. One only has to go down the list in Table 2 to see certain situations which will take long and hard negotiations and perhaps submission to some dispute settlement forum before a solution is found.

There are other disputes which have come to a head due essentially to the extension of maritime jurisdictions. To these disputes, certain techniques could possibly be applied in which the sovereignty issue could be minimized and mutually accepted resource development and management maximized. There are some disputed territories that may remain disputed by tacit agreement. It is possible that at some time in the future, Japan and China may finesse their problems over the Senkaku Islands in favor of some type of joint resource scheme. If the Japan-Republic of Korea joint development zone in the East China Sea continues to operate smoothly, there is no reason not to think that some type of joint arrangement may be established in lieu of a boundary in their presently disputed Liancourt Rock area. The two countries could use the same technique Canada and Denmark used for Hans Island. Ignoring the emerging Talpatty Island (New Moore Island) may be a partial solution for Bangladesh and India in delimiting their respective maritime limits in the Bay of Bengal. For other areas, such as for the South China Sea, suggestions are not as simple. With so many claimants involved in the Spratly Island region, any settlement may have to be a result of multilateral discussions and a regional approach.

Although the Convention does not provide specific directions to solve these sensitive sovereignty issues, it does provide a sense of cooperation and understanding which coastal states should respect in settling these disputes. The call in the boundary delimitation articles for "provisional arrangements of a practical nature" and forbearance so as not to jeopardize the reaching of a final agreement can be quite applicable to territorial disputes. The resources of the oceans can only be rationally and peacefully exploited in a spirit of mutual benefit.


PAPUA NEW GUINEA
9°
10°
11°
TORRES
AUSTRALIA
141°
142°
Map 3
Australia - Papua New Guinea Treaty
Concerning Sovereignty and Maritime Boundaries
Signed December 18, 1978
Seabed Resources Delimitation Line
Swimming Fisheries Resources Delimitation Line
Line delineating the Protected Zone
Limits of Australian Territorial Seas North of the Seabed Line
Territorial Sea Delimitation Lines between Papua New Guinea and Boigu, Dauan and Saibai
Basic extent of Papua New Guinea Territorial Sea


EAST
CHANNEL
NORTH
STRAIT
GREAT
BARRIER
REEF
GREAT
CORAL
SEA
144°
145°

NOTES

1. For a brief discussion of these trends, see Robert W. Smith, "Trends in National Maritime Claims," Professional Geographer, 1980, Vol. 32, pp. 216-223.
2. United Nations Convention on the Law of the Sea, A/CONF.62/122, October 7, 1982, article 298, paragraph 1 (a) (i); hereinafter cited as Convention.
3. Paul C. Irwin, "Settlement of Maritime Boundary Disputes: An Analysis of the Law of the Sea Negotiations," Ocean Development and International Law Journal, 1980, Vol. 8, No. 2, p. 114.
4. Convention, Part VIII, article 121.
5. Informal Single Negotiating Text, May 9, 1975, Third United Nations Conference on the Law of the Sea, Geneva; hereinafter referred to as ISNT.
6. Robert D. Hodgson and Robert W. Smith, "The Informal Single Negotiating Text (Committee II): A Geographical Perspective," Ocean Development and International Law Journal, 1976, Vol. 3, No. 3, pp. 225-259.
7. Ibid., p. 233.
8. Ibid., pp. 230-233.
9. Robert D. Hodgson, "Islands: Normal and Special Circumstances," In: Law of the Sea: Emerging Regime of the Oceans, J.K. Gamble and G. Pontecorvo (eds.), Cambridge, Mass., Ballinger Publishing Co., 1974, pp. 150-151.
10. Pacific Islands Yearbook, 13th ed., Sydney, Pacific Publications, 1978, p. 273.
11. ISNT, article 136, paragraph 2.
12. ISNT, article 136, paragraph 4.
13. See Hodgson and Smith, p. 234, for an illustration of a possible outcome of article 136.
14. A few exceptions must be noted. For example, should clear title be given to Mauritius in the Mauritius-France dispute over Tromelin Island, there would be no overlap of maritime jurisdiction.
15. Convention, article 15.
16. Ibid., articles 73 and 84.
17. See US Department of State, Limits in the Seas No. 72, Continental Shelf Boundary: Canada-Greenland, August 4, 1976.
18. At the time of the agreement, Italy claimed a 6-nautical-mile territorial sea. Thus, a territorial sea and contiguous zone together created a 12-nautical-mile zone. See Limits in the Seas No. 89, Continental Shelf Boundary: Italy-Tunisia, January 7, 1980.
19. Treaty between Australia and the Independent State of Papua New Guinea, signed at Sydney, December 18, 1978. Papua New Guinea has ratified the agreement; Australia has not.
20. See Limits in the Seas No. 24, Continental Shelf Boundary: Iran-Saudi Arabia, July 6, 1970.

COMMENTARY

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I believe I should preface my comments by stating that I am not a member of the law of the sea cabal, but really a newcomer to this game.

I am an amateur. If my comments are sometimes slightly off target, please forgive me.

Actually, I am an amateur in more sense than one. First, I am not an international lawyer, so I am not in a position to comment on some of the legal niceties and subtleties of the treaty language. Second, I have not carried out any independent research on ocean issues. I have dealt with other international issue areas and regime formation and transformation, specifically in the field of international aviation, which makes for some interesting comparisons because, after all, water and air are both global commons.

There is a lot of discussion about regime change in both, yet I find that the international aviation issue area is much less complex than the law of the sea area. International aviation deals with transportation only, whereas the law of the sea embraces a complex combination of transportation and exploitation of resources. It is also interesting to note, I think, that the first regime founded in the international aviation field was formed right after World War I, which meant that national sovereignty was the guiding principle. Before World War I, legal opinion was very much in favor of a freedom of the skies modelled on Grotius' mare liberum doctrine. But after the war, when aircraft had demonstrated their destructive capability, there was no question about that anymore. Unrestricted sovereignty characterized the first regime, and after that some freedoms have been added to that regime.

It seems that in the law of the sea, there has been an opposite development where the freedom of the seas was the original principle, but where the sovereignty principle makes tremendous inroads.

I will not delve deeper into this comparison, but instead I will try to make some comments on the papers here. As a political scientist and as a student of international politics, I find that the bargaining perspective seems rather natural for me to adopt when discussing these papers and when discussing international agreements generally. There are two aspects to this. The most obvious one is that any international agreement is the outcome of a bargaining process. But there is also another aspect which is even more pertinent to the subject of this panel: every convention creates new bargaining situations or affects existing bargaining situations in one way or the other.

Let me touch very briefly on the first aspect -- the obvious fact that the Law of the Sea Convention is the outcome of bargaining. It has the character of a compromise of course, a very complex compromise between maritime and coastal interests, between military and commercial interests, between North and South and, to a somewhat lesser degree, West and East. The Convention must also be seen against the background of the negotiating history. To an outsider like me, it is slightly ironic that a bargaining process that was set in motion by solemn declarations about the oceans as the common heritage of mankind, and which was negotiated in the widest possible multilateral forum, has had as an effect extended state sovereignty and greater scope for unilateralism. As has been pointed out earlier here, the extended 200-mile zones cover more than 40 percent of the surface of the oceans, more than four-fifths of the world's sea fisheries, and nearly all the exploitable offshore oil and gas. So, internationalizing the issue, it seems, has sped up the development towards increased sovereignty claims. I guess the multilateral bargaining setting contributes to that -- what one gets, everyone has to get, of course.

But more importantly, the Law of the Sea Convention creates new bargaining situations, new conditions for bargaining. Obviously, it does not remove law of the sea problems from the international agenda, as has been pointed out by all the panelists here. Bargaining situations, of course, generally contain a mixture of cooperation and conflict. To me it is rather interesting and significant to see that the papers of this panel deal much less with the cooperative patterns emerging from the Convention than with disputes and conflicts. There are passing references to Convention articles on peaceful settlement obligations and to the sense of cooperation pervading the Convention. Yet, when discussing the effects of the extended economic zones, most seem to concentrate their discussion on the conflictual aspects.

When it comes to the conflictual aspects, one could make a distinction between, on the one hand, already existing conflicts which are one way or the other affected by the Convention and, on the other, new conflicts which are in fact created by the Convention.

In the former category, we find a number of issues where the Convention has not changed the game, as it were, but has raised the ante. I think that argument is part of Mr. Smith's paper. There are disputes on national boundaries and there are disputes about rights within national boundaries. When it comes to disputes on national boundaries, one could say, of course, that the Convention has reduced the formerly very common disputes over the outer limits of national jurisdiction. But at the same time, it obviously multiplies opposite or adjacent boundary delimitation disputes, since it results in much greater overlap of maritime jurisdiction, as Mr. Smith points out in his paper. Also in Mr. Smith's paper is a discussion of the increased value of islands due to the maritime space around

islands, which offers no solution to, but more likely will aggravate, sovereignty disputes over islands. Interestingly enough, in his conservative list of thirty-three sovereignty disputes, as many as twenty-eight concern islands.

As for disputes about rights within national boundaries, we have heard much earlier in this session about the disputes that can arise concerning fishing. In Professor Fleischer's paper, there is a thorough discussion of whether or not coastal states have an obligation to grant rights to other states to fish within the economic zone. He also points out -- and I think this is an interesting remark in his paper -- that the Law of the Sea Convention may have reduced the incentives for coastal states to grant such rights because there is no longer the need that there used to be for a quid quo pro to obtain recognition of the 200-mile limit. We have heard also about disputes that might arise concerning military and non-military navigation within these zones. And, as is pointed out in several papers, there is the possibility that navigation may conflict with other activities within the economic zone, with a lingering question mark as to what will happen then and how these disputes will be resolved.

Professor Booth also has some words about a long-term paradigm shift. I will not go into the academic discussion about the trendy word "paradigm," which nobody has been able to define yet. I am not so worried about the effect of that long-term paradigm shift on naval mobility as Professor Booth is. I do not know if that is because I am a greater cynic than he is.

Let me turn then to the second category of conflicts, which incidentally, is not elaborated at great length in the papers.

The Convention may in fact create new conflicts. First of all, there could be unanticipated side effects of the Convention. Dormant issues could become politicized, and new information could be generated which contains reasons for conflict. The Convention may introduce more legislation than small states can enforce or manage. And, as has been pointed out in previous discussions here, the Convention may serve as a precedent in other issue areas and affect or create new conflicts in such issue areas. The Convention and the negotiations preceding it have given rise to new coalitions and thereby also to new disputes. We only have to think about the fifty-state-coalition of landlocked and geographically disadvantaged states which occurred as a result of the negotiations and the disintegration of some established groupings in the course of the negotiations.

In addition, there are -- as has been commented on earlier here -- certain ambiguities of the treaty language. Professor Booth says that in his opinion, there are surprisingly few of those. Yet, he goes on to find some, and others in the panel have helped to identify more ambiguities. When it comes to naval mobility, there is the question of innocent passage, transit passage and archipelagic sea-lanes passage which, although more clear than in previous international law, still leaves some room for maneuver on the part of coastal states.

Professor Fleischer also discusses certain ambiguities. For instance, does the right to extend national jurisdiction to a 200-mile economic zone also imply an obligation to do so? And finally, we had Mr. Smith's discussion of the distinction between islands and rocks, which is also very ambiguous.

So, briefly my conclusions are the following after having read these papers. Law of the sea disputes and conflicts are destined to be a source of disorder in the international system for the foreseeable future, with or without a fully accepted convention. The solution of these disputes -- as has been repeatedly pointed out here -- is dependent on political will and political imagination rather than treaty language. I would also say that there is perhaps a need to be realistic, if not cynical, about one aspect: one should not be too carried away by the rhetoric about the Convention's contribution to world peace, etc. I think one should make it quite clear that these rules will guide relations in peacetime. There is a good saying about a former ocean regime: "In peacetime Brittania rules the waves -- in wartime she waives the rules." I too think that in a situation of war or intense crisis, the Convention, to borrow a formulation in Ken Booth's paper, will be reduced to a scrap of paper across the opening of a missile tube.

Finally, in order not to leave on a very pessimistic tone, there is one aspect which has been inadequately discussed in the papers: what would be the effect if we have a non-universal treaty situation? The discussion has been framed very much in the context of what a generally accepted Law of the Sea Convention will mean and of what effects it will have. I think it is time now to worry about what will be the effects if we have a treaty which is not universally accepted and ratified. It seems that, then, relations between non-parties, and relations between non-parties and parties will be rather unstable and will be fraught with tension and conflict.

So, in short, I see a lot of bargaining taking place in the years ahead. There is, of course, one comforting aspect in that: it will indeed create fuel for many future Law of the Sea Institute conferences.

DOUGLAS JOHNSTON: Ladies and gentlemen:

As chairman I ask the panelists if they wish to respond to what has been said before we open the discussion to the floor.

GIULIO PONTECORVO: In response to your own commentary, Mr. Chairman, I would like to say that I think it is difficult to assert that the gaining of control over assets by nation-states will increase the efficiency of use of the resources. In a socialist society, this would require that the politicians in question admit they made planning mistakes -- a difficult admission. And the history of control over those resources in the capitalist states gives no real hope and no indication that in fact they will be able to improve the efficiency of use of the resources because they are under national control. It is a complex argument as to whether you can get further with national control or with international control over these resources. One of the few successful incidents of efficient use of resources is essentially in the North Pacific Fur Seal Convention, which in fact involves four states.

DOUGLAS JOHNSTON: Would any other panelists like to reply? We now have time for general discussion. The first speaker on my list is Professor Krispis.

ELIAS KRISPIS: I have a small question and perhaps Professor Fleischer would like to reply. Usually, we characterize the rights given to coastal states under the Convention as sovereign rights. Now there may be circumstances under which it is difficult to say whether a certain activity within the economic zone is really coming under the term "fishing" or "navigation." This raises the question of the presumption of rights: would this presumption be in favor of the coastal state -- that is, its sovereign rights -- or in favor of the community at large -- that is: the open sea? Which is the rule and which is the exception? If the rule is for the sovereign rights, then the solution would be for the coastal state. If the rule is for the open sea, the solution would be for the international community against the coastal state. I would like to hear your position.

CARL FLEISCHER: I think it is very difficult to take any definite position. Of course, you have the well-known Castaneda formula in Article 59 as to the basis for the resolution of conflicts regarding the attribution of rights and jurisdiction in the exclusive economic zone. As is well known, this Article is based on the ideas of Ambassador Castaneda, who is present here. This provision is based on the general idea that there is no presumption and that the conflict must be resolved on the basis of equity and in light of all the relevant circumstances. I fully understand that this does not quite solve Professor

Krispis' problem. There may be problems where one may say that those are either fishery questions falling within the Article 56 competencies or that they concern navigation. They are either the one or the other. In that case, Article 59 will not apply directly, but I think that more or less the same line of thinking may apply.

GEIR ULFSTEIN: Professors Munro and Pontecorvo discussed the common property problem, but there is also another common property problem, and that is the problem of resources shared between coastal states. This problem is not solved in the Law of the Sea Convention. The Convention says that the states concerned must cooperate, but it does not say how coastal states must share and how they must manage shared resources. Almost all of the fish stocks in the Northeast Atlantic are shared resources.

I think that the new fisheries management system is better than the old one because there are fewer states to decide how to manage the resources, but there remain situations in which two or more states must decide together on how to manage their fish stocks. The areas of coastal state control have increased, but so has nationalism in coastal states -- although perhaps not to the same extent as the areas have increased. Nationalism is a difficulty when states must cooperate. In addition, in certain areas it may be more difficult to reach an agreement between two states than among several states. For example, there have been problems between Norway and the Soviet Union regarding enforcement that might have been solved in a regional setting.

The experiences in the Northeast Atlantic regarding fisheries management have not been too good up to now. I do not think that they will be very good in the future unless more binding agreements on the sharing and the management of fisheries are adopted. Perhaps systems should also be developed with dispute settlement and joint enforcement.

GORDON MUNRO: I would like to make a response to that, even though it was not so much a question as a commentary on what we have left out.

One very important area which was certainly left out from our presentations is the issue of trans-boundary resources. This is important not just in the Western European context, but obviously also in the North American context. The reason that we did not deal with it is not because it lacked importance, but because we were under rather severe time constraints. I agree that trans-boundary resources pose a very difficult issue, and my comments in passing about the EEC were a reflection of that. I said that in a sense the EEC was one step behind North America, because, at least, so I am told, it really has not effectively gained control over the stocks.

You made reference to nationalism. My comments about infant industries' expulsion of distant water nations reflected that. I was going to bring up the Alaskan case, but perhaps, as a Canadian, I had better talk about that privately in order to maintain good US-Canadian relations.

There is, I think, one area of disagreement between the two authors. Although so far we in North America have not done a very good job, I feel that with extended jurisdiction there is at least a better chance of doing a good job through single-state, or two- or three-state, management than there is of trying to do it through something like ICNAF with eighteen or twenty members.

CHOON-HO PARK: Two brief questions. The first one concerns Article 76 of the Convention, which defines the continental shelf in such a complicated way indeed. My question is: how many countries would there be in the world whose continental shelves would extend beyond 350 nautical miles by virtue of the physical circumstances as defined in Article 76? My second question has to do with the delimitation of shelf and economic zone boundaries. Would there be situations where, in spite of Articles 74 and 83, the economic zone boundary and the continental shelf boundary -- in other words, the surface boundary and the sea bottom boundary -- between two or more opposite or adjacent states could be different?

CARL FLEISCHER: I do not think I am able to answer your first question, Professor Park. On the second question, I would personally say that the language of Article 74 and Article 83 is the same and that there is a reasonable presumption that delimitation should be the same for the shelf resources as for the living resources. That presumption is, of course, strengthened by the fact that the economic zone regime also applies to the resources of the shelf. However, I do not think that this presumption is irrefutable. There may be circumstances where you can argue that the solutions may be different, as they derive from special circumstances combined with equidistance or from equitable principles. At any rate, "equitable solutions" under 74 and 83 may be different in regard to living resources and in regard to shelf resources. There is at least one precedent of different solutions in state practice, namely in the delimitation between Papua New Guinea and Australia.

EDWARD MILES: First, Mr. Chairman, I want to assure my colleague, Gordon Munro, that I intend to say far harsher things about the Alaskan performance tomorrow than delicacy will permit him to say this afternoon. I wish to make some comments complementary to the points made by Gordon Munro and Giulio Pontecorvo about the immediate effects of extended jurisdiction for the management of fisheries. I finished the preliminary accounting on a regional basis this spring, and I think there are four major conclusions.

The first is that extended jurisdiction offers the opportunity to do much better in the future than we have done in the past but that there is no guarantee that coastal states will take this opportunity. It is clear that the common property problem has only been partly solved, and there is no indication

so far that any coastal states which have not already attempted the institution of comprehensive domestic licensing/entry limitation schemes are now prepared to do so. What the Chairman referred to as the political will question is here the predominant issue, but I would argue that there has never been rationality in the management of fisheries, and I do not think the new regime necessarily introduces that.

The second point is that as a result of the access agreements negotiated for the last seven years, extended jurisdiction amounts to a limited wealth transfer between distant-water fishing nations and some developed and developing coastal states with considerable resources off their coasts. What you might regard as a tax on the catch represents only a marginal increase in the operational costs of the distant-water fleets. This wealth transfer, while it may be significant to particular developing coastal states, is not significant globally as yet.

The third point is that the future of distant-water fishing is not good. This is not a result of extended jurisdiction, but a result of very significant increases in operational costs, mainly a combination of fuel costs and general inflation. The large scale industrial fleets of the last thirty years will probably not exist for another thirty years. When I make that point with colleagues and friends from the fisheries management sectors of socialist countries, they deny that their distant-water fishing capacity is currently in decline. I think that is correct in the short run, but I think even those governments will face the necessity for greater and greater subsidies of that kind of operation, and they will begin to ask themselves whether the opportunity cost of using the capital in that fashion is worth it.

The final point is the one referred to by Geir Ulfstein: the Convention actually creates and exacerbates more shared stock management problems than had existed before. There is as yet no comprehensive attempt to negotiate those problems which proliferate around the world -- and not only in the Northern Hemisphere. They are extremely difficult to manage.

GORDON MUNRO: First of all, thank you for reinforcing some of our conclusions. With respect to distant-water fleets, you say that under certain access conditions the coastal states are in fact really receiving very little from the distant-water nations, and this may certainly well be the case. Secondly, you referred to fuel costs. We do not know what is going to happen to them in the future. But if I look at the case of Alaska and also at Canadian waters, I would suggest that even if the real price of fuel should decline, access conditions will most likely cause distant-water countries such as Japan -- the eastern block countries are a separate issue -- not to re-invest in existing fleet capacity when the time comes for them to make that decision -- say, within the next ten or fifteen years.

GIULIO PONTECORVO: Yes, I think it is wonderful that Professor Miles agrees with us. I would add one point to this. One of the effects of extended jurisdiction has been, at least within the US and I suspect elsewhere, to significantly increase the cost of fishery regulation without significantly increasing the quantity of fish. So the net yield from the resources is probably going down for that reason as well as for the other obvious reasons.

ALASTAIR COUPER: I would like to say something about the countries that have introduced the exclusive fishery zone as distinct from the EEZ, because I think that in doing this they have missed some of the central issues which the EEZ does deal with. The economic zone covers not only fisheries but also the dumping of waste, oil and gas exploitation, dredging, and so on. So it can take into account, I suppose, the social and economic conditions of the coastal state, and it gives opportunities for planning of uses on a much more regional scale, probably including adjacent EEZ's. It seems to me we must get back somehow to this regional concept in ocean uses generally and not only in fisheries.

Professor Munro said that fishery commissions were complex and their value not very great. I suppose so, but I think it is necessary to somehow link these fishery commissions on a regional basis and with much greater areas of use under their jurisdiction, that is: uses which involve both waste dumping and fisheries. I think there is in the Convention or in its application in the future a danger of continual fragmentation of uses. One has fishery commissions, one has legislation over dumping, and so on. The management problem is more than a fishery management problem -- it is a sea-use management problem. It seems to me that this could only be dealt with regionally. An EEZ helps in this respect; an exclusive fishing zone does not.

DANIEL CHEEVER: I may have missed a point, Mr. Chairman, and I may be introducing a new topic; in both cases, I apologize. As I have understood it, the problem with fisheries management is the problem of a common use resource. It has been said that nationalizing the resource -- that is, limiting the audience involved -- does not solve the inherent characteristics and difficulties of managing it. So can you tell me what kind of steps have to be taken by some kind of entity or authority to resolve the dilemmas of a common use resource? Is it limited entry, for example?

GIULIO PONTECORVO: It is limited entry. Perhaps it is fair to say that limited entry is extremely simple and easy to conceptualize and visualize but that the actual application of limited entry schemes to fisheries turns out to be a far more complex and difficult task. I can give you very simple economic formulas that could be used to regulate capacity in the industry, but the problem with those is that they are not usable

in a management sense. The most simple limitation of entry would be the best, but in all probability that system would restrict fishing effort to some catch level well below the sustainable yield. This would minimize the management problem, but it would raise other problems about leaving the resource in the ocean under certain circumstances.

ANATOLIJ ZAKHAROV: A few words about the exclusive economic zone. First, on the general ideas behind the establishment of the zone, Mr. Fleischer mentioned only those rights that characterize the economic zone from the point of view of the jurisdiction of coastal states. In my view, the economic zone serves a balance. It is a package deal entity that comprises the rights of coastal states and also the rights and the freedoms of the high seas -- for instance, the freedom of navigation and some other freedoms.

Second, I should say a few words about state practice. If we try to analyze the process of forming norms of international law, we should say that in this particular case, we are faced with two steps or two aspects. The first aspect comprises, if I am not mistaken, the process of forming the rule as it is, and the second step is the forming of the rule as an obligation for other states. In this view, a reference to the history of the zone -- that it was known twenty years ago -- is not an argument because we should analyze the rights and obligations in the exclusive economic zone from the point of view of contents. As we did not know such an institution in history, I should say that all the rights of coastal states are strictly provided for by the Convention.

If we then look at state practice and if we try to analyze the acts adopted by governments, we must come to the conclusion that all of them differ greatly. For example, if we look at the act of the USSR, adopted in 1976, we note that this act will be in force until the date of the entry into force of the Convention, and that it said nothing about establishing the exclusive economic zone. So if we analyze all the acts adopted by different states, we find that there is no reason to say that we have a generally recognized practice. For this reason, we cannot say that the exclusive economic zone is a norm of customary law.

CARL FLEISCHER: Thank you, Mr. Zakharov, for this very interesting intervention. I would, by all means, agree that I may have been too fast in regard to the aspects of navigation and overflight. I did mention them, but only rather rapidly because of shortness of time. I think there can be no doubt, be it under the Convention, be it under general law outside the Convention as long as the Convention is not in force, that there exists an obligation incumbent on the coastal state concerning navigation and overflight. There also exists, in this respect, rights for other states that correspond to the traditional high seas rules, and there also are other traditional high seas freedoms that apply in the same manner.

As you know very well, there has been a lot of discussion as to whether the term "high seas" should apply to the area between twelve and 200 nautical miles. I will not go into that discussion, and I will merely point out that the substantive rules are those of freedom of navigation and overflight in accordance with the traditional rules of the high seas. There can be no doubt that in the economic zone chapter of the Convention, the reference is to the "pertinent rules" of the high seas.

As to your second question, I quite agree that this is a very difficult one. As I have discussed, one may try to explain the present and existing practice by saying that some of it is of a provisional nature -- as was said in the USSR Act of 1976. To some extent, it can also be explained as based on a set of bilateral relationships and on recognition by other states of the measures taken. Thus it is quite possible from the legal scholar's point of view to come to the conclusion that the 200-mile zone so far applied in practice is merely provisional and contingent upon acceptance by other states affected.

Personally, however, I would favor another viewpoint. Even if practice is not uniform, even if there are provisions as in the 1976 USSR Act, I would submit as the more realistic view that the economic zone and the 200-mile fisheries zone have come to stay. They will continue to exist as part of the general law, even if the Convention should not come into force. I would like to pose a hypothetical question: what will happen at some future date, say, somewhere in the 1990's, when it becomes evident that the Convention will never become legally binding as a treaty between states? I do not regard such an outcome as likely, nor do I consider it desirable; so it is just an academic question. Would then, for instance, the USSR repeal its Act of 1976 and go back to the old system of twelve miles, while others try to maintain the 200 miles? Of course, this lies in the future, and it is not possible to say definitely what is going to take place.

PHIPHAT TANGSUBKUL: I would like to make a very short remark. First of all, I would like to tell you that, trained as I am in Europe, I enjoyed this session very much, but I would also like to remind you that what we have discussed this afternoon is mostly concerned with European and North American waters and that the world, and especially the sea, is much larger. My second remark is that the creation of the EEZ by the Conference on the Law of the Sea creates a real problem for the long-distance fishing industry of some countries. In that respect, I would like to confirm what has been said about the political will. That has become one of the most important issues, especially in Southeast Asia.

JORGE CASTANEDA: I would like to make a brief comment on an earlier intervention regarding the exclusive economic zone. The speaker expressed the view that the regime of the exclusive economic zone still had not become customary law. In support of

this view, he referred to the fact that the Soviet law establishing that regime near the coast of the Soviet Union had a temporary character and that it would be lifted once the Convention entered into force. He also mentioned the fact that, in his opinion, many of the laws enacted by other countries were different in character and had a different content. So, he thought, there was no customary rule regarding the zone.

I was a bit surprised by this statement. Up to now I had not really heard that view. I thought there was practical unanimity in accepting that at present, not a few years ago, there is a customary rule regarding the exclusive economic zone. Indeed, I had thought that the Soviet Union had accepted this. In fact, there had been negotiations between the Soviet Union and Mexico to establish a regime by which the Soviet Union would fish near Mexico for species that in other circumstances it would not have had the right to exploit without an agreement with Mexico. As far as we are concerned, we thought that the fact that they had negotiated this type of agreement meant that they accepted the right of Mexico to establish a zone. If they had not accepted that right, then why would they negotiate with us? We also know that they have negotiated and reached agreements, for example, with Norway, and other countries, in which they accepted and recognized the exclusive rights of Norway within its economic zone.

We also negotiated with the US, which initially was very strongly against this new institution. This was in 1977 -- that is barely three years after the Conference started and five years before the Convention was opened for signature. They also accepted the right of Mexico to limit their fishing inside Mexico's economic zone.

To my knowledge, since 1975 and up to the Jamaica meeting last December in Montego Bay, sixty-eight countries enacted legislation establishing some kind of economic zone. They might name it differently -- the US calls it a conservation zone -- but it still is an exclusive economic zone. At this moment, there are more than seventy countries with such a zone. These seventy countries represent a majority -- a very strong majority -- of the countries whose practice has any meaning here -- that is, countries with coastlines. Countries that do not have coastlines cannot have a practice regarding the exclusive economic zone, so they do not count. I would think that this represents a clear practice. I also would think that the general opinion is that the exclusive economic zone has become a customary rule and that there is a new legal situation.

IGOR KOLOSOWSKI: Mr. Chairman, I would like to compliment you with arranging this meeting in such a manner that not only the people on the podium have the possibility to deliver very good speeches, but that also the people in the audience have sufficient time to discuss these brilliant speeches and to express their points of view. As I understand it, it is precisely such an exchange of views that would help in finding the truth about the significance of the new Law of the Sea Convention.

I was not prepared and I therefore have no intention to reply to my friend and distinguished colleague, Ambassador Castaneda. However, in order to avoid any kind of misunderstanding, I understood the comments of my colleague from the Soviet Institute of Shipping to be that we cannot consider the economic zone as a norm of customary law already. What is the reason for saying so? As everybody knows, the Convention contains a lot of new principles and a lot of new conceptions on the international law of the sea. One of these absolutely new conceptions is the economic zone, another is the deep sea-bed regime, and still another is the archipelago regime. These new principles and conceptions were introduced into the Convention after nine years of very profound, very difficult and sometimes very tough discussions.

For many years, Ambassador Castaneda headed the so-called Castaneda Group, and he knows perfectly well how difficult it was to reach agreement on the text of the economic zone regime. We elaborated many mini-packages, big packages, and very big packages before the text and the present provisions on the economic zone were included in the Convention. And all these packages, very small, small, big, and bigger, are inter-related and form one unit: the Convention. So you cannot dismember the Convention in its original packages and you cannot divide the Convention into parts. You cannot say this here is an old rule, nothing but a repetition of customary law, and that there is a new rule, not even to be taken into consideration.

The Convention is a single, undividable package. Everybody who participated in the Law of the Sea Conference knows perfectly well that this idea and this agreement -- it is even called a "gentlemen's agreement" -- was adopted before the Conference began. It was also followed and adhered to during all the nine years of the negotiations. All concessions made and all agreements reached on whatever article, including those on the economic zone, were conditional on concessions and agreements on other articles, including those of Part XI. How can we forget this history of the Conference? How can we forget that the Convention was formulated on this basis and under these solemn, formal agreements?

And now, Mr. Chairman, I would like to go to another point. To be frank, ladies and gentlemen, I am concerned about some ideas we heard yesterday and today. Yesterday we heard that the Convention is an invention of the devil and that it is unacceptable to one country; that country will not accept it. We also heard that this country could use, if it so wished, some norms of customary law -- that is, customary law according to the thinking of this country.

Today I would ask: is absolute freedom in the exploration and exploitation of the resources of the sea-bed a proper theory and a proper approach? I would also ask what the rest of the world would do in the field of the exploitation and exploration of the resources of sea-bed, particularly developing countries -- small developing countries -- without the technical and other capabilities to engage in these activities. The answer was:

well, they can associate themselves with the reciprocating states' arrangement. Of that arrangement, I never did find any word in the Convention or in any internationally accepted document on the law of the sea. It is an idea only to be found in American national legislation. Mr. Reagan mentioned it as the solution of all the difficulties in a speech on March 10th of this year, but that is his opinion. The reciprocating states' arrangement is not the internationally accepted solution for the problem.

So it seems that some countries which do not like the Convention and which did not sign it are preparing to bury it as soon as possible. They even give the impression that soon the bell will toll for the Convention and that we should discuss what should be done after the Convention has died. Why should we discuss this problem? Why should we not try to care about the newborn Convention and discuss how to make it strong and effective and how to secure for it an effective, successful and long life for the benefit of all countries and the international community as a whole? These questions would be a noble and useful subject for discussion and exchange of views among representatives of different countries, among scientists, and among the diplomats who participated in the process of preparing the Convention.

In addition, there is also a legal, political and moral obligation to address these questions. For countries that signed the Convention, there is an obligation not to defeat the object and purpose of the Convention pending ratification. I am quoting from Article 18 of the Vienna Convention on the Law of Treaties. And countries that did not sign the Convention have not only the moral but also the political obligation to do nothing to impede the success of the Convention. We should not forget the opinion of one hundred and twenty different countries as expressed in the session of December 1982. The Chairman of the Group of 77, representatives of individual developing states like Mexico and Indonesia, and representatives of developed countries like Canada, Australia, Sweden and Finland all expressed the same idea: that the Convention is a single package. So any country that would try to act unilaterally on the deep sea-bed will bear a heavy responsibility, and it will have to face political and legal consequences for this action. I think that we should remember these things in discussing the problems of the new Convention.

ALAN BEESLEY: I think, Mr. Chairman, there is a real danger that we are on the verge of reverting to a kind of colonial approach to the oceans, but I do not think it is inevitable. It behooves those of us who are lawyers, as I said yesterday, to take very seriously the terminology of the Convention and to use it with precision. To some extent, there already have been some misunderstandings evident today, at least in the discussion that has followed the presentation of the papers.

Many of us tend to use the term "economic zone" to mean "fisheries" and, as a number of us have pointed out, fisheries' jurisdiction is only one element of the economic zone. The point I wish to stress is not only that the economic zone embodies a functional approach comprising a series of quite separate types of jurisdictions, albeit inter-related, but that it was the complete negation of the sovereignty approach. On the other hand, and in spite of views to the contrary, it is hardly what one would call the high seas approach.

The point is that this was a very tightly negotiated package within the overall package. Only yesterday one of my Norwegian colleagues and I were recalling some of the very early negotiations where we were working on the language which survived all the years of hammering. We thought it essential to have rights and duties going hand in hand in the concept of the exclusive economic zone, and we did not think there would be any acceptance of the concept unless this was present. Against that background, we must analyze state practice very carefully before we jump to conclusions. I am sure that Ambassador Castaneda, who was throughout the Conference one of the eminent authorities on the questions we are discussing, might well have been referring to fisheries' jurisdiction. In some cases, states may have used the term economic zone, but I question whether such a large number have actually established the economic zone in all its elements. Many states have not done so, for example, with respect to marine scientific research or the environment. I think one of the conclusions to be drawn from these discussions is that states have to take the Convention home to examine it and to compare it with their legislation. And if they take the Convention seriously, they should begin drafting their legislation accordingly, harmonizing it with the Convention.

In this context, the case of the US is very significant, not only because of the importance of that country, but even more so because it has remained outside the Convention thus far. I think it ill behooves us again to indulge in recriminations. The US exercised its sovereign rights through its elected government. But in the US Proclamation on the economic zone, there are almost as many exceptions to the rules laid down in the Convention as there are areas of compatibility with the Convention, even though its stated intent is acceptance of the exclusive economic zone. People tend to refer to tuna and draw conclusions, but what about marine scientific research? If that is not included, what is the regime that applies? Tell me what international law is in light of the Convention and in light of state practice outside the Convention.

What about the environment? It is certainly not enough to say that everybody is already exercising these rights. That is simply not true. When we think of the combination of compromises between flag state and coastal state jurisdictions, and in addition to that port state jurisdiction, it is simply not enough to say that we can ignore the environment because it will take care of itself -- a point I hope to be making on Saturday. But it is another indication of how state practice

can be misread. If the US Proclamation was intended to incorporate all the elements of the economic zone, why did it not do so? I am not saying this as a criticism. I am saying merely that, as a lawyer, I feel I must take these factors into account in making generalizations about the law.

What about boundary settlement? For obvious reasons, I do not wish to argue this case, but, speaking personally, I find it very difficult to interpret the Presidential Proclamation as being based on the Convention.

I could, of course, go further and question the desirability of utilizing a Proclamation in the light of the widespread effects, not all of which are widely considered to be as beneficial as the major precedent, the Truman Proclamation. However, it is not for me to criticize. All I am saying is that if this device is being used again, we are not only entitled, but obliged, to look at it and analyze it very carefully to see what its effects are.

CARL FLEISCHER: Up to now, I have been a bit reluctant in taking the floor in regard to the discussion that is taking place here today. I have very little to add, especially to the eminent intervention of Ambassador Castaneda. However, I would like to stress very strongly that I can very well understand the arguments put forward by our two Russian friends. I have already replied to the first intervention. As to the second intervention by Ambassador Kolosovski, I can very well follow his argument on an intellectual level. Because Ambassador Kolosovski is such an experienced negotiator and because I quite respect his intellectual ability, I can quite understand and follow his line of thinking. But I still maintain my own position, namely, that there is a more realistic view. This is the case especially, as Ambassador Castaneda very aptly put it, after the passage of some years since the establishment of the main body of state practice on the EEZ's and fisheries zones in 1975, 1976 and 1977. In 1976 and 1977 there could, perhaps, have been doubts but now the realistic and correct view must be, at least in my opinion, that the economic zone has become a part of customary law.

DOUGLAS JOHNSTON: Ladies and gentlemen: I think you will agree with me that our panelists have served long and hard today and that they have earned a rest. So do you, as you have cooperated magnificently and contributed so much to the success of this afternoon's session. For that, I thank you very much. The session is closed.

SPECIAL SYMPOSIUM

SHIPPING SUPPORT FOR DEEP SEA MINING OPERATIONS

INTRODUCTORY REMARKS

Trygve Gulliksen
Bjorge Enterprise A.S.
Oslo

Good afternoon, ladies and gentlemen:

We are most pleased to extend to you a warm welcome to this special symposium devoted to the political and economical aspects of deep ocean mining. I would also like to take this opportunity to express our appreciation to the organizers of this conference for having included us in the program. The purpose of this symposium is to give you a better understanding of a most exciting field: deep ocean mining.

Your host country, sometimes referred to as the country of the blue-eyed Arabs, has for the past ten years been actively involved in exploring for oil and gas on its continental shelf. As you may know, our nation has been most fortunate in finding important discoveries of hydrocarbon resources on its shelf. We started very modestly in what we now call shallow water, but, as our experience and as our competence grew, we moved into deeper waters. As a nation, we certainly have at present an asset in possessing very sound competence and a great deal of experience in deep offshore technology. Quite a few of the people and the companies involved in deep offshore technology are shipping companies, offshore companies or industries related to offshore activities. For a long time, we have considered deep ocean mining a very exciting thing for Norwegian industry. We feel it is a challenge and we are not afraid of this challenge. In fact we welcome it. However, we do appreciate that although there are many opportunities, there are certainly many risks involved as well. Still, we think deep sea mining has an exciting future for us in Norway.

This afternoon we have a stimulating few hours in front of us as we have here some of the most experienced and most widely recognized experts in deep ocean activities.

The French government has invested much effort and much capital in the future of ocean mining. One of the key companies in France is a group called the CNEXO, and one of the key persons in the CNEXO is our first speaker today. Jean Pierre Lenoble is a graduate from the Ecole Superieure de Technique Appliquee, and he has more than 14 years experience in exploration and mining for a major French company. He joined the CNEXO organization in 1972 as the chief of geoscience and related resources department. Presently, he is acting manager of a group called AFERNOD consisting of the CNEXO and the French Atomic Energy Commission, as well as of a consortium of nickel companies and a French shipyard. Mr. Lenoble will give us some of his views on the technical aspects of deep ocean mining.

We will then focus on the economical features of ocean mining as exemplified by the M.I.T. Cost Model. This model, which deals with the future of ocean mining, will be presented

by Professor Dan Nyhart. He is a professor of the School of Management and the School of Engineering, Department of Ocean Engineering of M.I.T. He is a graduate of Princeton University and Harvard Law School. Professor Nyhart has more than ten years' experience in research projects not only related to ocean mining activities, but also to the legal aspects of oil spillage.

After Professor Nyhart we will hear from Conrad Welling, the Senior Vice President of the Ocean Mineral Company. Before joining the Lockheed Company in 1959, he had more than 23 years with the US Navy and the Army, having special tasks connected with the ocean and space program. He has a Master of Science of Engineering Electronics from the Naval School, as well as a postgraduate degree in aeronautical engineering.

After Conrad Welling we will hear from Jann Brevig, the Marketing Manager of SIMRAD Subsea. He is not an experienced ocean mining man, but he certainly has already marked himself in his profession. He is going to give his views as to what a small company may do in applying its talents to ocean mining activities.

Our last speaker is remarkably well known in Norway in the ocean mining field. He is a fellow research member of the conference co-sponsor, the Fridtjof Nansen Institute. Jan Magne Markussen is a graduate from the Bergen Commercial School in Business Management and Economics, and for the past few years, he has conducted extensive research, not only in Norway, but also overseas, into the potential of deep sea mining for Norwegian shipping and offshore and related industries.

TECHNOLOGICAL ASPECTS OF THE OPERATION OF TRANSPORT VESSELS AND MINING SHIPS

Jean-Pierre Lenoble
Centre National pour l'Exploitation des Oceans
Republique Francaise

MAIN FEATURES OF THE POLYMETALLIC NODULE DEPOSITS

The tremendous amount of exploratory work carried out in the last ten years by the so called pre-enactment explorers brings some light to the darkness of the deep sea-bed. Although the original concept of a polymetallic nodules deposit is considerably improved, there are still many unclear aspects and there is a lot of work to be done to get a comprehensive picture of the matter. Even so, it is already possible to silhouette the principal features of what could be a minable polymetallic nodules deposit in the near future.

The first generation of nodule mining operations will likely be limited to the richest nodule fields. The presently known rich fields are located in the north equatorial Pacific Ocean and south equatorial Indian Ocean, far away from any land, even from small islands. The distance from land-based metallurgical treatment facilities will be several thousand nautical miles, say, an average of 2,000 miles. For those fields the water depth averages 4,500 to 5,500 meters.

The sea state is characterized 90 percent of the time by waves and heave amplitude less than 4 meters and a heave period smaller than 10 seconds. The wind speed for 90 percent of the time is below 30 knots. However, most of the areas are subject to violent storms and even hurricanes. Fortunately, it can be expected that satellites will provide a complete cover for hurricane forecasting before the mining starts. Nevertheless, there is for the moment a lack of adequate weather data and of sea current data on the entire water column. Surface currents could be several knots with a flow of only a few miles width in some areas. The speed of bottom currents measured until now is below 100 meters per hour. Water temperature varies from 20-25 degrees Celsius in the first hundred meters near the surface to 0-3 degrees Celsius in deeper layers.

The bottom topography is generally smooth. Most of the slopes dip less than 10 percent. However, the geomorphology is complex with long parallel ridges, spaced every 5 to 10 km, which crest 100 to 300 meters above the nearby lowest areas. Most of the ridges are surrounded by discontinuous small earthy cliffs of one to several tens of meters high, which constitute the main obstacles for bottom harvesters of nodules. From place to place huge submarine volcanoes, some 2,500 meters high and 10 kilometers wide, are superimposed on this regular topography.

The sediments which cover the bottom are very soft and sticky, their shear strength ranging from 10 to 100 gcm; a man on his feet would sink to his chest. In a few places pillow

lavas or other basaltic outcrops have been observed. Crusts with compositions similar to the nodules are less unusual.

The nodules are spread irregularly over the bottom surface, more or less embedded in the first few centimeters of the sediment. No clear relationship can be established between topography and abundance of the nodules. This abundance varies from zero to more than 20 km/m with an average of 10,000 t/km in the most interesting areas. In the best areas 70 percent of the bottom surface is covered by nodules in homogeneous patches, averaging several acres. Statistically speaking, their metal content is fairly constant over large areas. However, nodules of poor value can occur near topographic accidents.

The size of these nodules varies from less than a centimeter to two decimeters, but, as they are very brittle, they break easily into smaller pieces. Their specific gravity is around 2 g/cubic cm , but a cubic meter of loose nodules weighs approximately one ton.

Factors that will affect the choice and dimensions of the mining vessels would be:

- The great distance from land facilities;
- The relatively rough sea and weather conditions;
- The considerable depth of the sea bottom that necessitates large and heavy equipment and high energy consumption; and
- The very low bearing capacity and breakout resistance of the sediment that calls for large motorized collecting devices on the bottom and consequently large surface vessels.

MINING THE NODULES

Many different systems have been proposed to mine the polymetallic nodule deposits, but only a few of them have been studied in detail. Three main concepts were adopted by the industrial consortia that devoted a significant amount of work to nodule mining. Those three concepts differ in the lifting system:

- Mechanical with a continuous line of buckets (CLB) using a loop of cable 20,000 meters long;
- By hydraulic or hydropneumatic pumping through a vertical pipe 5 kilometers long; or
- By a free submersible shuttle that collects the nodules on the bottom.

The CLB Concept

This system is based on the principle of a classic dragline. Dredges of some cubic meters in volume are fixed every 30 meters along the 20-kilometer cable. The cable is made of plastic fibers with a breaking strength as great as, but a weight much lighter than, steel. One side of the loop is payed out by a smaller vessel and it carries the buckets down to the ocean floor where they dredge the nodules for a distance of over 200 meters. The larger vessel pulls up the

other side of the cable and hauls the buckets filled with nodules on board. The buckets are emptied and transferred to the first vessel along a loose loop. The two ships are sailing in parallel at one knot. Their relative positions and the length of the loose loop are adjusted in relation to the bottom topography and the desired width of dredging.

The larger vessel supporting the pulling-up traction machine, the unloading and handling equipment of the buckets, and the storage facilities could be a 150,000- to 200,000-ton transformed ore carrier. The smaller ship could be a large tug or supply ship with special equipment for handling the bucket line. Both ships must be equipped with transverse thrusters.

Hydraulic or Hydropneumatic Systems

In these systems the nodules, collected on the bottom by a specially designed dredge, are introduced into a 5-kilometer long vertical pipe after sediment separation. Using slurry pumping or enlightment of the water column by air injection at the mid part of the pipe (air lift), the nodules are transported by the water flow to the surface. The surface vessel must support the lift pipe, drag it along at a speed of one knot, and tow the nodule collector. She must handle the positioning of the pipe down and up for maintenance and repairs and provide pipe storage facilities. She must also provide the power for all the equipment, including the bottom collector and pumping systems; and she must have sufficient storage capacity for the nodules awaiting transfer to the ore carriers. The mining vessel can be a large conventional drilling ship or a semisubmersible platform with automatic positioning system.

Free shuttle system

In this system an unmanned submersible handles the collecting and transportation of the nodules. Such a shuttle, with 1,500 tons water displacement, will dive from the surface with additional ballast. On its arrival near the bottom, by deplacement of part of its cargo weight and the help of thrusters, it will land on the soft sediment. From the landing point, the shuttle will crawl on Archimedes screws and harvest the nodules with mud separation and tank storage. During this operation part of the ballast will be dumped to adjust buoyancy. When the shuttle is filled, additional ballast will be discharged, giving sufficient buoyancy for the return to the surface. Ten to twenty shuttles will operate around a surface platform, which could be a very large (500 to 700,000 tons) vessel open at its stern with an internal harbor to handle the shuttles. The shuttles will be recovered, when emerging, by two small supply ships (1,000 tons) using remote controlled vehicles to drive them to the mother ship. After the unloading of the nodules, the reloading of ballast and refueling, the shuttle will be launched through a moon pool.

TRANSFER AND TRANSPORTATION OF THE NODULE ORE

As the mining ship, whatever the system adopted, is a highly specialized and large vessel, she will stay on the mining site most of the time. Transportation of the nodules between the site and the port where they are transferred to the metallurgical plant will be done by ore carriers.

Daily production is expected to be between 3,000 and 10,000 tons of dried nodules, which corresponds to 4,000 to 13,000 wet tons. The storage capacity of the mining ship will most likely be between 30,000 and 100,000 tons.

The size and the number of the ore carriers must be determined on the basis of:

- The storage capacity of the mining ship;
- The deadweight cargo capacity of the ore carriers;
- The distance from the mining site to the port;
- The transfer capacity at sea; and
- The transfer capacity in port.

Some constraints must be added by limitations on draught for port or canal access or by special treatment of the nodule slurry if it is too fine and water absorbent.

The calculations give a variation in size from 75,000 to 200,000 tons TDW and in number from 2 to 8, depending the port location, for a production of 1.5 million dry tons per year.

The nodules could be transferred from the mine ship to the ore carrier by hydraulic slurry pumping, as the MARCONAFLO already used for iron ore, which requires a preliminary grinding of the nodules to obtain a size smaller than 1 mm. It is also envisaged to proceed by indirect pumping through alternative chambers.

The ore carriers must be equipped with a dynamic positioning system.

UNSOLVED PROBLEMS

Though apparently few technical gaps are left in the development of nodule mining, considerable improvement has to be achieved to prove the feasibility of the present projects.

One of the main problems is the capability of the dredging equipment on the ocean floor. The discovery of relatively frequent topographic obstacles on the bottom made during the last phase of exploration necessitates a revision of the feasibility of the dredging operation. For example, although more expensive and complex, the free shuttle could be more efficient than pipe lifting as it could work around these obstacles and save time in avoiding waste areas.

The balance between investment and operating costs, on the one hand, and revenue, on the other, is in fact determined by the actual efficiency of all the operations. This efficiency has to be proved by more studies and more tests at sea.

COMPARED EFFICIENCY OF THE MINING SYSTEM

PARAMETERS		C L B	HYDRAULIC	FREE SHUTTLE
Dredge efficiency	$\frac{\text{weight of loaded nodule}}{\text{nodule on bottom}}$	70%	80%	70%
Traffic efficiency	$\frac{\text{area than can be swept}}{\text{total area}}$	40%	65%	85%
Sweeping efficiency	$\frac{\text{swept area}}{\text{area than can be swept}}$	70%	50%	70%
Dredging efficiency in the swept area	$\frac{\text{dredged area}}{\text{swept area}}$	15%	100%	100%
Total recovery	for a 7.5 kg/m^2 initial	3%	17%	40%
Area needed for 4 Mwt/year operation during 25 years		500,000 km^2	75,000 km^2	35,000 km^2

SENSITIVITY OF THE DIFFERENT MINING SYSTEM TO THE ENVIRONMENTAL CONDITIONS

		C L B	HYDRAULIC	FREE SHUTTLE
BOTTOM	Reaction to sediment	few influence	very critical	very critical
COLLECTOR	Mud cleaning	uneasy	possible	possible
EFFICIENCY	Sweeping efficiency	badly controlled	badly controled	monitored or
OTHERS	To weather conditions	sensitive	very sensitive	fewly sensitive
SENSITIVITY	water depth	fewly sensitive	sensitive	fewly or not sensitive
	nodule size and abundance	fewly sensitive	sensitive	fewly sensitive

OCEAN TRANSPORTATION CONSIDERATIONS IN DEEP OCEAN MINING: COST ANALYSES FROM THE MIT DEEP OCEAN MINING MODEL

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OVERVIEW OF PAPER

This paper summarizes the cost estimates and analyses comprising the second iteration of the MIT Deep Mining model, published in A Pioneer Deep Ocean Mining Venture [1]. It sets down in short form a projected time line for bringing a hypothetical nodule mining project to commercialization [2]; outlines the new, deepened structure of the M.I.T. model [3]; and reports on a new set of cost estimates and economic return analyses found in the full study. Two aspects especially concerning ocean transportation are examined in more detail because of the special focus of this symposium. These are the submodel for examining how the number and characteristics of the transport vessels should vary with changes in assumptions as to distances, port drafts, etc., and the submodel for direct cost estimation for those vessels.

BASIC ASSUMPTIONS

The operating entity is assumed to be a consortium of companies, working together initially in a contractual arrangement with the pre-production operations carried on by one company or by an organization formed for that purpose. The consortium is based in the United States with processing facilities located, for illustrative purposes in this study, on the West Coast of the US. The manganese nodules are recovered from a Pacific Ocean mine-site located within a belt of ocean bottom south of the Hawaiian Islands, north of the Equator, between the Clarion and Clipperton fracture zones and extending almost to Mexico from 180 degrees West longitude. This area contains manganese nodules with comparatively high concentrations of nickel, copper and cobalt. These three metals are the primary marketable products of the project.

THREE PROJECT PHASES AND THEIR TIMING

The hypothetical project can be thought of as happening in three operational phases. The first involves the pre-production or "up-front" work. The second is the contract and construction or investment phase assemblying the facilities and equipment necessary for recovery and processing of the target metals in marketable quantities; and the third phase, the commercial operations over a 20-25 year period.

Pre-Production Phase

The pre-production or "up-front" phase of the operation involves both the research and development (R&D) work aimed at assembling the technologies necessary to mine, transport, and process the manganese nodules and the prospecting and exploration (P&E) work necessary for defining the quantity, quality, and location of the manganese nodules resource. The results of this work supply the information necessary to make a decision on whether or not commercial production is both technically and financially feasible.

Contract and Construction (Investment) Phases

The contract and construction phase of the operation begins when the decision is made to invest in the facilities and equipment required for a full-scale project.

There are at least eight basic interdependent operations involved in the commercial operations of a deep ocean mining project. They are:

1. Continuing R&D and exploration activities;
2. The mining operation and its supporting activities;
3. The transportation of ore from the mine-site to the port terminal;
4. The operation of the ore discharge terminal;
5. The crew and supply vessel operation;
6. On-shore transportation to and from both the processing plant and the ore discharge terminal;
7. The nodule processing activities;
8. The waste disposal operations.

During this phase, the contracts are let and the construction of the major units of capital equipment for the above mentioned operations is undertaken. At this point the consortium commits the capital required for building the necessary equipment and facilities, as defined and developed by the pre-production R&D activities, and there is no turning back.

Commercial Operations

The commercial operations phase of the projects begins when construction of the capital equipment for the mining, transportation and processing activities is completed and the start-up period, estimated between one and two years, ends. During the start-up period the technology is further debugged and the system brought up to its full design production rate. The project operates at this design capacity through the remainder of its life, approximately 20-25 years, unless unforeseen slowdowns are encountered.

TIMING

Presented in the following paragraphs is a brief narrative summarizing a set of likely operating events of a hypothetical pioneer deep ocean manganese nodule mining project. The events

of concern are mainly those leading to full commercial production for the project.

In each consortium those responsible for long-term planning will decide how, if at all, the project will proceed and allocate funds for the prospecting and exploration (P&E) and research and development (R&D) efforts. These are divided into successive steps, each of which is funded based on the "go/no-go" decisions results of the previous steps. These intermittent "go/no-go" decisions, referred to here as "Go1," "Go2," etc., encountered at the end of one step prior to the funding and commencement of the next can be considered as "off-ramps." If the project evaluation at the end of each stage proves the project worthy of further investigation, the planners allocate funding, probably at an increased level, for the next stages of work. If the project does not appear favorable, the planners could decide to take the "off-ramp," thus resulting in shelving or terminating the project.

In this description of a hypothetical pioneer deep ocean mining venture it is assumed that pre-production activities (phase I) began in 1970, year 0 of the project time lines, as summarized in the Figures 1 and 2. In 1981, the US-based consortia were understood to be at the point roughly corresponding to year 11 in the time lines. The pre-mining P&E, bench test R&D, pilot miner construction and testing were completed, or nearly so, and the project evaluation preceding a major "go" decision was underway. At the outset of year 12, acquisition of equipment could begin for at-sea endurance testing of a reasonably large-scale mining system. Approximately one-and-a-half years later, the testing could begin. Six months into this testing, the at-sea mining operation would have proved sufficiently successful to allow further investment in a demonstration-size processing plant to begin, requiring about a year for construction after state and local permits are obtained.

Looking forward, during the demonstration construction period the miner is still at sea, finishing the endurance testing and developing the 100,000 tons nodule stockpile required for the demonstration plant test run. At the end of the demonstration plant construction period (year 15), the plant begins operations. A year of operating the demonstration plant should be sufficient to provide enough product and enough data to make the final "go/no-go" decision for commercial production. However, the demonstration plant will run for an additional year after the "go" decision to accumulate more data.

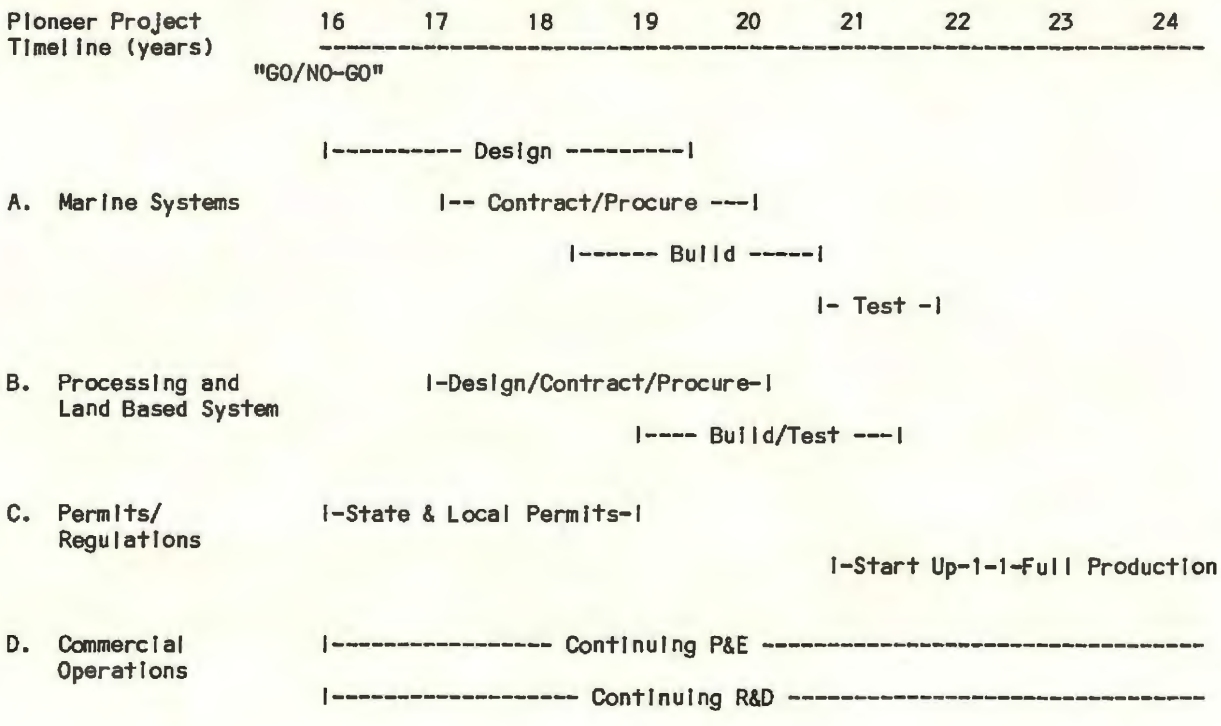
If the final "go/no-go" decision is favorable, the project enters the investment and construction phase in year 16. The design, contract and/or procure, build and test periods for the at-sea components of the project require five-and-one-half years. After about one year of design work, orders are placed for major equipment. Plant construction itself cannot begin until state and local permits have been obtained, about year 19.

The commercial production period begins halfway into year 21 with start-up lasting one-and-a-half years for both mining

Figure 1 A, B, C, D, E:
TIMING OF "UP-FRONT" PHASE FOR A PIONEER PROJECT

Pioneer Project Timeline (years)	(1970) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	GO 1							GO 2					GO 3		GO 4		GO/NO-GO		
A. Major decision points, project eval. periods							PROJ EVAL				PROJ EVAL				PROJ EVAL		PROJ EVAL		
	ENG/DES TUDI S				COMPONENT TESTS NSHO E & T-SE						PILOT MINER CONS R & EST				AT-SEA ENDUR TEST ACQUIRE OPERATE				
B. "Up-Front" R&D	ASSEMBLE TEAM																		
			BENCH TESTS OF PROCESSES								PILOT PROCESSING TESTS				DEMO PLANT BUILD OPS				
C. "UP-FRONT" P&E	BACK- GROUND		PROS- PECTING				EXPLORATION												
D. "Up-Front" P&E, revised	BACK GROUND				PROSPECTING				EXPLORATION						EXPLORATION FOR PERMIT AREA				
														DSM LIC		DSM PERMIT			
E. Permits Regulations														State, Local, & Other Federal Permit					
														DEMO PLANT				FULL SCALE PLANT	

Figure 2 A, B, C, D:
TIMING OF "CONTRACT AND CONSTRUCTION"
AND "COMMERCIAL OPERATIONS" PHASES



and processing. Thus, at the beginning of year 23, full production begins and runs for about 20-25 more years.

As indicated, it is assumed that the mining consortium is US based and, therefore, subject to the US Deep Sea-bed Hard Minerals Resource Act (P.L. 96-283), which regulates deep sea-bed mining. The Act requires a US deep ocean miner to obtain a Deep Sea Mining (DSM) License before exploration and a Deep Sea Mining Permit before commercial recovery. Existing, i.e., pioneer, consortia are exempt from the prohibition against exploration before receiving a license, so long as they make timely application. The DSM license and permit processing periods will require one-and-a-half and two years, respectively; both periods will run concurrently with R&D and P&E activities. The license would thus be issued in mid-year 13 and halfway through year 15 application would be made for a DSM permit. The consortium could, therefore, have a DSM permit in hand one year after the "go/no-go" decision.

COST ESTIMATES BY OPERATIONAL SECTOR, EXCLUDING OCEAN TRANSPORTATION

The activities, facilities and equipment required for successfully preparing for and conducting the commercial operations of an ongoing ocean mining project are summarized in this section, along with the cost estimates for the basic set of assumptions used in this second iteration of the MIT model.

Pre-Production Prospecting and Exploration, Research and Development

The P&E and R&D work conducted during the "up front" phase of the project establishes a bank of knowledge upon which the consortium bases the ultimate decision whether to invest and hence go into commercial production. In the prospecting and exploration activities carried out during the pre-commercial mining period, the miner delineates a mine-site based on ore abundance, ore grade, soil characteristics and topography. Pre-commercial-mining P&E is made up of three elements: background work; prospecting, i.e., identifying potential mine-sites of commercial quality; exploration, i.e., further delineating the ore deposits, determining concentration and abundance of nodules, obtaining soil mechanics data; and mapping.

In the initial research and development the current technical status of ocean mining and the potential for future financial returns are ascertained through literature and patent searches, interviews, estimation of future metals prices and returns, and small-scale bench tests of potential processing, transport, and mining systems. Using this information, an initial marketing strategy and business plan are developed. The business plan delineates a detailed program, schedule and budget for the next, or major, R&D effort, and it sets forth a tentative plan for commercialization activities including capital funding.

In processing R&D, both a pilot plant and a demonstration plant must be designed, built and operated. The pilot plant is about a 1/10,000 scale operation whose key objectives include the demonstration of the process of an integrated plant, the acquisition of preliminary design data for key operations, the determination of materials consumption, product yields and product purities, and process revisions/optimization studies as required. In addition, the pilot plant provides information for cost estimates for both demonstration and commercial plants. The demonstration plant is at about a 1/20 scale. From the demonstration plant come the final design data for the commercial processing plant.

Transport R&D deals with the unique problems created in handling and transporting large quantities of nodules, either from vessel-to-vessel or from vessel-to-shore. This effort requires the design of sophisticated slurry transport and ship control systems.

The mining R&D effort deals with the problems of collecting and lifting the nodules and navigation while carrying out these activities. This requires at-sea testing of systems and components.

As described previously, research and development expenditures progress in stages, and a substantial part of the overall capital requirements of the project are here. The greatest portion of funding is required for the capital-intensive pilot and demonstration processing plant tests and the mining system demonstration scale test.

Cost Estimates for P&E and R&D

For the base set of assumptions described in the study, an estimated $172M will be required on these initial efforts. These costs are summarized in Table 1 and they are allocated in the following manner:

1. Of the combined R&D ($136M) and G&A ($6M) costs of $142 million, 15 percent are expended between Go1 and Go2; 30 percent between Go2 and Go3; and 55 percent between Go3 and Go/No-Go.
2. The prospecting costs ($5M) are spread evenly over the years of the prospecting period.
3. The exploration costs ($25M) are spread evenly over the years of the exploration period.

Pre-production phase costs may be expensed, capitalized or both, depending on their nature, when they occur, the state of the project's revenue stream, and the desires of the consortium members. In the initial set of assumptions R&D, project feasibility, permitting, and up-front general and administrative expenditures are all expensed. Prospecting and exploration expenditures are expensed if the mineral deposit is considered as United States based. If they are considered as foreign based, they may be capitalized. Although US law is not entirely clear on this point, the assumption is made initially that the

Table I

PREPARATORY COSTS

(In millions of US dollars)

Pre-Commercial-Mining P&E	
Prospecting	5.00
Exploration	25.00
Pre-Commercial-Mining R&D	
Mining Sector Related	60.00
Transport Sector Related	6.00
Processing Sector Related	70.00
Project Evaluation [4]	
Licenses, Permits	
Payments to International Authority	0.00
General & Administrative	
Management	4.00
Sponsored Research	2.00
TOTAL	$172.00

deposit is foreign based and, therefore, the P&E costs are capitalized.

Continuing Preparations: Research and Development and Continuing Exploration

Specific tasks are to complete the topographic mapping of the year's mining area, to complete development of the mining plan at a pace one to two years ahead of the miner, and to prospect for future mine-sites.

This operation is active throughout the life of the mine-site, although not necessarily in the form of an at-sea prospecting vessel. The activity will require 150 days per year of the research vessel. However, there will be some activity either on land or at sea all the time and thus require a full year's use of the research team.

The R&D effort will continue in mining, transport and processing as initial design flaws or gaps are rooted out and efficiency is improved. The data required for this redesign effort is generated, for the first time, from the actual commercial operation itself. Likely improvements are looked for in the mining system and navigation sub-systems, in the nodule slurry transport system, in metals recovery efficiency and in the debugging of long- and short-term problems which develop in processing during and after start-up.

Finally, low-level service from the assay lab is required on a continuing basis. The continuing R&D effort is a minor, but necessary, operation whose function is to aid in improving the mining, transport and processing technologies. Little more can be said for this operation, except that its cost will be comparatively low, with an allotted operating budget of about 1 percent of projected full production sales of metals.

Cost Estimates for Continuing Preparations

The model assumes $4M per year of continuing P&E costs and $2M per year of continuing R&D. Costs thus total $36M for the investment period. According to present tax law, it appears that these expenditures are developmental and may, therefore, be expensed. During the production phase, continuing preparations are also allowed as developmental.

Mining

The at-sea mining operation involves the use of one or more specifically designed mining vessels, which employ hydraulic lifting techniques (submerged pumps) for recovering the manganese nodules from the ocean floor in about 18,000 feet of water at a rate of 3,000,000 dry tons (4,500,000 as mined tons) per year. The mine-ship is similar to a drill-ship with a central moon pool, a gimballed and heave-compensated pipe suspension system, and pipe handling equipment. Provisions are made for the storage of mined nodules, which are periodically off-loaded at sea to a transport vessel. The mine-ship is dynamically positioned, using bow and stern thrusters, to enable it to follow a predetermined mining path. In addition to the

mine-ship, there may also be a need for one or more smaller vessels to support the mine-ship at the mine-site.

Cost Estimates for Mining

For cost summary, see Table 2.

Ore Discharge Terminal, On-Shore Transportation (Nodule Slurry Pipeline, Waste Slurry Pipeline and Roads and Railways) and Marine Support Operations

The whole transportation operation requires equipment and facilities necessary for transporting nodules from the mine-ship(s) to the processing plant, crew and supplies from a port facility to the mine-ship, waste from the processing plant to a disposal site, and supplies to and products from the processing plant. The first component, transportation of nodules to the processing plant, assumed to be on the West Coast of the United States, requires a fleet of ore transport vessels. The requirements for this fleet are discussed below in the section on ocean transportation requirements. Other necessary elements include a dedicated port facility in a developed port on the US West Coast near the processing plant and a slurry pipeline system for transporting the nodules from the port facility to the processing plant.

A high-speed supply vessel based at a second port facility located nearer the mine-site, possibly in Hawaii, provides the mine-ship with fresh crew and supplies in addition to those carried outbound by the transport ships to the miner. This alternate port facility serves as a logistics base for the mine-ship(s), its supporting vessels, and the research vessel(s).

A cost estimation is made for a slurry pipeline capable of transporting 4,500,000 wet nodules over a distance of 25 miles and a height difference of 1,200 feet. The design methodology for such a slurry pipeline is not well established and the power and cost calculations should be regarded as a first approximation. The pipeline cost is derived from costs of existing pipelines. The slurry pipeline land cost is evaluated by summing the direct land cost and the surveying and preparation costs. A 50 foot right-of-way is assumed. The operating costs are divided into energy, labor and maintenance cost.

The disposal of process wastes in ponds requires the use of a waste slurry pipeline system. This pipeline, very similar to the nodules slurry pipeline, is a closed loop system with slurry water being recycled to the processing plant for re-use. The system requires slurry and decant piping, slurry and decant pumps, a slurry water storage tank(s), and right-of-way for the pipeline and land preparation. The pipelines are steel units with pumping and recycled water storage facilities located at the processing plant.

The waste slurry pipeline differs from the port to processing plant pipeline because in this case the particle average size is 100 microns. The distance to the waste site is assumed to be 60 miles. A height difference of 1,900 feet was

Table 2

MINING COSTS

CAPITAL COST SUMMARY

(In millions of 1980 US dollars (per mine-ship))

Equipment and Supplies Handling	17.05
Nodule Pumping System	12.40
Dredge Pipe	19.60
Collector	3.50
Ore Handling	10.20
Mineship	90.37
TOTAL	$153.12

OPERATING COST SUMMARY

(In millions of 1980 US dollars)

Maintenance and Repairs	15.37
Crew Salaries and Costs	9.94
Fuel Costs	4.68
Insurance and Lay-Up	2.80
TOTAL	$32.79

TOTAL CAPITAL COST FOR TWO MINESHIPS	$306.24
TOTAL OPERATING COST FOR TWO MINE-SHIPS	$65.58

taken into account. The cost methodology is also similar to that of the port to processing plant slurry pipeline.

Also provisions for roads and/or rail lines to transport personnel, supplies, and products to and from the various facilities mentioned above must be made where necessary. Both the access roads and the rail spur line require the purchase of right-of-way land. The land must be surveyed and prepared before pavement or tracking can be installed.

Cost Estimates for These Sectors

Capital and operating costs for the ore discharge terminal, estimated at $22.87M and $3.19M respectively, are summarized in Table 3. Costs for the research and supply vessels and the support marine terminal are summarized in Table 4.

The nodule slurry pipeline is estimated at a capital and land cost of $11.29M and an annual operating cost of $3.2M (Table 5). The figures for the waste slurry pipeline are found in Table 6. The actual cost will depend significantly on the specific location chosen. For this purpose costs of roads, access roads, and right-of-way land at $2M were chosen as tentative preliminary estimates assuming that no major road construction will be necessary.

Processing

In this study the recovered nodules are processed using a reduction/ammoniacal leach technique resulting in the recovery of nickel, copper and cobalt as marketable products. This recovery technique is modeled for illustrative purposes and does not necessarily reflect the exact system that any particular consortium might employ.

The processing plant is located on the West Coast of the United States to allow easy access to the anticipated mine-site. The plant is sited in an area which can provide the electrical power, manpower, air and rail transportation, public roadway network, and other such requirements necessary for a nodule processing facility. In addition, the processing plant is built as close to the ore discharge port facility as economically and politically feasible.

Equipment used in this process is grouped into functional units, subsectors, to facilitate capital cost estimation. The Materials Storage, Handling, and Preparation subsector ensures that the bulk raw materials are delivered to the process stream in the appropriate form at the proper rate. The Nodules Reduction and Metals Extraction subsector first prepares the nodules for release of the valuable metals (reduction) and then leaches out these metals with an ammonia liquor (extraction). The Metals Separation unit separates the valuable metals from each other by selectively extracting each dissolved metal out of an organic medium. The Reagent Recovery and Purification subsector washes the valuable reagents and metals out of the by-products of various operations and prepares those reagents for recycling. The Metals Recovery and Purification subsector produces marketable metals and materials from the products of

Table 3

ORE DISCHARGE TERMINAL COST SUMMARY

(In millions of US dollars)

ITEM	
Capital Cost	
Land	0.87
Site Development	1.32
Buildings	10.96
Piers and Cranes	1.48
Dredging	0.11
Fuel Pipelines	5.73
Slurry Discharge and Piping	1.65
Nodule Storage Basins	0.75
Water Recycling Tankage	
TOTAL	$22.87

ITEM	OPERATING COSTS
M&R	1.23
Labor	.95
Utilities	.25
Insurance	.23
Tax	.23
Leases	.30
TOTAL	$3.19

Table 4

RESEARCH AND SUPPLY VESSELS AND

SUPPORT MARINE TERMINAL COSTS

COST SUMMARY (BASE CASE)

(In millions of 1980 US dollars)

CAPITAL COST	
Research Vessel (Chartered)	--
Supply Vessel	1.80
Marine Terminal (Leased)	
TOTAL	$1.80
OPERATING COST	
Research Vessel	3.50
Supply Vessel (including helicopter)	0.80
Marine Terminal	0.38
Crew Training	0.20
TOTAL	$4.88

Table 5

NODULE SLURRY PIPELINE COST SUMMARY

(In millions of 1983 US dollars)

Capital Cost	10.89
Operating Cost	3.20
Land Cost	0.40

Table 6

WASTE SLURRY PIPELINE COST SUMMARY

(In millions of 1980 US dollars)

	CAPITAL COST	OPERATING COST
Waste Pipeline	22.40	4.48
Land Cost	0.96	0.00
TOTAL	23.36	4.48

the metal separation subsector. The Plant Services component provides many of the support operations needed to operate the process.

The processing plant site requires about 500 acres of land. About 25 percent of this land is allocated to nodule storage and decant ponds; coal, lime and limestone storage areas; and a plant run-off and emergency waste storage area. Some additional 75 acres are occupied by the major processing equipment, including the thickeners, and the remaining acreage is used as plant boundaries and as yard spaces for facilities such as the rail system.

Cost Estimates for Processing

Capital cost estimates for the processing plant are based on the description of the reduction/ammoniacal leach process in Dames and Moore (1977) [4]. Table 7 shows the fixed capital investment estimates for each of the six subsectors and the land.

In addition to capital costs, the processing plant also incurs annual operating costs. These are based on a three-shift, 24-hour-day, 365-day-year operation. Down times for maintenance and repairs will result in a full production schedule equivalent to 330 days per year.

Table 8 summarizes the annual operating costs. The materials and supplies and utilities fuel costs are estimated on the basis of energy and materials balances developed in Dames and Moore (1977). The labor cost is based on the assumption that the plant will employ 500 people including operating, maintenance, supervision, general plant, and administrative personnel. Capital related charges, which include machinery replacement costs, janitorial, and insurance premiums, are estimated as a percentage of the total fixed capital investment. The total annual operating cost is about $99.6 million.

Waste Disposal

The slurried tailings are contained in impermeable slurry tailings ponds. These tailings ponds are constructed at a waste site located as close to the processing plant as economically and environmentally possible. The distance from the plant to the waste site is probably less than 100 miles.

Essentially, this tailings disposal method consists of constructing earth embankments, behind which waste materials are deposited in slurry form. The embankments can be either a total enclosure or a cross valley or side hill type. For this analysis the total enclosure technique is assumed to be employed. The tailings are transported to the disposal area in a slurry pipeline and deposited into the impoundment through a series of distribution pipes and spigots. The waste slurry settles in the ponds to higher solids contents and excess transport water is decanted off and recycled to the plant for re-use. The design of the tailings embankment will be such that it is stable under both static and dynamic loading conditions and capable of handling floods. It will also be designed so

Table 7

CAPITAL COST SUMMARY FOR PROCESSING SECTOR*

(In millions of 1980 US dollars)

	FIXED CAPITAL INVESTMENT
Material Storage, Handling and Preparation	76.8
Nodules Reduction and Metal Extraction	51.5
Metals Separation	45.0
Reagent Recovery and Purification	45.5
Metals Recovery and Purification	95.1
Plant Services	134.3
Land	1.0
TOTAL	$449.2

*For a plant processing 3 million short tons of dry nodules per year using a reduction/ammoniacal leach technique.

The total fixed capital investment for the processing plant is $449.2 million.

Table 8

ANNUAL OPERATING PROCESSING COST SUMMARY

(In thousands of 1980 US dollars)

Materials and Supplies Costs	3,990
Utilities and Fuel Costs	47,520
Labor Costs	16,680
Capital Related Charges	31,430
Total	99,620

that seepage through the pond bottom and embankments is controlled by using impermeable synthetic liners and/or compacted impermeable clay liners if this type of material is chosen.

For one year's productions of wastes from a three-metal plant, a tailings pond of about 65 acres is required for tailings which accumulate to a depth of about 40 feet. However, this size can vary depending on the local evaporation rate at the waste site and the density to which the slurry settles. Based on the above figures, the total waste disposal land usage for a 25-year project is about 1,700 acres.

Cost Estimates for Waste Disposal

For the basic set of assumptions, estimated costs are as set out in Table 9.

General and Administrative Costs

The general and administrative (G&A) costs sector contains expenditures for leasing the consortium's headquarters, regulatory compliance costs, and testing for the plant, mine-ship and transport system.

Leasing costs for the consortium headquarters are assumed to total $22M during the investment period and $4M per year during production. Regulatory compliance expenditures are presently assumed to be zero, although flexibility is provided to substitute a positive amount. All testing costs are one-time costs incurred in the last year of the investment period. These costs are thus capitalized. There are no related operating costs. Total expenditures for testing the plant, mine-ship and transport system are assumed to be $66.2M.

Working capital is specified in the model as a set percentage of full production operating costs. At present this factor is equal to 3.5 percent or approximately $75M.

OCEAN TRANSPORTATION CONSIDERATIONS

The nodules will be carried from the mine-ship to the dedicated port facility by a fleet of equal-sized bulk ore carriers. The makeup of this fleet, its capital cost and operating cost will vary markedly with the distances required to be covered and the operating characteristics of the port to which the nodules will be borne. The analyses below examine some of these aspects.

At least two of these transport ships are provided in the system to minimize vulnerability to total stoppage. Their size and number is governed by draft restrictions in the dedicated port and any other ports of call, the distance from the mine-site to that port, the nodule load to be serviced and the delay time associated with transferring the nodules and maneuvering the vessel both at sea and in the port. Additionally, the number of mine-ships required is reflected in the size and number of ore carriers utilized, thus underlining the interdependence between mine-ship and transport sizing and design procedures.

Table 9

WASTE DISPOSAL COSTS BASE CASE

(In millions of 1980 US dollars)

CAPITAL AND LAND COSTS	
Land Cost (25 years)	3.25
Landfill and Decant Pond	1.50
Equipment and Auxiliary	0.50
Surveying	0.13
Three Initial Ponds	9.90
Total	15.28
OPERATING COSTS	
FIRST AND SECOND YEAR	
0 Ponds	0.00
Power, Materials and Supplies	0.30
Labor	0.30
TOTAL	0.60
THIRD AND SUBSEQUENT YEARS	
1 Pond	3.30
Power, Materials and Supplies	0.30
Labor	0.30
TOTAL	3.90

The ore transport vessels are designed to carry a dewatered slurry of whole nodules. These vessels are fitted with a manifold and piping system for receiving the slurried nodules from the mine-ship and distributing it to the respective holds. The slurry holds in the ore carrier are hopper shaped with smooth sides to expedite cargo removal. Slurry water in the holds is decanted.

Fuel for the miner is stored in dedicated storage tanks, with provisions for pumping these supplies from the transport to the mine-ship through a flexible, floating unbilical. Additionally, special equipment must be developed to allow the mine-ship and transport vessel to transfer nodules and fuels. This equipment might include dynamic positioning equipment for the ore transport (the mine-ship is assumed to be dynamically positioned as well), some type of towing system where the mine-ship tows the transport during transfer operations, or possibly a combination of the two. The design of this interactive system is conducted during the R&D period.

When the ore transport vessel reaches the port facility, the nodules are removed from holds by portable, dockside slurry units. However, as an alternative, the ore carriers can be fitted with their own internal unloading system. Such a system is similar to that employed by the mine-ship. Water jets located in each hold of the vessel are directed into the stowed nodules, thus slurrying the ore which then flows into a collection sump under each hold. Slurry water is added to attain the proper mix for pumping the nodules to a shoreside holding pond.

If ocean dumping is selected as a viable means for the disposal of tailings from the processing plant, slurry discharge ships could be used. This option results in the use of larger slurry transport ships in combination with disposal barges for handling the excess wastes. The larger transport size results from the extension of port time for these vessels to load outbound tailings for disposal. The waste slurry is pumped overboard by the ship's equipment while the ship is underway -- at full speed in deep water -- and enroute to the mine-site. This alternative assumes that the discharge of wastes at sea will be permissible.

A special shallow ship design may be used when required to reduce the total number of ships. This shallow design allows a draft reduction up to 10 percent over a conventional design.

The capital and annual operating costs presented here are for a transportation scheme that handles a total of 4.5 million tons of wet nodules per year. As mentioned, the transport vessels are similar to ore carriers due to the specific gravity of the decanted slurry. Ore carriers are deadweight limited vessels and -- in accordance with the scenario -- they are limited in size by the draft restriction of the port. Further assumptions are as follows:

- The number of mine-ships used in the marine transportation program is fixed and equal to two.

- Each mine-ship is serviced by an equal number of transport ships.
- Those transport ships are assumed to be equal in size.
- The transport ships are traveling between one mine-ship and the port terminal. A round trip which involves both mine-ships is not considered.

The marine transport sector includes all systems required to carry the nodules from the mine-ship to the port. Special preparations and facilities necessary to accommodate the transport vessels at port are included in the ore discharge port sector of the model.

Number and Characteristics of Ore Transport Ships

Since the number and size of ships has a significant influence on the costs of the transportation sector these characteristics should be determined with considerable care. In this study a submodel based on a simple algorithm was developed for this purpose. It takes into account the distance from port to site, the annual nodule tonnage, and the port restriction. Other factors are the ship speed, which may be changed for fuel efficiency, the number of annual operating days, the transport efficiency, and the time to load and unload the nodules.

For the basic set of assumptions in this study, in addition to the 4.5M net short tons, it is further assumed that the distance between port and mine-ships is 1,750 miles. The number of ships satisfies the draft restriction at the port and the vessels are loaded at least 80 percent for their capacity, but not more than 90 percent. For the base case, 300 operating days are assumed, a port draft of 40 feet, and loading time of 24 hours. The port draft is rather restrictive for the sites considered so that the sizing of vessels allows up to 10 percent changes for draft limited operation.

The average trip duration between mine-site and port equals the time required to travel both ways, plus the time to load and unload the cargo, plus port delays. An estimated 20 hours are required for loading the transport ship so the total delay time is estimated at 48 hours per round trip.

If N denotes the number of transport ships, DWT the deadweight, U the ship speed in knots, D_S the distance between site and port in miles, and Q the annual nodule tonnage in net tons, then the number of ships is the smallest integer equal to:

$$N = \frac{Q \frac{2 * D_S}{U} + 48}{0.9 * DWT * 300 * 24 \text{ Hr/day}}$$

Based on the above assumptions for the base case, four transport ships are required with a DWT of 44,700 tons each. Their characteristics are given in Table 10.

Table 10

PRINCIPAL CHARACTERISTICS -- TRANSPORT SHIP

Length (BP)	=	631	Ft.
Beam	=	97	Ft.
Depth	=	52	Ft.
Draft	=	38.3	Ft.
C_b	=	0.82	
Δ	=	55.000	Tons
DWT	=	44,700	Tons
Light Ship	=	10.300	Tons
Engine Speed	=	15	Knots

Other sets of assumptions are examined below.

The sizing procedure described by Watson [5] is used to obtain the principal dimensions of the vessel and the various weights and manhours required, also satisfying the considerations on the number of ships. A 10 percent change allows for restricted draft operation [6].

It should be noted that the nodule storage capacity of the mining vessel is selected as the minimal capacity capable of handling the given transport vessels plus a 25 percent margin. The mining sector calculations therefore follow after the transportation calculations.

As will be developed below, the total capital cost for four transport ships of 44,700 DWT is $200.88M. The annual operating cost for the base case with a 180 Centistroke Diesel fuel at a price of $158/ton is $22.08M.

Capital Cost Estimates

The ships that transport the nodules are similar to ore or bulk carriers, given the specific gravity of the nodules. A large number of such ships have been constructed and an abundance of data exist. For this reason, the present study uses data from existing ships in a generic form to allow the user to vary some parameters and to update the costs simply by making input changes to the computer program for this submodel. Thus, in this model the total capital cost for the transport ships is based on direct estimations of labor, material, overhead and slurry system costs, all for US construction. This direct cost estimation has the advantage of providing the flexibility to evaluate the influence of changes in such parameters as labor, price of steel, and efficiency of shipyard on the total capital cost. Other sources of uncertainty are the variations between cost price and market price for the transport ships.

The cost estimating for the transportation sector proceeds by dividing the ore-ships into five subsectors and still further into sub-subsectors. These correspond to functional working units for which costs can be derived. They are shown in Figure 3. A capital cost summary is shown in Table 11. It is desirable to keep these units as large as possible, but sometimes the equipment arrangement mandates that small units be used.

The ship price is for US ship construction. The price is estimated by direct calculation of the labor and material costs and will therefore be slightly different from the actual market price. This ship size is estimated using methods suggested by Watson [7].

The labor and material costs are estimated from Carreyette [8] modified for US construction. The methodology traces back to Benford [9]. The cost of labor is taken as $15 per manhour. The overhead costs are taken as two-thirds of the labor costs.

A profit margin of 10 percent is used, which includes actual profits, insurance costs, and owner expenses. Cost estimation data were used from Flipse [10] and Andrews [11] in

Table 11

MARINE TRANSPORT CAPITAL COST SUMMARY

(per 44,700 DWT transport ship)

	TOTAL CAPITAL COST ($ million)
Ship, Nodule Transport	
Hull Structure	
Materials	3.80
Labor	9.40
Overhead	5.60
Outfitting	
Materials	4.42
Labor	4.94
Overhead	3.29
Hull Engineering: (included in Hull Structure)	
Propulsion Machinery	
Materials	6.37
Labor	3.96
Overhead	2.64
Profit	4.34
Slurry, Load System	1.16
Fuel, Water and Supplies Storage and Transfer Equipment	0.30
Special Equipment Necessary for At-Sea Coupling With Miner	
TOTAL FIXED CAPITAL INVESTMENT	$49.22
TOTAL CAPITAL COST OF FOUR TRANSPORT SHIPS	$196.88

Figure 3

MARINE TRANSPORT

SHIP(S), HULL (MAIN TRANSPORTS, GEARLESS)

Hull Structure (Includes materials, labor, overhead, and miscellaneous items.
Outfitting (Includes materials, labor, overhead, and miscellaneous items.
Hull Engineering (Includes materials, labor, overhead, and miscellaneous items.
Propulsion Machinery (Includes materials, labor, overhead, and miscellaneous items)

SLURRY LOADS & DISCHARGE EQUIPMENT

Deck Piping and Manifold System (for receiving nodule slurry from mineship)
Dewatering Pumps and Piping for Each Hold
Reslurrying Equipment

FUEL, WATER, AND SUPPLIES STORAGE AND TRANSFER EQUIPMENT

Miner Fuel Dedicated and Piping
MinFuel Pumps and Piping
Miner Fresh Water Dedicated Storage Tank(s)
Miner Fresh Water Pumps and Piping
Deck Crane for Handling Slurry, Fuel, and Water Umbilical for Mineship

SPECIAL EQUIPMENT NECESSARY FOR SEA COUPLING WITH MINER

To be developed; Includes navigation and control equipment for transport-miner interface

AT-SEA DISPOSAL EQUIPMENT

addition to the references mentioned above. The overall results are comparable with those cited in note 11.

Ship Hull

The nodules have a specific gravity of two; thus an ore carrier or bulk carrier configuration must be used. Dedicated tanks to transport fuels and water to the mine-ship are up to 15 percent of the DWT capacity. Additional pumps and piping are needed for slurry handling, dewatering and decanting, and sea water handling. Using material prices, labor costs, and overheads applicable to US construction, the cost of the hull is obtained as outlined by Carreyette [12] and Benford [13] outfitting and hull engineering components are included.

The Series 60 are used to obtain estimates of the horsepower required. For the base case the engine's maximum continuous rating is 116,850 HP. Cost estimation follows Watson and Carreyette [14]. A direct drive diesel engine using diesel 180 Centistroke is assumed.

Slurry Loading System

The nodules are loaded on the transport vessel in slurry form without prior grinding. The nodules are first dewatered from the bottom of the hold and subsequently decanted to about 90 percent solids. When in port the load is fluidized by using water jets and subsequently pumped to the port terminal.

A pumping capacity of 5.000 tons of slurry per hour for a 100,000 DWT ship is reported and a linear decrease of this capacity is assumed for the smaller vessels [15].

The cost of the slurry loading system is estimated as a linear function of deadweight. The following equation was obtained using existing data: Cost = 556,700 + 13.3 * DWT [16].

Fuel, Water, and Supplies Storage and Transfer Equipment

The costs of the miner's fuel and fresh water pumps and piping and the deck crane are also added to the ship cost. Data from Andrews were used [17].

Special Equipment for At-Sea Coupling With the Miner

A major part of the navigation and control equipment necessary for at-sea coupling between the miner and the transport ship is included in the mining sector. The at-sea transfer of cargo requires further investigation and the costs are tentative. Data from Andrews [18], Flipse [19], and Halkyard [20] were used. At-sea disposal equipment is not considered in the base case.

Operating Costs Estimates

The annual operating cost for the transport sector has been divided into the following costs: crew salaries, maintenance, insurance, fuel, port charges, and lay-up charges. Empirical data obtained from the industry were used to estimate these costs. The salaries of the crew and the price of fuel are the most important parameters, which can change the operating cost

significantly. A summary of annual operating costs is shown in Table 12.

Crew Salaries

The total number of crew is determined as a function of the DWT of the transport ship:

DWT	Number of Crew
30,000	28
40,000	29
55,000	30
70,000	31
85,000	32

Annual salary per crew member = 60.260 + 0.15 x DWT.

Maintenance

The maintenance cost of the transport ship with a slow speed diesel is assumed to be a function of maximum continuous engine rating and DWT [21]. The maintenance cost of the slurry system is assumed to be 10 percent of the capital cost of the slurry system.

Insurance

The insurance cost is a function of the DWT and the capital cost of the ship [22].

Fuel Cost

The fuel and lubrication cost for a slow speed diesel engine can be calculated as:

$$\text{Fuel price per day} = \text{sfc} \times \text{MCR} \times \text{cbc} \times \frac{24}{1{,}000{,}000 \times 1.2}$$

sfc = Special fuel (lubrication oil) consumption per day (gr/Hph)
MCR = Maximum continuous engine rating
cbc = Price per metric ton

As specific fuel consumption estimates, the following were selected:

Special fuel consumption main engine = 155 gr/HPh
Special lubrication oil consumption = 0.93 gr/HPh
Special fuel consumption auxiliaries = 165 gr/HPh
Special oil consumption auxiliaries = 1 gr/HPh

The power used by the auxiliaries is assumed to be 4 percent of the maximum continuous rating of the main engine. The assumption is made that in port the auxiliaries are operating continuously and that for loading at sea 40 percent of the main power and the auxiliaries are operating.

Table 12

ANNUAL OPERATING COST SUMMARY

PER 44.700 DWT TRANSPORT SHIP

(In millions of 1980 US dollars)

Crew Cost	1.94
Maintenance Cost	0.50
Insurance	0.58
Fuel Cost	2.24
Port Charges	0.13
Lay-up Charges	0.13
Miscellaneous	0.00
TOTAL	5.52
TOTAL OPERATING COST FOR FOUR TRANSPORT SHIPS	$22.08

Port Charges

Port charges are calculated from linear regression of available data:

Port charges first day = 1650 + 0.078 DWT$ Port charges second day = 133 + 0.0267 DWT$

Lay-up Charges

Lay-up charges are taken as a percentage of the normal operating charges [24]:

$$\text{Lay-up charges} = \frac{300 \text{ Operating Days}}{365} \times (0.1 \text{ Labor} + 0.75 \text{ Maintenance} + 0.25 \text{ Insurance})$$

Impacts on Costs of Changed Transportation Assumptions

Changing the assumptions underlying the transportation sector of the model will change the cost estimates, sometimes dramatically. The program written to evaluate the cost of the transportation vessels can handle changes in the basic inputs of distance between port and mine-site, port draft, the number of operating days per year, and port time.

Two variables, distance between port and mine-site and port draft, illustrate the sensitivity of costs to such basic inputs. The distance between port and mine-ship may vary between 1,700 and 3,500 miles depending on the site selected. A different transportation scheme is to be selected for each case. Also the input of the port restriction can be directly assessed.

As Table 13 indicates, an increase of 15 feet in the draft of the port for the processing plant permits an increase in the size of the ships while decreasing both the total capital and operating costs by a substantial amount, especially when the distance from mine-site to port is increased from 1,750 to 2,500 miles. The indicated size of the ship when a 50 feet port is available increases threefold, cutting the number of ships from 6 to 2 with dramatic cost reduction.

Summary of Cost Estimates

The capital and operating cost estimates for all the sectors of the model, as outlined in the prior sections, are summarized in Table 14.

It should also be noted that the storage capacity of the mine-ship must be selected on the basis of the transport vessel deadweight, so that the impact of changes in the inputs above on the mining sector costs is substantial.

FINANCIAL ANALYSIS

The financial analysis part of the model integrates cost information developed in the preceding sectors with the revenues

Table 13

OCEAN TRANSPORTATION VARIATIONS SUMMARY OF RESULTS

Draft Restriction (Feet)	35	40	50
Distance (N. Miles)	1,750	1,750	1,750
Number of Ships	4	4	2
DWT	44,700	44,700	89,300
Total Capital Cost (M$)	205.2	195.5	139.2
Total Annual Cost (M$)	22.6	22.0	15.4
Draft Restriction (Feet)	35	40	50
Distance	2,500	2,500	2,500
Number of Ships	6	4	2
DWT	41,400	62,000	124,000
Total Capital Cost (M$)	292.7	237.8	169.0
Total Annual Cost (M$)	32.9	26.1	18.9

Table 14

SUMMARY OF CAPITAL OPERATING COSTS BY SECTORS

(In millions of US dollars)

SECTOR		CAPITAL COSTS	ANNUAL OPERATING COSTS
1	Preparatory Prospecting and Exploration and Research and Development	Capitalized 30.00	Expensed 142.0
	TOTAL		142.0
2	Mining	306.24	65.58
3	Transport	200.88	22.20
4	Ore Discharge Terminal	22.87	3.19
5	Onshore Transportation	36.65 [a]	7.68
6	Processing	449.10	99.60
7	Waste Disposal	15.28 [b]	3.90 [c]
8	Marine Support	1.80	4.88
9	General and Administrative Administrative	88.20	4.00
10	Continuing Preparations	.00	6.00
	TOTAL	1,121.02	217.03

[a]	Slurry pipeline: capital cost	10.89
	land	.40
	Water slurry pipeline: cap. cost	22.40
	land	.96
	Roads and railroads	2.00
[b]	Capital cost	12.03
	Land	3.25
	TOTAL	36.65
[c]	First and second year	0.60
	All subsequent years except last	3.90

expected over the anticipated life of the ocean mining operation. Assumptions about project timing, investment scheduling, debt financing, and annual tax liability are incorporated in this part of the program. These assumptions permit the model to project annual net cash flows. Taking the projected annual net cash flows over the project's life, the model estimates the economic return of the ocean mining operation using various standard financial measures. For this study, three measures of profitability are calculated: net present value using adjusted present value methods, internal rate of return, and simple payback.

In many instances highly uncertain economic conditions require a degree of healthy skepticism toward many of the assumptions underlying the economic analysis of deep ocean mining. Perhaps the most uncertain are the price projections. In a draft analysis of metals prices (November 25, 1980) Dr. Larry Rogers of NOAA's Marine Minerals Division notes that:

> For many commodities, price forecasting is fraught with difficulties. Under the rapidly changing conditions which characterize today's international economic environment, the task of price predictions becomes even more difficult. Because the future is uncertain, as well as for other reasons related to prediction models, price forecasts for the value metals in manganese nodules may not be expected to exhibit a high degree of accuracy.

However, for use in this study price projections for copper, cobalt, and nickel must be developed for approximately the next forty years. A review of recent studies reveals estimates ranging from -2.1 percent real price growth for cobalt [25] to approximately +2.2 percent real growth for metal [26]. Simple linear regression of historical data for the past nineteen years yields similar results.

Therefore, for the purposes of this study, we have assumed the following prices as "central values."

Metal	Yield (million lbs.) = Level of Production x Metal Content x Recovery Efficiency
Cobalt	8.64 = 3MDST x 2,000 lbs./DST x 0.24% x 60%
Copper	74.10 = 3MDST x 2,000 lbs./DST x 1.30% x 95%
Nickel	85.50 = 3MDST x 2,000 lbs./DST x 1.50% x 95%

Production is assumed to be zero until start-up of commercial operations in year 22 when production scale is 50 percent for one half year. Beginning in year 23, production is full scale (100 percent).

The model next translates annual gross revenues into net cash flow, taking US tax and other factors into consideration, as indicated in Table 15.

Table 15

NET CASH FLOW ESTIMATION SUMMARY

	Annual Gross Revenues
-	Annual Operation Expenses
	Operating Profit (Gross Margin)
-	Depreciation Expense
	Earnings Before Interest and Taxes
-	Interest
	Earnings Before Tax, Credit, and Deductions
-	Depletion, Tax Loss Carry Forward, and Revenue Sharing Tax
	Earnings After Tax Before Investment Tax Credit (Taxable Income)
-	Corporate Income Taxes
	Earnings After Tax Before Investment Tax Credit
+	Investment Tax Credit and Foreign Tax Credit
	Next Income
+	Non-cash Expenses (depreciation, depletion, tax loss carry forward)
	Net Cash Flow

Financial Measures Used in This Analysis

Three measures of economic return are used in this chapter: adjusted present value (APV), internal rate of return (IRR), and simple payback period. These measures of return are computed using cash flows described above.

The APV is calculated using a preselected discount rate that is considered appropriate to the specific risk inherent in the project [27]. In a pioneer venture that is highly influenced by uncertain international law and variable economic circumstances, this "risk-adjusted" discount rate is especially difficult to estimate accurately. To allow varying estimates of uncertainty, a range of asset discount rates around a "central value" of 6 percent (real) was selected. The APV of the project was calculated at each of these discount rates and is presented below both in tabular and graphical form. Throughout the analysis, a 50 percent debt : equity structure is assumed. In addition, the standard US graduated corporate income tax scheme, as of Spring, 1981, is used to calculate tax payments and debt-derived tax shields. Other assumptions are as shown in Table 16.

The IRR is defined as the discount rate at which the APV of the project is equal to zero. A useful means of presenting the return of a project is through the APV-discount rate graph [28]. These graphs portray the change in present value of a project as it is evaluated at varying discount rates, including that rate at which APV is equal to zero, i.e., the project's internal rate of return.

This study copes with uncertainties in several ways. Most basic is the design of the model itself, as the model permits the easy substitution of alternate values for most parameters should future experience or research provide improved cost data. As part of the financial analysis a more optimistic and more pessimistic set of assumptions is considered. These are set out in Tables 17 and 18.

Economic Return Projections for the Base, Upside and Downside Set of Assumptions

A project with the base set of assumptions described in this paper yields an expected internal rate of return in real, non-inflated terms of 9.21 percent. This figure is easily in excess of a "central value" discount rate of 6 percent, taken as a reasonable rate of real return. Table 19 presents the value of the project when evaluated over the selected range of discount rates.

Figure 4 presents the base case project's APV-discount rate graph. According to this simplified analysis, the project from an investor's perspective would appear to be profitable, that is, returning an adjusted present value of above zero. If an investor's actual risk adjusted discount rate is less than 9.21 percent, the project would be accepted.

The upside case scenario assumes that current US law prevails and that the prices obtained by the venture are the more favorable of those predicted (see Table 17). In addition,

Table 16

SUMMARY OF ADDITIONAL VARIABLES FOR BASE SET OF ASSUMPTIONS

Schedule:	
Initial delay	0 years
Pre-production	16 years
Pre-investment delay	0 years
Investment period	6 years
Pre-production delay	25.6 years
Costs:	
Capital	$1,140.94 MM
Operating	
-- Base	233.00 MM
-- Average annual real growth	0.00%
Production (full scale):	
Ore recovery	3.0 MDST
Ore assay	
-- Nickel	1.29%
-- Copper	1.09%
-- Cobalt	0.25%
Metals recovery	
-- Nickel	73.4 MM lbs.
-- Copper	60.0 MM lbs.
-- Cobalt	8.6 MM lbs.
Metals Prices:	
Price base	
-- Nickel	$3.75/lb.
-- Copper	$1.25/lb.
-- Cobalt	$5.63/lb.
Annual real growth rate	
-- Nickel	0.0%
-- Copper	0.0%
-- Cobalt	0.0%
Corporate Factors:	
Debt/equity	1:1
Interest rate	6.5%, real
Structure	Corporation
Regulatory Factors:	
Depletion	
-- Determination of deposit	Foreign
-- Nickel percentage	14%
-- Copper percentage	14%
-- Cobalt percentage	14%
Tax rate	46%
Investment tax credit	10%
Revenue sharing trust fund	0.75% of gross return
International Regime:	
Revenue sharing	none

Table 17

UPSIDE CASE VARIABLES

Metals Prices

-- Nickel: $3.29/lb. base price, +1.6% annual real growth

-- Copper: $1.31/lb. base price, +1.3% annual real growth

-- Cobalt: $9.56/lb base price, +0.7% annual real growth

Los Financial Arrangements (same as Base)

-- Production: 5% increased output tonnage

-- Delays: none

Capital Costs

-- Absolute estimate: 25% less than base case

-- Growth estimate: 0

Operating Costs

-- Absolute estimate: 25% less than base case

-- Growth estimate: 0

Depletion Allowance

-- Domestic deposit

-- Percentage depletion: 22% Ni, 15% Cu, 22% Co

Table 18

DOWNSIDE CASE VARIABLES

Metals Price

-- Nickel: $3.46 base price, 0% annual real growth

-- Copper: $1.25 base price, 0% annual real growth

-- Cobalt: $4.67 base price, +0.3% annual real growth

Los Financial Arrangements

-- Application Fee: $.5 MM, year 11

-- Fixed charge: $1 MM annually during production, creditable

-- Royalties: 2% first period, 4% second period

-- Profit sharing: 35%, 42.5%, 50% first period
40%, 50%, 70% second period

Regulatory Delays

-- Preinvestment: 2 years

-- Preproduction: 2 years

Technological Factors

-- Production: 10% decreased output tonnage

-- Delays: 1 year intra-investment

Capital Costs

-- Absolute estimate: 25% greater than base case

-- Growth estimate: 1% annual real growth

Operating Costs

-- Absolute estimate: 25% greater than base case

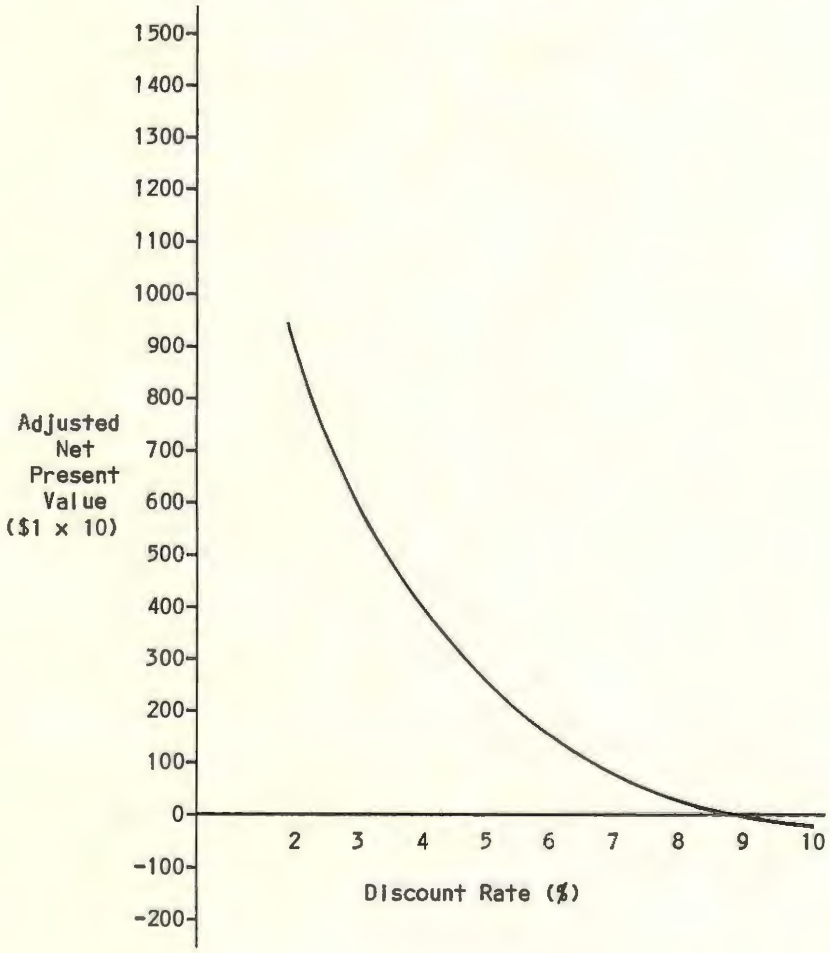
-- Growth estimate: 1% annual real growth

Table 19

BASE SET APV EVALUATION

Discount rate	APV($MM)
10	-11.8
9	4.6
8	31.8
7	72.3
6	135.9
5	232.5
4	378.3
3	597.6
2	926.9

Figure 4
APV-DISCOUNT RATE GRAPH FOR A
BASE SET OF ASSUMPTIONS



metals recovery is increased over the expected value by 5 percent and all costs are 25 percent under predicted levels. The deposit is ruled domestic and thus a higher depreciation percentage is allowed.

Under these conditions, the mining project would expect to receive a 21.96 percent rate of return. Obviously, the "upside" of this project can be very profitable. Table 20 presents the project's estimated values under the best case scenario.

The economic return of the downside case scenario suggests the magnitude, in contrast to the likelihood, of the downside risk inherent in the project, given that several detrimental factors occur together. The internal rate of return in this case has plummeted to -6 percent. It is interesting to note, however, that the direct cause of this drop is the fact that only in the final year of the project, when working capital and equipment salvage value are recaptured, does the cash flow turn positive. In all prior years the net income is negative. It is questionable whether any corporation would continue to operate under such conditions. Thus, the usefulness of this case is not to indicate an expected return, but to illustrate the fact that the uncertainties do present a very serious downside risk to this venture. Table 21 emphasizes the magnitude of this downside risk. Once again, the specific numbers obtained are not as important as understanding the seriousness of the possible project failure.

Sensitivity Analyses

In addition to the alternate scenarios examined above, several sensitivity analyses were made and reported in the study, using the MIT model's flexibility in another way to cope with the uncertainties involved in projecting costs and returns of a non-existing industry. The parameters changed were those indicated in Table 22. Space considerations have suggested focusing only on two.

The variances in IRR obtained when capital and operating costs were varied are shown in Table 23.

A 25 percent error in revenue estimation is entirely plausible. Sensitivity analysis of plus or minus 25 percent conducted on gross revenues reveals the following APV range in Table 24.

The resultant IRR's were 13.91 percent and 2.74 percent for the increased and decreased revenues, respectively. As expected, the economic return is highly sensitive to the level of gross revenue.

CONCLUSIONS

This paper summarizes the data and analyses found in A Pioneer Deep Ocean Mining Model, the report on the second iteration of the MIT Deep Ocean Mining Model [29]. The identified activities leading to commercial production in deep ocean mining of nodules are found to stretch out over at least 22 years from the time serious development of the concept began

Table 20

UPSIDE CASE APV EVALUATION

Discount rate	APV($MM)
10	236.7
9	328.0
8	454.7
7	631.4
6	878.9
5	1227.5
4	1721.2
3	2424.8
2	3433.6

Table 21

UPSIDE CASE AVE EVALUATION

Discount rates	APV($MM)
10	-337.7
9	-409.0
8	-503.7
7	-623.3
6	-755.2
5	-969.4
4	-1219.1
3	-1542.4
2	-1963.8

Table 22

PARAMETERS VARIED IN SENSITIVITY ANALYSIS

METALS PRICES
- + 25% base price, all metals
- - 25%,base price, all metals
- + 25% base price, each metal
- - 25% base price, each metal
- + 1% + 2% annual real growth
- 1980 average base price, 0% growth
- 1980 average base price, 1% growth
- 1980 average base price, 2% growth

LOS TREATY
- Present treaty provisions

TECHNICAL FACTORS
- -10% output tonnage, -5% costs
- +5% output tonnage, +5% costs
- +10% recovery efficiency
- -10% recovery efficiency

DELAYS
- 1 year delay, pre-investment
- 2 year delay, pre-investment
- 2 year delay, intra-investment
- 1 year delay, pre-production
- 2 year delay, pre-production
- 1 year delay at all three points

CAPITAL COSTS
- Absolute estimate +25% base, -25% base
- 1% annual real growth

OPERATING COSTS
- Absolute estimate +25% base, -25% base
- 1% annual real growth

DEPLETION ALLOWANCE
- No percentage depletion
- Domestic deposit percentage depletion

Table 23

VARIATIONS IN CAPITAL AND OPERATING COSTS

+25%	Capital Costs, IRR	7.29%
-25%	Capital Costs, IRR	11.26%
1%	Capital Cost Annual Growth, IRR	7.04%
+25%	Operating Costs, IRR	5.49%
-25%	Operating Costs, IRR	12.21%
1%	Operating Cost Annual Growth, IRR	3.89%

Table 24

APV EVALUATION FOR REVENUE ESTIMATION VARIATIONS

10	66.2	-122.2
9	105.9	-133.7
8	163.3	-143.4
7	246.3	-149.1
6	366.0	-147.5
5	539.0	-133.2
4	789.6	-97.7
3	1153.3	28.0
2	1684.7	96.5

around 1970. Delays arising from economic, political or legal uncertainties are further elongating this timeline.

Based on one set of assumptions about engineering, economic and financial characteristics which the authors found to be most acceptable under present knowledge, the capital costs of the project were projected to total $1,121 million, after preparatory costs of $172 million. The annual operating costs under the same assumptions were projected to be $217 million and the internal rate of return between 9 and 10 percent. Different sets of more favorable assumptions, all with a rational basis, were combined in sensitivity analyses and found to raise the internal rate of return to nearly 22 percent, while a combination of less favorable assumptions lowered it to negative 6 percent, illustrating the inherent uncertainty surrounding the issue of profitability of deep ocean mining. Projected economic return of this hypothetical pioneer venture was found to be markedly sensitive to changes in annual revenues, operating cost projections, and annual growth in capital costs and somewhat less sensitive to changes in capital costs themselves.

NOTES

1. J.D. Nyhart, M.S. Triantafyllou et al., A Pioneer Deep Ocean Mining Venture, MIT Sea Grant Program, MITSG 83-14, July 1981. The first version of the model was reported in J.D. Nyhart et al., A Cost Model of Deep Ocean Mining and Associated Regulatory Issues, MIT Sea Grant Program, MITSG 78-4, March 1978. For accounts of the use of the initial version in the law of the sea negotiations, see R. Katz, "Financial Arrangements for Sea-bed Mining Companies: A NIEO Case Study", Journal of World Trade Law, 1979, Vol. 13, p. 218; H. Raiffa, The Art and Science of Negotiation, Ch. 18, Cambridge Mass., Harvard University Press 1982; "Computer Model Aids Law of the Sea Mining Negotiations," INFOWORLD, Vol. 5, No.20, April 1982; J. Sebenius, Agreements and Disagreements: Negotiation Analysis and the Law of the Sea, Cambridge, Mass., Harvard University Press (forthcoming). See L. Antrim and J. Sebenius, "Incentives for Ocean Mining Under the Convention," in: B. Oxman, D. Caron and C. Buderi, eds., Law of the Sea: U.S. Policy Dilemma, San Francisco Institute for Contemporary Study, 1983, for a comparative analysis of the two versions and an evaluation of the effects of design and cost changes made.
2. For a more detailed account, see J.D. Nyhart, M.S. Triantafyllou, et al., Toward Deep Ocean Mining in the Nineties, MIT Sea Grant Program, MITSG 82-1, April 1982.
3. For highlights of the improvements in the present version and an account of the collaborative efforts with NOAA consultants in arriving at costs and scenario of events leading to mining, see Nyhart and Triantafyllou et al., note 1 and accompanying text.

4. Dames and Moore and EIC Corporation, Description of Manganese Nodule Processing Activities for Environmental Studies, US Department of Commerce, NOAA, Office of Marine Minerals, 1977.
5. D.G.M. Watson, "Some Design Methods," Trans. RINA, 1977, pp. 282-284.
6. H. Benford, "Principles of Engineering Economy in Ship Design," Trans. SNAME, 1963.
7. See Watson, note 5.
8. G. Carreyette, "Preliminary Ship Cost Estimation", Trans. RINA, 1978, pp. 235-238.
9. See Benford, note 6.
10. J.E. Flipse, consultant, preliminary cost estimations and private communications. B.V. Andrews, consultant; preliminary cost estimations and private communications; "Relative Costs of U.S. and Foreign Nodule Transport Ships," Contract Report prepared for US Department of Commerce, NOAA, Office of Policy and Planning, Marine Minerals Division, April 1978.
12. See Carreyette, note 8.
13. See Benford, note 6.
14. See Watson, note 5 and Carreyette, note 8.
15. See Andrews, note 11; N.J. Thompson and T.B. Thomas, "Marine Transportation of Mineral Slurries," Marine Technology, April 1971.
16. See Thompson, note 15.
17. See Andrews, note 11.
18. See Andrews, note 11.
19. See Flipse, note 10.
20. J.E. Halkyard, "Ore Handling and Transfer At Sea", Trans. Marine Technology, Washington, D.C., 1980.
21. See Andrews, note 11.
22. See Andrews, note 11.
23. Scott, C. W. and Casey, J. P., "An Updated Analysis of Fuel Consumption," Marine Technology, October, 1980.
24. See Nyhart et al., 1978, note 1, p. C-14.
25. R.L. Wright, "Ocean Mining: An Economic Evaluation", US Department of the Interior, Ocean Mining Administration, 1976.
26. R.C. Pittman, Long-Range Mineral Price Prediction for the Deep Ocean Mining Model, Masters Thesis, Alfred P. Sloan School of Management, Cambridge, Mass., June 1980.
27. S.C. Myers, "Interactions of Corporate Financing and Investment Decisions -- Implications for Capital Budgeting", Journal of Finance, 1974, pp. 19-23.
28. This type of graph was also used in the 1978 study.
29. Nyhart, Triantafyllou, et al., note 1.

POLYMETALLIC SULFIDES -- NEW RICHES FROM THE SEA

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INTRODUCTION

In the area of deep sea mining, practically all the development of the past twenty years has been associated with manganese nodules. As is well known, the manganese nodule was first discovered over one hundred years ago by the first exploration ship, the HMS CHALLENGER. It was not until the post-World-War-II years that the advances in oceanographic research led to the discovery of extensive manganese nodule deposits throughout the world.

The prospects that the ocean floor might contain commercial deposits of minerals derived from the offshore development of petroleum in the period following World War II. New technology in ocean exploration, and particularly the new hardware for deeper waters, provided the basis for the expanded effort.

Many studies -- governmental, commercial and academic -- reviewed all available data on geology and morphology, as well as results of reconnaissance exploration. These studies included the continental shelves and the slopes as well as the deep sea-bed. While the probability of finding many mineral deposits was great, only manganese nodule deposits showed real promise for large-scale commercial development. Ocean mining was limited, and still is, to a few minerals: tin, sand and gravel, oyster shells, and perhaps limited amounts of titanium-bearing sands.

The real problem facing the would-be ocean mineral developer was a lack of information about the ocean floor. Until recently, practically all land ore deposits were discovered by visual observation and sampling of outcrops. This fact by no means deprecates the great aid that the understanding of geology and morphology provided in the designation of mineral providences and of the areas where prospecting would be most rewarding. On land, it is difficult enough to find commercial ore deposits unless they are exposed in some way; at sea it is almost impossible.

The one great advantage of the manganese nodule deposits is that they are so large and so fully exposed on the ocean floor that it is almost impossible not to find them, even with very inefficient exploration tools. They are, therefore, a unique deposit. Because the nodules are so exposed, the lack of basic knowledge of the seafloor was not a great deterrent to the manganese nodule exploration effort. However, this is not the case with other hard rock mineral deposits. The polymetallic sulfides were discovered only in the last few years; even at this time very little is known about them. They were discovered as a result of the great increase in scientific knowledge of the ocean floor. As great as this increase of knowledge is, it is

still only a beginning. Nevertheless, preliminary data indicate great potential.

DEVELOPMENTS IN OCEAN EXPLORATION

Before continuing, I think it may be helpful to recount some of the developments in ocean exploration so that a better understanding of the polymetallic sulfides can be obtained. The greatest deterrent to ocean exploration is the seawater itself. It is essentially opaque to electromagnetic energy and its viscosity and mass prevent rapid physical movement through it. The result is that the data rate -- that is, getting information through it -- is very low: perhaps one-thousandth or less than that of getting information through the air. This one singular factor has kept the ocean floor as remote as the planets in the solar system. One could say that the recent scientific discoveries on the ocean floor are equivalent to the discovery of a new planet in the solar system.

These discoveries have come about because of the rapid development in technology. In particular, the deep sea drilling program of the US National Science Foundation indicated that the ocean floor was geologically more active than the dry land mass. This led to the possibility that mineral formation could be a part of the process. There exists on the ocean floor worldwide a long, almost continuous mountain chain of approximately forty thousand miles in length in which new ocean floor is being formed. These ridges are called "spreading centers" since they are the result of the spreading ocean floor. None of this was known before World War II and we are just now beginning to appreciate the importance of the ocean floor. Contrary to the old idea that the ocean floor is a "lifeless" abyss, it is very dynamic. This will become even more evident as improved exploration tools become available.

We have found the polymetallic sulfides after exploring approximately one hundred miles of the forty thousand miles of the ocean ridge spreading centers. Furthermore, it is reasonable to assume that the processes that are going on today to form the mineral deposits of the spreading centers have been operating for up to two hundred million or more years of the life of the present ocean floor. The polymetallic sulfide deposits discovered so far may be just the tip of the iceberg.

We have a long way to go to improve the efficiency of ocean exploration tools in spite of the great advances made to date. The adaptation of computers, digital techniques, fiber optics, extra sensitive video sensors, and improved sonar, among other tools, will greatly expand our capability to understand the new geology and morphology, as well as to find new deposits.

It is interesting to review what has been found to date. About five locations have been investigated: the Mid-Atlantic Ridge, the East Pacific Rise, the Galapagos Rift, the Gorda Ridge, and the Juan de Fuca Ridge. The most promising areas so far are the Galapagos Rift off Ecuador in the Pacific and the Juan de Fuca Ridge off the State of Washington, also in the

Pacific. Initial findings indicate that the richer deposits are more likely associated with the rapidly spreading centers in the Pacific than the slower spreading centers in the Atlantic. However, it is too early to come to any final conclusions on these matters. One thing is certain: as more scientific and commercial interest is given to the ocean floor mineral deposits and as improved exploration instruments are developed, more discoveries will be made and possibly some extremely large and rich deposits will be found.

POLYMETALLIC SULFIDES

The polymetallic sulfides are highly concentrated, approximately a thousand times that of manganese nodules. One of the recent developments in sonar, called the SEABEAM, has been a great aid in the discovery of the polymetallic sulfides. The SEABEAM is a multiple beam sonar coupled to a properly programmed computer that gives a real-time topographic map of the ocean floor beneath the exploration vessel. This instrument represents a tremendous improvement over the precision depth sonar, a standard tool of exploration vessels worldwide. Without the use of the SEABEAM in conjunction with the manned submersible, it is highly probable that the polymetallic sulfides would not have been discovered.

Discoveries such as these often raise far more questions than are answered by initial analysis. The area of the deep ocean exceeds by almost two to one the dry land total area. Yet, as previously stated, our ability to explore the ocean floor is orders of magnitude less than it is on the dry land. However, now we have at least an indication of where some of the mineralized areas are located. But the task remains immense.

The discovery of polymetallic sulfides has led to much speculation. One can make many assumptions which appear to be reasonable, such as the following. The process by which polymetallic sulfides are formed has been active for the millions of years the ocean floor has been spreading and it appears that a deposit can be formed in a hundred years or less. Therefore, it can be assumed that there are many thousands of these deposits on the ocean floor, perhaps tens of thousands. However, a large portion of these deposits may be covered by thick sediment and therefore almost impossible to find by present exploration methods. It is reasonable to assume that these deposits vary greatly in size but could be bunched together. The deposit found at the Galapagos Rift is estimated to be tens of millions of tons. Many deposits can be lost by oxidation and slow dissolution in seawater prior to being covered by sediment.

It can be assumed that other metals besides zinc, lead, copper and small amounts of silver will be found in commercial quantities. Nevertheless, at the present time we cannot refer to these deposits as ore bodies until their economic value is proven by extensive exploration and evaluation, which in turn will require the development of practical mining equipment.

The equipment to mine the sulfides does not exist, but the component technology does. It should be less difficult to mine the sulfides at 2000 to 3000 meters than to mine the manganese nodules at 5000 meters. Furthermore, as was said earlier, the sulfide deposits are highly concentrated, about one thousand times that of the manganese nodules. In developing the test equipment to mine manganese nodules, large machinery was operated sucessfully at 5000 meters depth. This equipment weighed about 200 tons and it was powered by prime electrical power of approximately 1000 horsepower. Comparable mechanical and hydraulic systems were operated at these depths. The power and control systems employed transformers, cables, connectors, switches and relays, television, lights, and numerous sensors. The command and control system responded well to the operators aboard ship. Once the physical characteristics of the sulfide deposits are known, a suitable and practical mining system can be designed.

Another favorable characteristic of the sulfides is their chemical make-up. Since they are crystalline in form, they can be easily upgraded by mechanical beneficiation. In some cases beneficiation may not be necessary since the ore grade may be sufficiently high for direct input into existing smelters.

It should be emphasized that the above statements are based upon very little data. Considerably more exploration will be necessary before these statements can be removed from the speculation category. If future evaluation proves favorable economics, then the commercial interests will give these ores more attention.

Another favorable element is of a legal nature. Some of the sulfide deposits lie within the exclusive economic zone (EEZ), a designated zone of 200 nautical miles adjacent to the coastline of an individual nation. Since these areas would not be subject to controversy because they would lie outside the jurisdiction of the proposed International Sea-bed Authority, the development risks should be reduced.

Some mining companies have taken an interest in the marine polymetallic sulfides, not because they would consider marine mining, but because they believe that the knowledge of the geology and morphology of these deposits would aid their search on land. It appears that many sulfide deposits had their origin in the marine environment. The deposits on the island of Cyprus in the Mediterranean are a good example. It is believed that these deposits were formed many years ago when the present location was a deep ocean floor.

For those who may not be acquainted with the theory of the formation of marine sulfide deposits, a short explanation may be in order. Seawater under pressure entering the cracks in the ocean floor penetrates a zone of high temperature caused by the proximity of a magma chamber. After reaching a temperature of approximately 300 degrees centigrade, while not boiling because of the high pressure, the seawater becomes highly acidic due to the presence of sulfur. This sulfuric acid then leaches the metal out of the rock and is then forced to the surface of the

ocean floor through an adjacent crevice formed by the spreading center. Upon reaching the cold waters of the ocean floor, the mineral-bearing water becomes supersaturated and the sulfides precipitate out, forming a chimney not greatly different in form to an industrial smoke stack. In many cases these smoke stacks are bunched so closely together that they form an almost solid mass.

Millions to perhaps a billion years later, these deposits are pushed to the surface when the ocean floor rises to become part of the land mass. Otherwise, these deposits travel with the spreading ocean floor and are subducted below the land mass and then pushed up during the volcanic and mountain-building process.

There is a practical result of understanding these processes. During the last one hundred years or so, most of the easily accessible deposits on land have been mined to a very low grade. Modern technology has enabled the miner to become very efficient, but during the last few years productivity has in many cases been unable to keep up with the lower ore grades. And, of course, the lower ore grade requires ever-increasing energy to process. If knowledge of the geology and morphology of marine sulfide deposits enable the geologist to locate hidden, rich deposits on land, then it is possible that the mining companies will be able to take advantage of this knowledge to exploit both marine and land deposits. Of course, this is a two-way street. During the many years of mining on land, considerable knowledge has been acquired on the mining and processing of sulfide deposits. Some of this expertise can be applied to the marine sulfide deposits.

SUMMARY

In summation, the discovery of the polymetallic sulfide deposits of the ocean spreading centers is having, and will continue to have, a significant influence on the theory of formation of sulfide deposits. However, this is only the beginning. Many areas of the ocean floor are very dynamic and ore formation is taking place very rapidly: in tens of years, instead of millions of years. The rapid development of ocean floor exploration tools will most certainly lead to further important discoveries. What additional minerals will be discovered is not known, but it is highly probable that additional ones will be found. In only the last three or four years has the existence of the polymetallic sulfides been known. Once a commercial deposit and its economics are proven, commercial ocean mining development will take place. Many factors will influence the timing; chief among them is the rate of recovery of the world economy and the metals market. The technology to design the miner is here; what is lacking is knowledge of the physical characteristics of the ore body. These are not difficult to determine and a mining system could be in operation within a decade once a prospective ore body is found.

DEEP SEA MINING -- OPPORTUNITIES FOR SMALL COMPANIES AS WELL

J.O. Brevig
SIMRAD Subsea A/S

I have called this paper: "Deep Sea Mining -- Opportunities For Small Companies as Well," and in the paper I want to give you one small example of exactly that.

SIMRAD Subsea is a small Norwegian company, specializing in underwater technology. The main principle of our products is that of transmitting and receiving signals through water between a transducer mounted on a vessel and a transponder mounted on the sea-bed, on a diver, on a towed fish, etc. By means of this process, we can tell the exact position of the various items in the water. The data are displayed on a control-and-display unit on board the vessel.

In other words: we are developing, producing, selling and servicing advanced hydroacoustic equipment for navigation and positioning purposes, as well as hydrographic equipment for sea-bed mapping. Bearing this in mind, it will not come as surprise to you when I say that deep sea mining caught our attention at a very early stage.

SIMRAD has been engaged in hydroacoustic activities during the last thirty years, and I would say that in this field we are considered as having one of the major capacities in the world.

Deep sea mining, requiring operations at depths down to 6000 meters, offers a great challenge to companies engaged in underwater activities. Participating in these activities demands years of experience and a very high level of technical know-how. SIMRAD Subsea intends to keep up with the development of all the activities in the deep sea mining sector in order to stay in the front line technologically and to stay competitive, both in this field and in related areas.

Related areas are keywords in this connection. SIMRAD Subsea and similar companies have a unique opportunity, as we may become involved in deep sea mining without risking too much capital, the main reason being that we already have developed equipment ready to be used in this field.

In order to illustrate these bold statements, please allow me to refer to two mining projects in which we have been involved.

The first project was carried out on commission for AMR, representing the Ocean Mining, Inc. group of companies. Our task was to control a towed fish. The fish had a side-scan sonar for mapping the sea-bed. The project was carried out in the Pacific Ocean off Hawaii. Knowing the exact position of the fish is, of course, essential for producing a high level, quality map of the sea-bottom. The towed fish should be tracked at a depth of 4,500 meters, with a slant range or distance from the ship of approximately 6,000 meters. The problem was solved by using our hydroacoustic-position-reference (HPR) system "turned around."

Without going into too many technical details, I can say here that we used a transducer on the towed fish and a responder

on the vessel. Transmitting the signals hydroacoustically through the water between the two units provided the data required.

The second project was going to be conducted in the Red Sea on commission for the German company Preussag, which was acting on behalf of the Saudi/Sudanese commission for the exploitation of the Red Sea resources.

We did a thorough pre-study of the project, in which our task was twofold:

1. We should position the surface vessel relative to the sea bottom and the suction head/pump station of the system.
2. In addition, we should measure the relative position between the suction head/pump station and bottom-anchored transponders.

Unfortunately the whole mining project was put off or postponed at the last minute. The reason was said to be falling oil prices, causing the tightening of risk-money. However, the examples show that even small companies like ourselves, can contribute to the exploitation of the mineral resources in the sea.

Looking at the future, I would like to say that we are considering the deep sea mining sector as a big potential new market. We are continuously developing and testing new generations of products. Our technical know-how is improving, enabling us to solve tasks of increasing complexity in ever-increasing depths of water.

All companies evaluating the deep sea mining sector for participation should naturally base their evaluations on a profit-making view. I am not talking here about government-owned companies looking at the security aspects of the matter.

However, one valuable aspect, and a very important side-effect for all companies, is that of building up know-how and competence. Deep sea mining involves mechanical and technical problems not previously encountered. Trying to meet these challenges will, of course, automatically improve a company's abilities to deal with related activities in other fields, such as the offshore industry. These aspects should be taken into consideration when evaluating the total costs of becoming involved in the deep sea mining area.

Please allow me to take advantage of this opportunity to express our view on the relationship between the industry and the research institutions -- I am referring to application-directed research. In our opinion the research institutions should be approached by the individual companies which have to develop products cost-efficiently in order to make them salable. Thus, the industry, having defined the problems of salable products, should take the initiative and request the institutions to become engaged in these particular problems. In this way there should be excellent chances of getting relevant results, which can be used directly in the industry.

We are all aware of the fact that deep sea mining is a venture with high risk and heavy investments. Having said that, we also know that the companies already engaged in these activities can foresee large profits and favorable opportunities as incentives for their involvement.

In my opinion, Norwegian companies, including the smaller ones, should take advantage of the position they enjoy, coming from a well-established sea nation, and become engaged in the deep-sea mining sector. I am talking about companies having know-how and experience in related activities. They do not necessarily have to invest a lot of money at this stage, but they should start looking into the matter. One alternative is to join forces with other companies with complementary products, start a mutual marketing company, and make themselves known to the consortia already engaged in nodule mining.

I will conclude by saying that I hope you will bear in mind what you have heard today and make a note of the fact that a tiny company, from a small country, has become involved in the deep sea mining-sector and that it firmly believes in doing business in that sector.

DEEP SEA MINING - A FUTURE GROWTH AREA FOR NORWEGIAN COMPANIES? MARKET POTENTIAL AND NORWEGIAN ATTITUDES

Jan Magne Markussen
Fridtjof Nansen Institute

INTRODUCTION

Whether and in what way a Norwegian company will participate in deep sea mining is conditioned by two sets of factors: the deep sea mining strategy of the company and the external constraints and opportunities.

The external factors, which may be termed the exterior working conditions, encompass all economic, political, legal and technological constraints that the company must adapt to and that it will only to a very small extent be able to influence itself. Two examples of such factors are the degree to which the governments of other countries subsidize R&D in this field and the 1982 Law of the Sea Convention. The R&D subsidies of foreign governments are, among other things, of consequence to the opportunities of companies from other countries to deliver products and services, while the Law of the Sea Convention is of vital importance to the investments of private corporations in this field.

Needless to say, these external factors constitute significant premises for the analysis which a Norwegian company has to make in evaluating whether various aspects of deep sea mining represent a possible market. In addition to these purely market-related data, the analysis will also reflect factors like the possibility of utilizing synergistic effects; the distinctive competence of the company; and, not the least, the ability and willingness of the management to undertake strategic planning. If deep sea mining is considered to be of interest to the company, it will make a product/market decision. The deep sea mining strategy of the company is then formulated, both in the short term and in the long term.

In my paper I will deal with the external factors by making an assessment of the market potential with respect to the exploitation of the manganese nodule deposits. I shall also touch upon factors that enter into the internal analysis of the company and submit some suggestions of my own regarding priorities for Norwegian policy in this area in the years ahead.

THE PROSPECTS FOR NODULE MINING

Let us begin with the prospects for commercial exploitation of manganese nodule deposits. The four internationally composed industrial groups: Ocean Mining Associates, Kennecott Consortium, Ocean Management Incorporated, and Ocean Minerals Company, were established between 1974 and 1977. At present each of these companies has made investments in the magnitude of

50 to 120 million US dollars for the exploration of the deposits and for the development and testing of systems for the mining and processing of the manganese nodules. Table 1 gives a survey of existing and planned investments for each of the four groups. The information has been provided by the directors of the companies during interviews that took place approximately one year ago.

The companies consider the deposits of the Clarion-Clipperton area in the eastern central Pacific Ocean to be most interesting from a commercial point of view. Thus, this is the area where possible first-generation manganese nodule projects will be located. Moreover, in this area the companies have carried out successful tests of small scale integrated mining systems. These tests were mainly conducted between 1977 and 1979. The technology for processing has also been developed and tested. After the companies finished their large R&D programs around 1979, the general level of activity was sharply reduced. Among the four companies, Ocean Mining Associates has displayed the highest level of activity in more recent years and to some extent it has started with large-scale testing. It was capable of doing this because in October, 1980 the Italian company Samim, owned by the state company ENI, invested between 20 and 25 million dollars in the OMA group in return for an ownership share of 25 percent. After 1979 the KENCON group has shown the lowest level of activity. None of the six companies participating in this group currently have departments specializing in issues related to deep sea mining. However, a committee composed of representatives from the owner companies meets once or twice every year.

Even though the basic technology for mining and processing is known, the companies stress the need for a detailed exploration of the deposits and for large-scale testing of the technology prior to the commencement of a possible commercial phase. So far, none of the industrial groups have started commercial exploitation. The reduction in the activity of these private companies in more recent years has given rise to doubts among certain research and industry representatives whether there will ever be any commercial exploitation of manganese nodule deposits. Before I come to my own appraisal, it is pertinent to say a few words about the nature of the resources in question.

As mentioned above, the industrial groups consider the six million square kilometers of the Clarion-Clipperton area in the eastern central Pacific of greatest interest from a commercial viewpoint. What makes this area economically interesting is the high nickel and copper content of the nodules, as well as the high nodule density. According to the Scripps Institution of Oceanography, the average combined nickel and copper content is 2.29 percent +/- 0.61, while the density of nodules in the area where Ocean Mining Associates is planning to locate its possible first-generation manganese nodule project is estimated to be 1,174 kg per square meter. Estimates made by the French national group AFERNOD indicate that the Clarion-Clipperton area

has nodule reserves sufficient for up to ten first-generation manganese-nodule fields -- that is, fields which will have a production capacity of three million tons of dry nodules each over a period of 20 to 25 years. I may add to this that conservative estimates show the Clarion-Clipperton nodules to contain reserves of nickel, copper, cobalt and manganese that are equal to around 26 percent, 4 percent, 187 percent and 21 percent respectively of the land-based reserves of these metals.

Let us turn now to some issues bearing on the supply situation of the four most important nodule metals -- that is, the geographical distribution of reserves and production and the import dependence of western industrial countries.

In their study "Military Use of Natural Resources" (International Peace Research Institute, Oslo 1980) Hveem and Maines recall that France imports 100 percent of the copper and cobalt it consumes, with Zaire being the most important supplier of these metals to France. The major sources of supply of nickel are New Caledonia and South Africa. New Caledonia is a French colony, but there are strong forces on the islands working for self-government and secession from France. If this takes place, the import dependence of France with respect to nickel will also become 100 percent.

This high dependence on imports of important nodule metals is shared by other industrial countries in the West, such as the US, the Federal Republic of Germany, the United Kingdom, and Japan. The nodule metals nickel, copper, cobalt and manganese are all economically and strategically important raw materials for these and other industrial countries. There is today no physical scarcity of these four metals in the world, but the crucial question is where the metals are located -- that is, the geographical distribution of production and reserves. Land-based reserves of cobalt, manganese and nickel are largely concentrated in developing countries, in countries with centrally planned economies, and in Southern Africa.

Hveem and Maines illustrate the import dependence of western industrial countries with the following figures. Import dependence of the Federal Republic of Germany with respect to manganese and nickel is 100 percent; 51 percent of their import of manganese and 32 percent of their import of nickel come from South Africa. The United Kingdom and Japan also depend on imports for their total manganese consumption, with 48 and 45 percent, respectively, being covered by supplies from South Africa.

In view of this critical supply situation, one may reasonably fear the consequences for western industrial countries of disruptions in the flow of resources. This becomes clear if the geographical distribution of reserves and production is seen against the background of the extremely high import dependence of these industrial countries.

Worries about the future security of supplies with respect to these metals are the main reason why the Governments of Japan and of several European countries subsidize R&D activity in this field. In the Federal Republic of Germany the government funds

between 50 and 100 percent of the activities of the companies; this percentage varies with the nature of the activity in question. Walther Kollwentz, Director of the German group AMR, stated that governmental subsidies amount to between 72 and 100 million DM. The Italian government finances 100 percent of R&D, while the French authorities subsidize 80 percent of the investments in this field by the French national group AFERNOD. The importance attached by the French government to these activities is clear from the following statement made by the former Minister of Industry, Mr. Andre Giraud, in a speech in January, 1980:

> For France, the exploitation of these deposits represents an important goal in terms of obtaining sources of essential raw materials such as copper, cobalt, manganese and nickel. In fact, 3 million tons of these nodules would be the equivalent of France's entire nickel consumption, three times our annual cobalt needs, twice our manganese consumption and 10 percent of our copper needs.

As Mr. Lenoble has already given you information on the French program, I will not dwell further on it.

Like France, Japan also has a national project which is fully government financed. Funding comes from the Ministry of International Trade and Industry. The project was started in 1981, it is scheduled to be completed in 1990, and its total cost is estimated at twenty billion yen. The purpose of the project is to carry out a thorough exploration of manganese nodule deposits of commercial interest in the Pacific and to develop technology for the mining of nodules. General R&D will be carried out in the period 1981 to 1984 and this will be followed by a construction-and-test phase, projected to continue until 1988. In 1988-89 the Japanese plan a test of an integrated mining system in an area near Hawaii. The main responsibility for the implementation of the project rests with the National Research Insitute for Pollution and Resources.

In this connection I would like to mention that Professor John E. Flipse of Texas A & M University is of the opinion that the grants by the Japanese Government in support of the activities in this field by Japanese companies exceed the aggregate grants of all other governments. Furthermore, Japanese companies have the opportunity to raise low interest loans to finance this type of project.

In other words, considerations as to security of supply constitute a major motive behind governmental subsidies. Another important factor relates to the external economy: we have to deal with import values of considerable magnitude. A third factor is the desire to support the development of a new branch of industry.

Little is known about Soviet ocean mining activities. It is known that the Soviets have been mapping the nodule deposits in the Pacific Ocean, as reports from these surveys have been

submitted to the Scripps World Ocean Sediment Data Bank. The Fridtjof Nansen Institute has received information that the Soviet authorities have been in contact, both directly and indirectly, with several of the industrial groups seeking to buy technology, particularly mining technology. For example, in the beginning of 1983 a Finnish company approached one of these groups with a request for mining technology. On closer examination it turned out that this company had been acting on behalf of the Soviets. We have also received information that at least one of the western companies might be interested in selling products and services to the Soviets, but was hampered by present American restrictions on the transfer of high technology to countries with centrally planned economies.

Recent talks with representatives of the Soviet Union suggested a certain fear on their part of falling behind in this area of technology. The Soviets have closely followed Japanese and Indian activities in this field as they know, of course, that countries like the US, France and West Germany have already developed the necessary technology.

Interest in purchasing deep sea mining technology has also been shown by South Korea. The South Korean deep sea mining program was launched in 1983 and is said to be motivated mainly by the need to secure the supply of important metals. The program comprises both the mapping of the nodule deposits and the development of technology. It is coordinated by the Korea Ocean Research and Development Institute.

China also seems to have a program for the mapping of nodules. In August, 1983, the Beijing Review reported that a Chinese research vessel had been mapping an 800,000 square kilometer area and had collected large quantities of nodules. The location of the area and the quantities of the nodules recovered were not specified.

It is of some interest to note that the financial resources currently channeled into the exploration of nodule deposits and the development of equipment and systems for the mining and refinement of nodules come primarily from governmental authorities in Europe and Asia.

Let us return to the private industrial groups and consider why they have reduced their level of activity. The causes lie both in political/legal and in economic factors. Discontent with parts of the regime of the Law of the Sea Convention and a general mistrust of a management system based on the United Nations are mentioned by the companies as the most important factors hampering investment. Moreover, the companies state that the current low prices of metals impede investments in this field. However, one should keep in mind that none of the industrial groups plan to start a commercial project in the near future; they consider the second half of the 1990's as a likely time for the beginning of commercial production. Consequently, the expected metals price level at that time is of greater interest than today's prices. Needless to say that attempts to predict the development of metals prices pose excessive difficulties, as the prices will be largely determined by the general health of the world economy.

What is the economic climate under which the companies have been working in recent years? Depressed economic conditions have reduced profit margins and it is well known that in this situation companies must give priority to projects that promise high yields on a short term. In my opinion this is another important reason why the companies have cut down on their investments in deep sea mining: their financial condition does not permit such investment to the same extent as in period 1974 to 1979. In a conversation in September, 1981, Marne Dubs, the former Director of Kennecott Consortium, asserted that Kennecott Corporation was unable to finance a 40 percent share in possible large scale testing or commercial production on account of the grave economic problems faced by the company in view of low metals prices. I think that in a more healthy economic climate the companies would probably even be willing to accept more extensive regulation as compared to what they consider acceptable in times of depression.

Thus, in depressed economic conditions such as those we are experiencing today, financial support from governments seems to be a prerequisite for the financing of large-scale R&D projects. Such subsidies are necessary because of the high economic, political, juridical and technological risks associated with manganese nodule projects. These risks are just too high for private companies, but governments will be capable of accepting them.

At what time is commercial exploitation of manganese nodule deposits likely to start? In the conversations we had with the directors of the industrial groups the second half of the 1990's, possibly 1995, was suggested as a reasonable assumption. A crisis in South Africa was mentioned as a possible reason for an earlier start. However, the decision to commence production must be made eight to ten years ahead -- that is, possibly as early as 1985-87. There will be no clear distinction between large-scale testing and the commercial phase. Deep sea mining will gradually evolve from a prototype project into a commercial project. The companies expect investments in the magnitude of 1.5 to 2.5 billion dollars for a project with an annual production capacity of 3 million tons dry nodules over a period of 20 to 25 years. The level of investment will depend on the kind of equipment and systems which a company may possess: for example, whether existing processing plants can be used. It will also depend on the end product.

The companies estimate the cost of the large-scale testing phase at 100 to 300 million dollars. Information received from the companies indicates that key areas for technological development include the transfer of nodules from the mining ships to the transport ships; the ability to maintain high-powered, deep-submerged electric motors; advanced instrumentation and data systems; ship and seafloor collector control and navigation systems; on-ship ore handling; corrosion resistance of materials; etc.

The companies expect a relatively low internal rate of return for the first-generation projects; the OMCO-group assumes

it to be around 10 percent. In this connection I may add that certain individuals in the United Nations with close relations with the industry suggest that the OMA group will probably start commercial operations even if initially income covers only costs. US Steel's requirements for manganese were given as reasons for this plan.

The degree to which the internationally composed industrial group will be re-activated is, in my view, largely a function of the development of the world economy and of the opportunities for making changes in the Convention so as to make it more acceptable to private company interests. Presumably, prior to the beginning of commercial exploitation we will also see changes in the composition of the company groups. These groups work by the rule that each individual company decides for itself whether or not to prolong its participation upon the conclusion of a certain R&D project, while a company which wants to become a partner in one of the groups must comply with a catch-up principle, that is: pay its share of the investments already made in R&D.

In the foregoing I have focused on the deposits in the Clarion-Clipperton area, but I must point out that several studies indicate that the manganese nodule deposits in parts of the Indian Ocean, particularly in the Central Indian Basin, contain enough nickel and copper to make them comparable to the Clarion-Clipperton nodules.

The Indians appear to attach great national prestige to their manganese nodule project. Thus, there is a possibility that in time a commercial project for mining and refinement of the nodules will be established in the Indian Ocean. On different occasions the Indians have made clear that they are interested in cooperating with Norwegian companies and institutions in this field. Due to historical, political and technological conditions, the Indians look upon Norway as a possible partner in cooperative ventures.

The polymetallic sulphide deposits are another form of a mineral deposit on the deep sea-bed that open up interesting perspectives -- interesting, inter alia, because of the prospect of finding commercially exploitable deposits in areas subject to national jurisdiction. Another area of interest is the metalliferous muds in the Red Sea. As is known, Norway has supplied products and services for the test activity carried out in the so-called "Atlantis-II deep".

THE ROLE OF NORWAY

Let us now turn our attention to the role of Norway. In general, a cooperative arrangement between Norwegian companies and the national and international industrial groups will assume the form of Norwegian companies supplying products and services and purchasing ownership in the groups.

Two years ago the Fridtjof Nansen Institute carried out a study on the attitudes and plans of Norwegian companies with respect to participation in deep sea mining. This study covered

a total of 177 Norwegian companies, 86 shipping companies and an industry group of another 91 companies. The selection of the companies was made in cooperation with the shipping and industry organizations and the percentage of response was as high as 93 percent.

The study clearly shows that Norwegian companies that are, or may be assumed to become, of relevance in this context consider deep sea mining a possible future market for Norwegian industry and shipping. This is the case with 81 percent of the industry group and 63 percent of the shipping companies. It should be stressed that the majority of these companies are in what may be called a preliminary phase of orientation: the companies try to keep track of the developments in deep sea mining, but they do not yet regard today's market as sufficiently interesting for them to make specific decisions about products and markets. According to these companies the market will be worth entering once commercial exploitation starts or when other Scandinavian companies within their own line of business receive contracts. At present Norwegian companies have received four contracts of this type. Moreover, inquiries have come from India and the Soviet Union regarding cooperation in this field.

Norwegian industry and shipping are primarily interested in delivering products, services and know-how to companies in deep sea mining. They may supply products and services for all four phases of a deep sea mining project: prospecting/exploration, mining, transport, and processing. There are products and services that may be supplied on relatively short notice. The kind of products and services a company would like to deliver depends, of course, on its line of business; naturally, the shipping companies are most interested in selling transport services.

More than 70 percent of the industry group and the shipping companies say that they consider products and services for deep sea mining to be closely related to their existing products and services. Furthermore, the fact that the company's existing technology constitutes a natural starting point for entering into the deep sea mining market is put forward as the most important motive behind a possible future involvement.

Norwegian companies have contacts with all industrial groups involved in deep sea mining. However, only a small number of companies have contacts that are specifically related to deep sea mining, but contacts made for other purposes should provide a suitable starting point for future contacts pertaining to deep sea mining. Norwegian companies also express an interest in contacts with a possible United Nations-sponsored corporation.

The Norwegian companies want financial support from the Government in the introductory phase of their deep sea mining involvement -- that is, the market analysis work, product development, and marketing.

Norwegian maritime and industrial competence represents, in my view, a promising starting point for a future role in deep

sea mining. Opportunities to convert existing technology and possibilities for utilizing synergistic effects are just the things that make deep sea mining so interesting from a Norwegian point of view. Offshore oil technology has, for example, been the basis of the technology developed for the mining of manganese nodules.

It is sometimes said that there is little chance for Norwegian companies to supply products and services to the current testing projects and to the future commercial exploitation on the grounds that certain countries subsidize R&D work in this field and that Norwegian companies do not have ownership shares in the industrial groups.

Ownership shares in the groups will, of course, increase the prospects of acquiring contracts, just as subsidies mean that the industry of the country in question will be in a more favorable position. However, neither of these factors exclude another country from the market. Competitiveness determines whether or not a company receives business. In general the industrial groups are highly interested in establishing contacts with companies that have ideas for new technology. In the interviews with the leaders of the industrial groups it was stated that they knew very little about the supply potential of Norwegian companies in this and other areas. Therefore, they recommended that Norwegian companies with appropriate products and services get in touch with the industrial groups. In other words, as far as the Norwegian companies are concerned it is a question of marketing vis-a-vis the industrial groups and other groups working in this field.

Norwegian shipping companies have significant prospects. None of the industrial groups have made a decision as to the chartering of maritime equipment for a commercial project -- that is, mining ship, transport vessels, and supply ships. However, the companies consider it highly likely that at least the transport vessels will be chartered.

At present it is unlikely that Norwegian companies will acquire ownership shares in the industrial groups. However, in our survey of the attitudes and plans of Norwegian companies, certain companies stated that they might be interested in ownership shares later on.

The exploration of the mineral deposits of the deep sea-bed is still in a preliminary phase and the work undertaken so far has been characterized by international cooperation. In my view Norway should seriously consider the possibility of participating in future international research projects and in future exploratory efforts.

If Norwegian companies are to succeed in this market, no matter whether they participate by delivering products and services or through the acquisition of ownership shares, I believe the existence of a Norwegian ocean mining milieu to be an absolute prerequisite. Norwegian companies must keep track of developments and opportunities in relevant segments of ocean mining. Ocean mining is an new industry and this provides Norwegian companies with the opportunity to obtain a footing in

the market at an early stage. Knowledge about market conditions is, of course, necessary for participation and for this reason the Ship Research Institute of Norway and the Fridtjof Nansen Institute have taken the initiative of establishing a Secretariat for collecting information and conducting research in the area of ocean mining. Its purpose is to provide Norwegian companies and research institutions with information on the current status and the future outlook of the industry and on the prospects for various forms of participation by Norwegian companies. In the first year the Secretariat will carry out analyses of the opportunities for Norwegian participation in the exploitation of the manganese nodule deposits in the Indian Ocean, the metalliferous muds in the Red Sea, and the polymetallic sulfides in the Pacific.

Furthermore, it is important for Norway to take part in technological R&D. The technology for the transfer of nodules from the mining ship to the transport vessels is an example of an area where Norwegian research should be able to make a contribution. In this connection we should keep in mind that several oil companies operating in the North Sea have ownership interests in the industrial groups involved in deep sea mining. This fact creates possibilities for arrangements of industrial cooperation. Many of these oil companies have made it clear to the Fridtjof Nansen Institute that deep sea mining is a potential area for such arrangements with Norwegian industry and shipping. Moreover, Norwegian research in this field will have an important marketing effect by showing to the industrial groups that Norwegian companies are seriously interested in this market.

In the foregoing I have talked about ocean mining and thus included both shallow water mining and deep sea mining. The accumulation of competence in one area will automatically have spill-over effects for the other area. In this connection it is well to remember that the oil and gas activities on the Norwegian continental shelf have led to the discovery of coal and copper, but it should be stressed that the time perspectives for the possible exploitation of these deposits are very long. There are also indications that there might be deposits of polymetallic sulfides off Van Mayen.

I believe it to be important that Norway formulate a comprehensive policy for ocean mining as soon as possible. Objectives have to be set and means for the pursuit of these objectives must be provided. At the earliest possible date we should decide whether Norway is going to play an active role in ocean mining, as a supplier of products and services and/or as co-owner of companies. This integrated Norwegian policy for ocean mining should emerge through negotiations between the representatives of Norwegian industry, the authorities, and the research institutions. In this process all actors must be willing to undertake long-term planning.

Table 1

CURRENT AND PLANNED INVESTMENTS OF THE INDUSTRIAL GROUPS

The Time Perspectives

INDUSTRIAL GROUP:	CURRENT INVESTMENTS IN R&D:	INVESTMENTS REQUIRED IN A LARGE-SCALE TESTING PHASE:	EXPECTED COSTS OF INVESTMENT FOR COMMERCIAL PROJECT: (PROJECT:)	EXPECTED YEAR OF START FOR COMMERCIAL PROJECT: (PROJECT:)	METALS TO BE EXTRACTED:
AFERNOD:	200 million francs up to Jan. 1980 (60% for exploration; 20% mining system; and 20% processing system). Phase I on the development of the remote-shuttle system (Jan. 1980-Dec. 1983) is estimated to cost 150 million francs (1980 franc).	Phase II in the development of the remote-shuttle system (4 year project) is estimated to cost 600-800 million francs (1980 franc).	1.5 billion dollars for a project with annual production capacity of 3 mill. tons dry nodules over a period of 20-25 years (1981 dollar).	1990-2000. No decision taken.	Nickel, copper, cobalt and in a longer time perspective perhaps also manganese.
KENCON:	50 million dollars (20% for exploration; 55% mining system and 25% processing system) (1980 dollar).	160-200 million dollars (1981 dollar). Large scale testing has not yet begun.	1.5 billion dollars for a project with annual production capacity of 1-2 mill. tons dry nodules over a period of 20-25 years (1981 dollar).	1995-2000. No decision taken.	Nickel, copper and cobalt are most important. Molybdenum may also be extracted.

OMA:	80 million dollars (1981 dollar).	100-125 million dollars (1981 dollar). Large scale testing has not yet begun.	1.5 billion dollars for a project with annual production capacity of 1-2 mill. tons dry nodules over a period of 20-25 years (1981 dollar).	First half of the 1990's. No decision taken.	Nickel, copper, cobalt and manganese. Even molybdenum, zinc and vanadium if market permits.
OMCO:	120 million dollars (50% for the development of the mining system; most of the remaining 60 million dollars for exploration). (1981 dollar).	250-300 million dollars (1981 dollar). Five years duration. Large-scale testing has not yet begun.	1-1.5 billion dollars for a project with annual production capacity of 3 mill. tons dry nodules over a period of 20-25 years (1981 dollar).	Around 1995. No decision taken.	Nickel, copper and cobalt.
OMI:	100 million dollars (1982 dollar).	R&D work of 10 years duration required. There will be no clear-cut distinction between large-scale testing and commercial project. No decision taken.	1.5-2.5 billion dollars for a project with annual production capacity of 3 mill. tons dry nodules over a period of 20-25 years (1982 dollar).	Second half of the 1990's. No decision taken.	Nickel, copper, cobalt and a third of the manganese.

DISCUSSIONS AND QUESTIONS

TRYGVE GULLIKSEN: Ladies and gentlemen, we now have time for questions from the floor.

MATI PAL: Monsieur Lenoble, at the United Nations, we are preparing a monograph on the mining technology for manganese nodules intended for a general audience. The preliminary draft has been sent to some external reviewers and one of the reviewers is Jack Flipse, whom you know very well. In his review, he expressed considerable skepticism about the shuttle system. I would appreciate it if you could enlighten me about two things: one, what is the stage of development of that system and, two, is there a possible explanation for the skepticism in fellow professionals.

JEAN PIERRE LENOBLE: Thank you very much for this question. It is a good question because these skepticisms could be shared by many people in view of the very sophisticated system that we are envisaging at the moment. However, it seems that the topography of the bottom and the variations in abundance on the bottom will make it very difficult to mine the nodules with the other systems. This means that the recovery could be very low and that will endanger the whole economics of the project. The free shuttle system offers the same possibilities that were given to land-based miners by small shovels that can operate on many different areas and in many different places, instead of a very large dredge that can only operate on one mine. This gives you more freedom and more flexibility during the operation. The main point is that during its travel on the bottom, the connecting device will encounter obstacles. So the question is, then, of how to proceed with a system that is linked to the surface with a very long string, whatever it is, a cable or a pipe string. The procedure will be to lift the whole system before the obstacle and to bring it down after the obstacle. That is rather difficult, and it will need time. I think that most of the other consortia have left this system, but for the moment, the French are still working on it. We have not yet made the final decision, and we are still making some comparisons between the hydraulic and the free shuttle system.

DONALD WATT: Our impression in Britain is that deep sea mining is not very real in economic terms. There is such a supply of minerals on the market now that it will take at least twenty years before deep sea mining becomes profitable. So are we not inducing a rather false sense of urgency? Also, in ten years' time, the technology will surely have progressed a lot further than the rather crude systems of today and then the investments will perhaps return a higher percentage.

JAN MAGNE MARKUSSEN: We need to have a long-term perspective in this field. As I said in my speech, the companies think that the latter half of the 1990's is a possible start for the commercial exploitation of manganese nodules. However, the decision to start such an operation must be taken up eight to ten years in advance. And as you heard from Mr. Brevig of SIMRAD, they have already delivered products to the industry for testing purposes. Conrad Welling told us about these exciting new minerals, the polymetallic sulfides. For these too, there will be a long exploration phase. And Norwegian companies cannot participate in that phase unless we have information about the market possibilities. This is also the reason for establishing a Secretariat in cooperation with the Norwegian Shipping Research Institute.

DONALD WATT: I really do not see anything in the present situation that is likely to provide a payoff in less than ten years. I would have thought that what is required at the moment is much more detailed technological know-how, in particular on the very serious problem of disposing of the large amount of toxic wastes likely to be produced by the present techniques. My understanding is that there will be a very serious pollution problem indeed given the techniques which are at the moment available for extracting metals from the nodules.

CONRAD WELLING: In the US we have worked very closely with the government on these activities, and my company alone has spent about five million dollars at universities for research on the environmental issue alone. We have come up with no serious problem. In any new venture, there will be environmental problems, but we have not encountered any that we cannot handle economically.

QUESTION: How are manganese nodules formed and what is the rate of their formation?

JEAN PIERRE LENOBLE: There are still many questions about this, and it is difficult to give an answer. The generation of nodules can be divided into two different steps. The first concerns the origin of the metals. One of the origins of the metals may be the newly discovered hydrothermal systems working in the region. This is one of the possible origins. The other is the normal arrival of metals in the ocean from the continents. The second step is the process of concentration. That process is also very unclear. Different processes or different systems may be operating, perhaps at the same time. One process could be, for instance, concentration by living organisms in the water -- mainly at the few first hundred meters from the surface -- that accumulate metals in their bodies. After their death, these metals sink down from the surface with the skeletons. These skeletons are more or less dissolved before arriving on the bottom. This could be the first step in the process of concentration. Little is known about the second

step: the accumulation of manganese on the surface bottom sediment. This then brings the possibility of absorption of other metals, such as nickel, copper, and cobalt. This whole process is being discussed by the scientists, and they have not yet come up with any clear and definitive answer. Scientists also have a great deal of discussion about the rates of formation. Some scientists are thinking of a very quick rate of formation, and they say that their measurements indicate that most of the nodules present at the bottom of the sea are only 2,000 to 8,000 years old. Other scientists take the opposite view. They think the process is very slow and that most of the nodules are maybe from one to two million years old, with a rate of growth that is less than one millimeter for each 1,000 years.

QUESTION: How many groups are now involved in deep sea mining activities?

JEAN PIERRE LENOBLE: For the moment, there are five or six groups in the free market world, and it was announced that there are also some groups being formed in the USSR. I do not think that there are more groups. I heard something about a Korean group, but I have no specific information.

QUESTION: How widespread is the interest shown here in Norway about getting into the peripheral side of deep sea mining?

JAN MAGNE MARKUSSEN: We have been in contact with the four internationally composed industrial groups, that is: Ocean Mining Association, Kennecott Consortium, Ocean Management Inc., and Ocean Minerals Company. We have also been in touch with the French AFERNOD group. What we have been trying to do is to make an analysis of the status and perspectives of this industry, and we have published five reports recently.

QUESTION: I have a question for Professor Nyhart. In calculating your internal rate of return on the mining project, was there any account taken of risk and uncertainty?

J. D. NYHART: Yes and no. One way to get at that problem is to guess what discount rate an investor might select. What we have done in the paper is to present a range of different discount rates for the economic return analyses and the sensitivity analyses. We did not try to specify, except in one place, what the discount rate might be. In the one place we did, we picked a 6 percent real cost of capital. Rather than trying to say that this or that is an acceptable discount rate for any industry, we gave a range.

QUESTION: How long would it take to develop a manganese nodule mine?

CONRAD WELLING: Ten years minimum from the time we start to the time we are in production. Manganese nodules are a nickel business and nobody will get into it until there is a recovery in the nickel market. About ten years ago, the people in the nickel mining business felt that there would be a market growth of about 4 percent compounded annually, and based on that a lot of people expanded their capacity. About three or four years ago, growth in the nickel business came to an end and, as a result, we now have excess capacity. Until consumption increases and absorbs that excess capacity, which will take about six to eight years or more, nobody is going to build a new nickel plant, land or sea. But when the nickel market recovers, the important thing is that we can compete with new nickel land mines. We want to be prepared for that when the time comes.

QUESTION: Do the polymetallic sulfides have commercial potential?

CONRAD WELLING: That is a distinct possibility. At the moment, we cannot say that we have even found a commercial deposit. All we have found so far are indications of it. It will take several years yet before we really feel that we are onto something. But when you get the high values we have been getting, 10 percent copper, 20 percent lead, 50 percent zinc, we feel that we have to look further. I would not want to say right now that in five or ten years we will be in that business, but the indications are that the probability is good and we cannot ignore it. How much we find within 200 miles and how much we find outside, no one knows.

QUESTION: What determines the location of the manganese nodules and what determines the location of the polymetallic sulfides? Why are both most prevalent in the Pacific?

CONRAD WELLING: One element associated with manganese nodules is a very low sedimentation rate, and the Pacific has the lowest. That does not cover everything as we find nodules everywhere, but the richest deposits are found in areas with low sedimentation. The polymetallic sulfides are associated with spreading centers that have the fastest spreading rates, and the most dynamic activity is in the Pacific. I am sure you have heard of the ring of fire, the Pacific perimeter noted for its earthquakes and volcanoes. The Pacific is more dynamic than the Atlantic.

QUESTION: What types and sizes of ships would be used for ocean mining?

CONRAD WELLING: As to the mining ship, we feel that it would be something of 200 to 300 thousand tons. Supership size. The supply vessels would have to be standard type slurry carriers in the order of an average of 80 thousand tons.

JEAN PIERRE LENOBLE: Yes, I think that there will probably be two kinds of ships. A very large one, probably very heavily equipped and especially built for this purpose, that is the mother ship or the mining ship itself. In addition, there will be ships that could be similar to the supership presently used in the oil industry. Also, the exploration of the nodule deposit will continue during the mining, and for that ships are needed that are larger than the normal oceanographic vessels.

TRYGVE GULLIKSEN: We now come to the end of this special symposium. Our task was to try to give you some highlights of the economical and technical aspects of the ocean mining industry, although we appreciate that other factors are involved, like the political and the legal aspects. It is perhaps for each of you to decide whether we have accomplished our task, but we sincerely hope that we have given you the impression that the tom-tom drums are heralding perhaps the coming of the ocean mining industry. For some, the drums are pretty close; for others, they are more distant. Let us also hope that we are able to cope with the opportunities and the challenges of ocean mining.