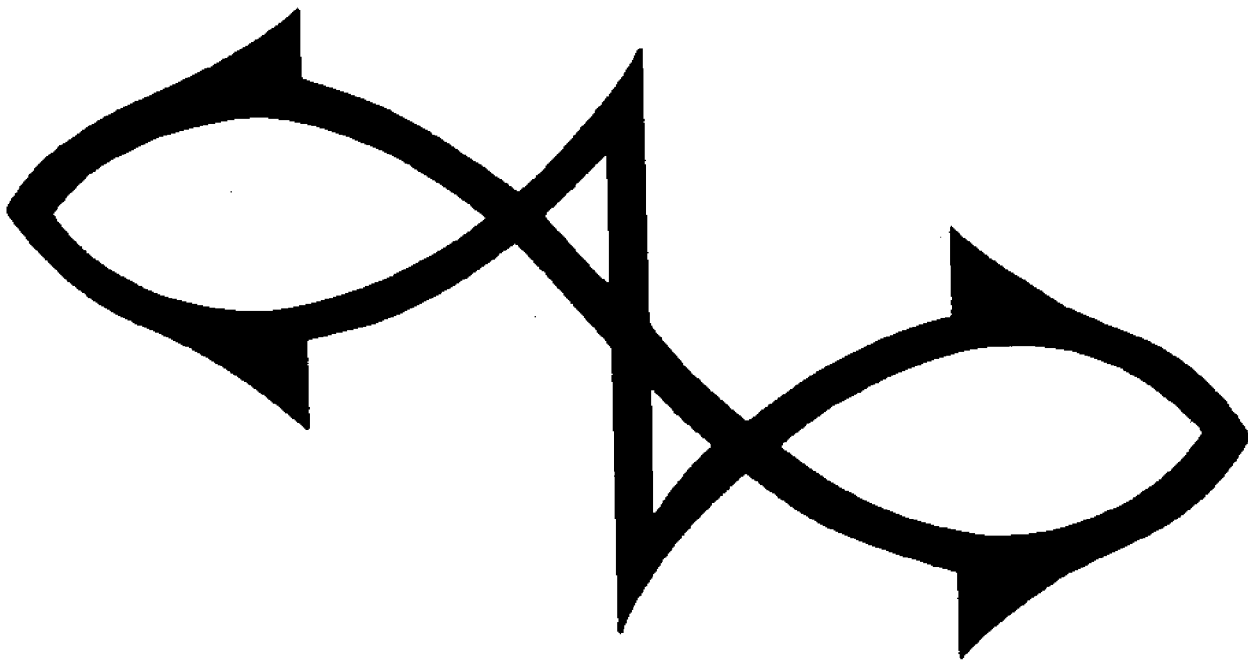


THE LAW OF THE SEA
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National Policy Recommendations

Proceedings of the Fourth Annual
Conference of the Law of the Sea Institute
June 23 — June 26, 1969
The University of Rhode Island
Kingston, Rhode Island



Edited by:
Lewis M. Alexander

Published by:
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**THE LAW OF THE SEA:
NATIONAL POLICY RECOMMENDATIONS**

**Proceedings
of the
Fourth Annual Conference
of
The Law of the Sea Institute**

June 23-26, 1969

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Kingston, Rhode Island**

**Edited by
Lewis M. Alexander**

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The Department of Geography**

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STATEMENT

Vice President Spiro T. Agnew

As Chairman of the National Council of Marine Resources and Engineering Development, I extend congratulations to the Law of the Sea Institute, of the University of Rhode Island, for directing the attention of many ocean experts from home and abroad to recommendations of the Commission on Marine Science, Engineering and Resources. Your timely review of the Commission's Report will be of considerable value to me, the Council, and its member agencies as we chart the future of our national effort. Only by taking into account the views of the entire marine science community will we be able to set a course that is responsive to both our national need and our growing capability to use the seas more effectively. My best wishes for a successful conference. I look forward to receiving a report.

OUR NATION AND THE SEA¹
A COMMENT ON THE PROPOSED LEGAL-POLITICAL FRAMEWORK
FOR THE DEVELOPMENT OF SUBMARINE MINERAL RESOURCES

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Nearly a quarter of a century ago the foundations for a radical new development in the international law of the sea were laid in the Truman Proclamation on the Continental Shelf.² Timely though this initiative was, it is doubtful whether it would have found such a ready response and developed so quickly into a generally accepted doctrine of international customary law had it not been taken by the major maritime power with the most advanced submarine technology. Since that time States have become fully conscious of the mineral potential of the seabed; many claims have been advanced to exclusive control over extensive maritime areas; and the need for the developed States to assist the developing countries has been introduced as an element in the debate on the legal regime for the exploitation of submarine minerals. In this altered context United States national policy is less likely to carry the same weight and have the same long-term influence as the Truman Proclamation. The fact remains, however, that the United States is still the leading maritime power with the most advanced submarine technology. The policies and practice of such a country must inevitably have a major influence on the direction in which the law will develop. The foreign commentator is thus as much concerned as his American colleagues to subject the recommendations of the Commission on Marine Science, Engineering and Resources to a searching analysis to determine their merits and defects as a basis for an international regime.

This paper falls into three main parts. In Part I the Commission's recommendations on the definition of the continental shelf, the establishment of an intermediate zone and the regime for the ocean floor beyond are considered in

¹ The proposals of the Commission on Marine Science, Engineering and Resources are presented in the Commission's Report, Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969) [hereinafter referred to as Commission Report]. See especially Chapter 4, pp. 141-58, "An International Legal-Political Framework for Exploring and Exploiting the Mineral Resources Underlying the High Seas." For the more detailed "Report of the International Panel" on which the Commission's recommendations are largely based, see Marine Resources and Legal-Political Arrangements for Their Development (Washington: U.S. Government Printing Office, 1969), Vol. 3, Part VIII [hereinafter referred to as Panel Report].

² Presidential Proclamation No. 2667, September 28, 1945, 10 Fed. Reg. 12303 (1945); United Nations Legislative Series, Laws and Regulations on the Regime of the High Seas, Vol. 1, 1951, p. 38.

Consideration of the Marine Science Commission Recommendations

Monday, June 23, 1969

Brown

detail. In Part II the criteria in accordance with which the Commission formulated its recommendations are examined and their acceptability assessed in the light of the national interests of other States. Finally, in Part III, the Commission's rejection of the proposals made by the National Petroleum Council are critically reviewed and suggestions offered for a few variations on the Commission's theme which might make its recommendations more acceptable.

I. THE COMMISSION'S RECOMMENDATIONS

1. Redefinition of the Continental Shelf

The Commission's proposed redefinition of the continental shelf for the purposes of the Geneva Convention on the Continental Shelf (1958) comprises three elements:³

First, the seaward limit of the continental shelf should be marked by the 200-meter isobath or a line 50 miles from the baseline of the territorial sea, whichever gives the greater area.

Secondly, where the same continental shelf, as so redefined, is adjacent to the territories of two opposite or adjacent States, the boundaries should be determined by application of the median-line or equidistance rules incorporated in Article 6 of the Geneva Convention.

Thirdly, the boundary should be drawn definitely on the basis of the best available bathymetric surveys and should not be subject to later change because of subsequent alterations in the coastline or revelations of more detailed surveys.

The latter two elements would seem to be a sensible attempt to prevent future conflict over boundary problems such as we have witnessed recently in the North Sea.⁴ It is the first element, the Commission's recommendation of a 200-meter/50-mile line, which seems likely to cause difficulties.

Why, it must be asked, should States be prepared to accept the average depth or the average distance from the coast of the outer limit of the

³ Commission Report, pp. 143-46, and Panel Report, pp. VIII-33/34.

⁴ On the North Sea Continental Shelf Cases (1969), see below, pp. 36-38.

geophysical continental shelf as marking the limit of the legal continental shelf.⁵ The 200-meter line was, arguably, a reasonable criterion in 1958, given the state of contemporary technology and the lack of expectations to sovereign rights over more extensive areas. It seems much less justified today when it is clearly only a matter of time before the greater part of the continental slope will be made accessible to exploitation⁶ and States are conscious of the elasticity of the formula in Article 1 of the Geneva Convention.

The Commission suggested⁷ that by providing the 200-meter/50-mile alternative, the inequity of a definition in terms of the 200-meter isobath alone would be avoided for those coastal States which either are not on a geological continental shelf, as in the Persian Gulf, or have coasts that drop to great depths almost immediately, as off the west coast of South America.

I fail to understand the reference to the Persian Gulf. No part of the Gulf lies at a depth greater than 200 meters and the alternative is thus not required. The assumption that the Persian Gulf is not properly classifiable as part of the geological continental shelf is in any event questionable.⁸ If, however, the reference to this alleged fact is meant to ensure that offshore submarine areas to a depth of 200 meters will be embraced by the definition of the legal continental shelf irrespective of whether they fall within the definition of the geological continental shelf, it would seem to be redundant. Neither the

⁵ The International Panel states that the "200-meter/50-mile pairing is about as close together as pairings on worldwide averages of the depth and width of the world's geological continental shelves can reasonably be" (Panel Report, p. VIII-34) but, citing Shephard, Submarine Geology (2d. ed.; New York: Harper & Row, 1963), notes that, "The average width of the geological continental shelf is about 40 nautical miles, but it varies from 5 miles to more than 700 miles. The average edge of the shelf is at a depth of 132 meters but shelves are known to terminate at depths less than 70 meters and greater than 600 meters. Very few, however, terminate at a depth of more than 200 meters" (Panel Report, p. VIII-34, n. 111). For further statistics, see E. D. Brown (Rapporteur), Report on the Legal Regime of Deep-Sea Mining (I.L.A. British Branch Committee on Deep-Sea Mining - hereinafter referred to as Brown Report), 1968, p. 41, n. 139.

⁶ The Commission, e.g., states that, "Present technological forecasts indicate that the nation can achieve the capability to operate at the 2,000-foot [625 meter] depth within a relatively short time if basic research and development are accelerated" (Commission Report, p. 32). It has further recommended that the U.S. establish as a goal the achievement of the capability to explore the ocean depths to 20,000 feet [6,259 meters] within a decade to utilize the ocean depths to 20,000 feet by the year 2000 (p. 32).

⁷ Commission Report, p. 146.

⁸ Brown Report, p. 8, n. 16.

Geneva Convention formula nor the Commission's suggested revision of it refers to the geological concept at all.

The 50-mile criterion is also a curious choice and hardly likely to attract countries whose offshore waters are of greater depth than 200 meters. If the United Kingdom, to take but one example, may enjoy the riches of the North Sea out to about 170 miles, the charitable recognition of 50-mile limits for States such as those on the west coast of South America hardly seems a negotiable proposition.

2. The Intermediate Zone

The Commission's proposals on the limits of the continental shelf can not, however, be fairly evaluated unless considered together with their proposals to create an intermediate zone.⁹

The Commission's proposals were intended as a compromise between the position that the continental shelf should be redefined to include the continental slope and the position that everything beyond the 200-meter isobath should be treated in the same way as the bed of the deep seas.¹⁰

The intermediate zone is defined as the area of the seabed and sub-soil lying between the outer limit of the continental shelf as redefined by the Commission and either the 2,500-meter isobath or a line drawn at a distance of 100 nautical miles from the territorial sea baseline, whichever gives the greater area. These particular figures have been adopted as being respectively the average depth of the base of the world's geological continental slopes and the average width of the continental terrace.¹¹

The median-line and equidistance rules are again prescribed for the determination of boundaries between opposite and adjacent coasts and the outer limit of the zone is to be determined by reference to geographical co-ordinates fixed in accordance with the best available bathymetric surveys and not subject to subsequent change.

⁹ Commission Report, pp. 151-53 and 155; and Panel Report, VIII-34/35.

¹⁰ Commission Report, p. 152.

¹¹ For definitions of the terms continental shelf, continental slope, continental rise and continental terrace, see Panel Report, p. VIII-13, n. 21.

The International Panel notes that "The average width of the geological continental slope is about 15 nautical miles, but it varies from 10 to 50 miles. The average base of the slope is at a depth which varies from 1,400 to 3,200 meters. World-wide, about 7-1/2 per cent of the total ocean area is of a depth less than 200 meters and another 8-1/2 per cent is from 200 meters to 2,000

The Commission's attachment to the notion of average depths and distances may again cause difficulties for some States but it is doubtless true that the same criticism could be levelled at any other reasonably moderate line.

The main point of the Commission's proposal is that it prevents the establishment of permanent, exclusive rights over the intermediate zone by the coastal State. The zone thus basically partakes of the nature of the deep seas and is subject to the regime of the deep seas proposed by the Commission, subject however to a crucial reservation: only the coastal State or its licensees are to be authorized to explore or exploit the mineral resources of the zone.

It is clearly the Commission's intention that the coastal State's preferential right of access for exploration and exploitation of the mineral resources of the zone should be of limited duration.¹² In their present form, however, the Commission's recommendations are exceedingly vague and seem hardly to acknowledge the difficulties which might arise in limiting the duration of the coastal State's preference.

The Commission recommends that:

Upon expiration of the period of registration of a claim to explore or to exploit, further exploration or exploitation of the resources covered by the claim should be subject to whatever international legal-political framework is in effect at that time. The nation which registered the expired claim should not acquire, by virtue thereof, a vested right to continue to explore or exploit the particular resources covered by that claim, or even a preference over any other nation with respect to such exploration or exploitation.¹³

The outer limit of the continental shelf is thus regarded as a permanent delimitation of the area within which the coastal State enjoys permanent sovereign rights over submarine mineral resources. The duration of the coastal

meters, of which about half is deeper than 1,000 meters. For the United States, the ocean areas at a depth less than 200 meters exceed the areas at depths from 200 to 2,000 meters (Panel Report, p. VIII-35, n. 114).

¹² Commission Report, p. 152. See also Prof. C. A. Auerbach (a member of the International Panel) in The Law of the Sea: International Rules and Organization for the Sea, ed. Lewis M. Alexander (Kingston, Rhode Island: University of Rhode Island, 1969) [hereafter referred to as III Sea Institute Proceedings (1969)], p. 445.

¹³ Commission Report, p. 149.

State's more limited right of exclusive access to the mineral resources of the intermediate zone appears, however, to be in the lap of the gods. The regime has been designed, according to the Commission's Report, "to meet the needs of the immediate future, not to suffice for all time. It does not foreclose the adoption of other alternatives that experience may indicate to be preferable."¹⁴ The duration of the immediate future is unfortunately rather indeterminate. In practice, it would have to be determined in accordance with the provisions of the Convention by which the zone was established. Nothing is said in the Commission's Report on this point though it would be rather a crucial consideration for any State contemplating acceptance of the Commission's proposals. Three patterns suggest themselves but none seems politically viable.

First, the formula used in the Geneva Conventions on the Law of the Sea (1958) might be adopted. Termination of the status of the intermediate zone would then depend upon a request for revision of the Convention made after a given term of years by a contracting State to the UN Secretary General; the General Assembly would then be empowered to decide what steps if any should be taken in respect of such request.¹⁵ The adoption of such a procedure would be tantamount to a recognition of the quasi-permanence of the intermediate zone, for no revision of the Convention could then be made binding on a contracting State without its consent.

Secondly, the creation and operation of the intermediate zone might be treated as a transitional arrangement intended to compensate States for any disappointed expectations raised by extensive interpretation of Article 1 of the Geneva Convention. A specific term of years might then be written into the new Convention. There is, however, no hint in the Commission's Report of any intention to limit the regime to a specific term. And the acceptability of any such scheme would again be influenced by whatever provision might be made for the elaboration of a subsequent regime.

Thirdly, authority to revise the legal regime might be vested in an international institution, subject to safeguards in the form of membership and voting rules. It seems highly unlikely, however, that States would commit themselves in advance in this way.

The Commission's Report is surprisingly brief and vague about machinery for change. With reference to the proposed legal-political framework for the area beyond the continental shelf, the Commission states that, "The recommended framework can be changed at any time in the light of experience with mineral resources exploration and exploitation in the deep seas," and claims that,

¹⁴ Ibid., p. 157.

¹⁵ Convention on the Territorial Sea and Contiguous Zone, Article 30; Convention on the High Seas, Article 35; Convention on Fishing, etc., Article 20; Convention on the Continental Shelf, Article 13.

in this way, "Stability is achieved without unduly inhibiting change."¹⁶ In the absence of special provision for revision, such confidence in the capacity for change of international law seems unwarranted. It is, moreover, a little surprising that the Commission should have been conscious of the problems which membership of the International Registry Authority and of its Governing Body might raise¹⁷ but was seemingly unaware of the similar problems which procedure for revision might create.

Finally, it may be illuminating to view these proposals for an intermediate zone in the light of the purposes which they were intended to serve.

First, it was considered that they would satisfy the expectations of some States raised by the ambiguity of the present conventional definition of the continental shelf by giving them preferential rights of access in a reasonable zone beyond the shelf.¹⁸ Whether this is so will depend very largely on the degree of permanence attached to the notion of the intermediate zone and on safeguards against excessive production levies being raised against States by the Registry Authority.¹⁹

Secondly, it was thought that the establishment of an intermediate zone would serve to recognize that "'self-protection' may compel the 'coastal nation to keep close watch over activities off its shores which are of the nature necessary for the utilization of' the mineral resources lying reasonably beyond the shelf."²⁰ Insofar as such need for self-protection is of a permanent character, the Commission's view of the zone as serving to fulfill this need would suggest that the regime of the intermediate zone should also be permanent. Yet, on the next page,²¹ the Commission states that, "A nation which registers a claim in the intermediate zone....will have only the rights accorded it under the new framework. Thus, for example, its right of exclusive access will be limited in time" (emphasis added).

The Commission saw as the third purpose of the zone, the need to ensure that States other than the coastal State should not be "entirely excluded from the benefits of their exploitation."²² More will be said on this point

¹⁶ Commission Report, p. 151.

¹⁷ Ibid., p. 151. See also below, pp. 13-15.

¹⁸ Ibid., p. 151.

¹⁹ See below, pp. 17, (v), and 45, (3)(a).

²⁰ Commission Report, p. 151. The language is that of the Truman Proclamation.

²¹ Ibid., p. 152.

²² Ibid., p. 151.

in connection with the Commission's recommendations for the establishment of a Registry and an International Fund.²³ It may be noted already, however, that a resolve to share the profits of exploiting the continental slope may, of course, be carried out in a number of ways and does not necessarily require that the coastal State's rights in the continental slope should be either limited in time or subject to an international decision-making process.

3. The Regime Beyond the Continental Shelf

For a number of reasons²⁴ the Commission felt that it would be unwise to leave the exploration and exploitation of submarine mineral resources to regulation by the vague general principles of international law. It, therefore, recommended the negotiation of a new convention regime based on the twin pillars of an international system of registration of claims and an international fund.

(1) Objects of Deep-Sea Regime

The objects of the deep-sea regime are:

(a) Security of investment - the encouragement of investment in submarine mineral exploitation by international recognition of claims to exclusive access to a sufficiently large area for a sufficiently long time to make operations profitable.

(b) Minimization of conflict - inter alia by channeling a proportion of exploitation profits to an International Fund; and by providing a means for the peaceful settlement of disputes.

(c) Flexibility - the maintenance of flexibility by limiting the duration of exclusive rights pending experience in the operation of the regime.

(d) Community interest - the recognition of the international community interest in deep-sea resources by the

²³ See below, pp. 15-20, 27-28, 45-47.

²⁴ The main reasons were (a) to offer protection against "poachers"; (b) to clarify the status of the seabed as a whole to facilitate serious consideration of the proposed redefinition of the continental shelf; (c) to safeguard against the danger of underestimating the pace of technological advance; (d) to forestall faits accomplis by governments and private entrepreneurs; and (e) to enable the United States to respond intelligently to proposals for change made by other States. See Commission Report, p. 146.

establishment of a Fund through which the poor and developing States may share the benefits of submarine exploitation.

(2) Geographical and Temporal Scope of Deep-Sea Regime

The geographical scope of the regime extends to all waters seaward of the redefined outer limit of the continental shelf though, as has been seen, its application to the intermediate zone is subject to the reservation of exclusive rights of access to minerals to the coastal State.

The extension of the regime in time has already been examined in connection with the intermediate zone, where it was seen that the regime is designed for a rather indeterminate "immediate future."

(3) Operation of the Deep-Sea Regime

The great majority of States and of informed commentators will approve of the objectives of the Commission's proposed deep-sea regime and many will wish to examine sympathetically the concept of the intermediate zone and the role envisaged for the Registry and the Fund. But, be they foreign States, members of Congress or representatives of the oil and mineral industries, such critics will wish to scrutinize the Commission's recommendations not on the level of general principles but in terms of detailed institutional arrangements. They will wish to be satisfied that the proposed machinery is capable of achieving the stated objectives in the most efficient and yet acceptable manner. They will wish to consider carefully the powers which it is proposed to vest in the international organs. They are likely to insist that such powers should be as minimal as is consistent with the attainment of the scheme's objectives and to seek reassurance that reasonable powers cannot be unreasonably exercised to their disadvantage by an irresponsible majority vote in the institutions concerned.

Unfortunately, the Commission has presented merely an outline sketch of the proposed institutional arrangements and such an investigation is accordingly rather difficult to carry out. It is, of course, true that, at this time, schemes such as that of the Commission can provide no more than a starting point for negotiation and one would not wish to burden preliminary proposals with procedural detail. Unfortunately, the questions of membership and voting rules of international institutions cannot be considered to be mere procedural questions for they are closely linked with important issues of substance. If the Commission's recommendations are to be seriously evaluated, some of the gaps which the following study of the proposed Registry and Fund reveal must be plugged.

(a) Registration of Claims - The scheme which the proposed International Registry Authority (hereafter 'the Registry') is to administer is broadly similar to many of the proposals

advanced in the recent literature on this subject.²⁵ Its main features may be briefly noted:²⁶

(i) Claims to be registered. States would register with the Registry all claims to explore or exploit particular mineral resources in particular areas beyond the outer limit of the redefined continental shelf and would undertake not to engage in or authorize exploitation except under a registered claim. Preliminary general exploration might thus proceed without registration but would require registration as soon as it centered upon a particular resource in a particular area.

(ii) Who may register claims? Only States or associations of States would be eligible to register claims and, of course, only the coastal State might register a claim to an area within its intermediate zone.

(iii) Minerals and area. Claims would be registered for a specified area in relation to either specified minerals or all minerals other than gas and oil or all minerals.

(iv) Conditions of registration. The Registry would be obliged to register a claim on a first come-first registered basis, subject only to its being satisfied by the registering State as to the financial and

²⁵ See, for example, E. M. Borgese, The Ocean Regime (Center for the Study of Democratic Institutions, October, 1968); Brown Report; F. T. Christy, "Economic Criteria for Rules Governing Exploitation of Deep-Sea Minerals," 2 The International Lawyer (1968); A. Danzig, "Proposed Treaty Governing the Exploration and Use of the Ocean Bed," United Nations Committee of the World Peace Through Law Center, 1968; L. F. E. Goldie, "The Contents of Davy Jones's Locker - A Proposed Regime for the Seabed and Subsoil," 22 Rutgers Law Review (1967); L. Henkin, Law for the Sea's Mineral Resources (1967) - a study prepared for the National Council on Marine Resources and Engineering Development and the source of many of the Commission's recommendations; and Senator Claiborne Pell's Proposed Treaty on Principles Governing the Activities of States in the Exploration and Exploitation of Ocean Space, S. Res. 263, 90th Cong., 2d Sess., 114 Cong. Rec. S. 2199 (daily ed., March 5, 1968); Arts. 12-33 are reproduced in the Panel Report, pp. VIII-98/103.

²⁶ See further Commission Report, pp. 147-52 and Panel Report, pp. VIII-36/40.

technical capacity of the proposed operator and his willingness to undertake the work. The continued bona fide working of the claim (by exploration or exploitation) would be guaranteed by the conditions to which the Registry might subject registration of the claim and by the sanction of revocation of registration to which failure to satisfy these conditions would be subject.

(v) Effect of registration. Inter partes, registration of a claim to explore would confer exclusive rights of exploration (and, therefore, priority over any unregistered claim) and the right to have the registered claim to explore converted into a registered claim to exploit any minerals discovered. Registration of a claim to exploit would confer the exclusive right to exploit the resources concerned for a time and in an area to be so fixed by the Registry as to enable the producer to operate economically and not wastefully and to recover its original investment plus an adequate return.

(vi) Transferability. Registered claims might be transferred by the registering State to any other State party to the proposed convention. Presumably this would apply also to claims in the intermediate zone.

(vii) Termination. Upon termination of the period of registration, the registering State would enjoy no vested or preferential rights in relation to the further exploration or exploitation of the resources covered by the claim. The right to engage in such further working of the claim would be subject to whatever regime might be in effect at the time of termination.

(viii) Financial provisions. Registration would be subject to payment of a registration fee, the amount of which would be determined by the Registry so as to cover its costs.

The proposed International Fund, on the other hand, would derive its resources from a levy on production, the amount of which would be determined by the Registry and paid in the first instance to the Registry by the State registering the claim.

The acceptability of this system of registration will depend to some extent on the composition, powers and decision-making character of the Registry.

(b) Composition of the Registry - The Commission's proposals as to membership and organization are exceedingly vague but do refer to the following elements:

(i) Membership is to be specified in the agreements establishing the new regime.

(ii) The Registry is to have a Governing Body. The manner of choosing its members is also to be specified in the new agreements.

(iii) The Registry is to be a UN body enjoying the same autonomy as the World Bank.²⁷

(iv) The Registry is to be "organized on a 'multiple principle' representation, based on the technological capacity of its members as well as on their geographic distributions."²⁸

This enumeration leaves some very large questions unanswered.

Presumably the Governing Body will be responsible for the conduct of the Registry's general operations under authority delegated from a plenary organization. If so, what is the division of powers between the two organs? Will the Governing Body, for example, have sole discretion to exercise the various powers, discussed below, with which the Registry is invested? Which ever organ is to possess these powers, what is to be its membership? The Commission's reference to the two criteria of technological capacity and geographical distribution is very vague.

There are, of course a variety of precedents in the constitutions of the United Nations Specialized Agencies.²⁹ A common

²⁷ Given the dominant position of the United States in the World Bank, the analogy is rather inept. See further I. L. Claude, Swords into Plowshares (3rd ed., 1964), p. 364.

²⁸ Commission Report, p. 149.

²⁹ See further D. W. Bowett, The Law of International Institutions (1963), especially at pp. 93-132 and 323-29. For institutional proposals made by other writers see the works cited in n. 25, p. 11.

feature is to ensure the adequate representation on the Governing Body of the leading States in the functional field concerned, while at the same time providing for representation of the major geographical regions. Thus, in the International Labor Organization,³⁰ the ten States "of chief industrial importance" are guaranteed governmental representation on the Governing Body. In IMCO³¹ eight of the ten "largest shipowning States" are allocated half of the places on the Maritime Safety Committee; and, similarly, the States of "chief importance in air transport" are given "adequate representation" on the ICAO Council.³² On a somewhat different pattern, five of the Executive Directors of the IMF are appointed by the five members having the largest quotas.³³

A glance at the constitutions of these various organizations makes it clear that it is the function of the organization which determines the membership formula adopted. As the functionalists tell us, form must follow function.³⁴ The Commission's failure to specify the form of the Registry suggests that its function is still too vague. Are the technologically advanced powers to have a preponderant representation, parity with the developing States or are they to accept a minority position? Will it suffice to lump together the developing States, be they land-locked, mineral-rich coastal States or coastal States lacking a continental shelf, or must their differing interests be separately represented?³⁵

³⁰ Constitution of the ILO, as amended October 9, 1946 (1 UN Year Book, 1946-47, p. 670), Art. 7(2).

³¹ Convention on the Inter-Governmental Maritime Consultative Organization, March 6, 1948, amended September 15, 1964, and September 28, 1965 (IMCO, Basic Documents I, 1968), Art. 28.

³² Convention on International Civil Aviation, December 7, 1944 (Cmd. 8742-1953), amended June 21, 1961 (Cmd. 1826-1962), Art. 50(b).

³³ International Monetary Fund, Articles of Agreement, July 22, 1944 (Cmd. 6546), Art. 12(3)(b). Similarly, five of the Executive Directors of the World Bank are appointed by the member States with the largest capital subscriptions.

³⁴ See discussion of the "political functionalists" in R. L. Friedheim, Understanding the Debate on Ocean Resources, Occasional Paper No. 1 (Kingston, Rhode Island: The Law of the Sea Institute, February, 1969), p. 41 et seq. at p. 43.

³⁵ See further below, pp. 31-35.

A related question is that of voting. In exercising its powers, will the Registry act by simple or qualified majority and will the major powers enjoy any right of veto or weighted votes? It might be borne in mind that all four of the United Nations monetary and financial institutions (IBRD, IMF, IFC and the IDA) reflect the real interests of States by applying a system of weighted voting according to the gold and currency quotas of member States or the amount of their capital contributions.³⁶ Is any attention to be paid to the relative size of the contributions which a State makes to the International Fund?

What is the United States position? Is it to have preponderant representation in the Registry as the technologically most advanced State or as the State which in effect will be contributing the largest slice of the Fund's resources? Or does the national interest require that justice to the underdeveloped world must be seen to be done by granting it a controlling position?

Until these important policy questions are answered, it will be impossible either for Congress or the international community of States to determine whether the proposed organization is to be a pseudo-international institution through which a few advanced maritime States will administer the exploitation of submarine resources and decide how much aid they will pay to others; or, at the other extreme, a body so ill-conceived in its membership or in its system of voting as to constitute a permanent threat that the economic exploitation of the intermediate zone may be sacrificed to some alleged higher good.

(c) The Powers of the Registry

The regime recommended by the Commission is very moderate in character as compared with some of the alternatives advocated in the literature.³⁷ There is no question of vesting title to the seabed in an international institution and no power in such an institution to allocate specific portions of the seabed to exploiting States or private entrepreneurs. The evident moderation of the Commission's scheme should not, however, disguise the fact that the powers which the Registry is to

³⁶ See further Bowett, op.cit. in n. 29 above, pp. 324-28, especially p. 328, n. 47.

³⁷ Commission Report, pp. 147-50 and 150-52.

wield are of considerable importance especially in relation to the development of the resources of the intermediate zone. The proposed powers of the Registry are as follows:

(i) It has power to deny registration of any claim if it is not satisfied by the State concerned that the claim operator is "technically and financially competent and willing to perform the task." Similarly, it will have to be satisfied concerning the discovery of minerals before converting a registered exploration claim into a registered exploitation claim.

(ii) The Registry has the power to specify the conditions subject to which a claim will be registered, in the interests of preventing States from "sitting on" claims. To ensure compliance, the Registry is to have a right of inspection over all stations, installations, equipment and other devices used in operations under a registered claim and to conduct "appropriate hearings." Registration may be revoked if it is found that the conditions have not been complied with. It may be noted that while this power might prevent sitting on claims, it would not prevent a State from sitting on the whole of its intermediate zone since it is not required to register any claims to that area.

It is true that a decision to revoke a registered claim is subject to review by "an independent arbitration agency possessing expertise in resolving the kinds of issues likely to be presented."³⁸ Nonetheless, it is not difficult to think of important maritime States which would welcome neither the presence of an international inspectorate in waters about fifty miles from its coast nor the submission of disputes concerning claims in its intermediate zone to such an arbitration agency. Powers of inspection and revocation of registration subject to arbitral review may just be negotiable, given a reasonably generous continental shelf; in my judgment it would be unduly optimistic to expect their widespread acceptance in the form recommended by the Commission. And yet, without such safeguards the registration system is not a viable scheme at all.

³⁸ Ibid., p. 150.

(iii) Thirdly, the Registry is empowered to fix the amount of the registration fee but the fee is intended merely to cover costs.

(iv) An important power is that of the Registry to determine the size of the area in respect of which, and the length of time for which, a claim to exploit resources will be registered. There is clearly a considerable scope for difference of opinion on what area and time are required to enable the producer to operate economically and earn an adequate return on his investment. Who will decide these matters, and on what advice, are questions in which potential investors will be deeply interested.

(v) Perhaps the most important power with which the Registry is invested is that to fix the amount of the levy on production which States will have to contribute to the International Fund. The Commission's warning³⁹ against undue optimism over the expected proceeds from this source and its reminder that exploitation would be discouraged by an unduly high rate of levy are useful as far as they go, but it would seem unrealistic to expect States to be willing to give the Registry unfettered discretion to decide the rate of levy. More precise criteria than the danger of discouraging investment would seem to be called for. Suggestions for the establishment of such criteria are made in Part III of this paper.⁴⁰

(vi) The Registry is authorized to settle in the first instance any disputes arising under the recommended regime. Its decisions are, however, subject to review by the above-mentioned arbitration agency. It is not clear whether it is intended that any dispute arising between a State and the Registry over the exercise by the Registry of its powers would be reviewable by the arbitration agency. The Commission's words are: "At the request of any party to the dispute [a dispute 'arising under the recommended framework'], however, the Authority's initial decision, including a decision to revoke a registered claim, should be subject to review...."⁴¹

³⁹ Ibid., p. 149.

⁴⁰ See below, pp. 45-46.

⁴¹ Commission Report, p. 150.

It would seem reasonable to subject to the possibility of arbitration any decision made by the Registry under the powers discussed under heads (i) to (iii) above. Such decisions should be based on objectively verifiable considerations. The position would seem to be quite different in relation to the more important powers enjoyed by the Registry. Decisions on what amounts to an adequate return on investments - as the Shah of Persia has recently shown⁴² - are only partly dictated by commercial considerations and, similarly, the determination of the amount of the production levy would reflect the political balance in the Registry. It would seem inappropriate, therefore, to subject such decisions to review by an independent tribunal in the composition of which the same delicate political balance would not be present.

Conclusion. It seems unlikely that many States would be prepared to vest such powers in the Registry unless their exercise is to be hedged round with substantial procedural safeguards. In their present form, the Commission's recommendations do not indicate whether such safeguards are regarded as an essential element of the proposed regime.

(d) The International Fund

As has been seen,⁴³ the possibility exists that the technologically advanced powers will be able to control the amount of the profits levy on submarine mineral development. In other words, the fund-raising institution may be controlled by the developed States. An examination of the Fund shows, however, that the same option has not been left open for the spending agency. The Fund, then, is the chief instrument through which it is intended that the will of the developing States as to the disposal of community funds should be expressed and carried out. The disposal of the Fund is nevertheless more closely regulated than is at first sight apparent. It is regulated

⁴² The reference is to the demands made upon the Iranian Oil Consortium by the Iranian government for increased revenues from oil production in accordance with the requirements of their Fourth National Development Plan, 1968-72 (The Sunday Times, London, May 11, 1969). One is reminded of the Commission's judgment that, "In light of recent history, it is short-sighted to assume that U.S. private enterprise would be better off to deal with those coastal nations for permits to develop these resources in the absence of any recognition of the interest of the international community in them" (Commission Report, p. 145).

⁴³ See above, pp. 14-15.

very broadly as regards the purposes for which the fund may be spent and more particularly as regards the decision-making process.

(i) Purposes of the Fund. The Commission envisages that the Fund should be used for two main purposes:⁴⁴

First, it will finance marine scientific activity and resources exploration and development, particularly food-from-the-sea programs. Secondly, it will provide aid to the developing States. The specific rejection of proposals to use these moneys for the general purposes of the United Nations is to be welcomed. Such proposals are based on a much too superficial assessment of the deficiencies of the United Nations.⁴⁵

(ii) Decision-making process. The membership of the Fund and the manner of choosing its Governing Body are to be determined by the General Assembly. The Commission has stressed that this scheme is intended not to be just another way in which the rich may help the poor but to provide machinery "to compensate the common owners of the mineral resources of the deep seas."⁴⁶ Certainly, so far as spending is concerned, therefore, the United States would have to be prepared to be outvoted by a majority of developing States.

On the other hand, it should be noted that the function of the fund is a very limited one. In the interests of economic administration, the Commission recommends that aid should be channelled through the existing development agencies such as the World Bank and the United Nations Development Program. It might be expected, similarly, that finance for marine scientific development and resources development would be expended by the existing operating agencies including, probably, a more autonomous Intergovernmental Oceanographic Commission.⁴⁷ The role

⁴⁴ Commission Report, p. 149.

⁴⁵ See Brown Report, at p. 56. For a similar view, see Henkin, loc.cit., in n. 25 above, at p. 11.

⁴⁶ Commission Report, p. 149.

⁴⁷ Cf. the Commission's views on the desirability of strengthening IOC and possibly raising it to the status of a Specialized Agency with broader functions (Commission Report, pp. 199-202).

of the Fund would then simply be to determine on behalf of the international community how the economic rent from the exploitation of submarine resources should be allocated among the various existing operating agencies. To determine where ultimate spending power would lie, one would have to examine the decision-making processes of these various agencies. It might well then be found that the developing States would have greater influence over expenditure channelled through the United Nations Development Program than over that administered by an agency such as the World Bank.⁴⁸

(4) Flags of Convenience

The possibility exists that in the area beyond the proposed intermediate zone, a "flags-of-convenience" problem might arise if explorers or exploiters were⁴⁹ to find that they could obtain better registration terms from foreign States.

After rejecting as an undesirable precedent the possibility of prohibiting United States nations from registering claims through a foreign State, the Commission recommended that the problem might be dealt with by the adoption by the United States of a policy of registering claims on behalf of qualified applicants on a first come-first registered basis rather than on the competitive bidding system which would prevail in the intermediate zone. Since the United States is recommended not to apply the system of fixed annual rent plus royalties to the deep-sea area but merely to demand from exploiters the registration fee and production levy which it is required to pay to the Registry,⁵⁰ there would probably be little incentive for foreign registration. The possibility does exist, however, that States anxious to control operations in particular areas - for security reasons or perhaps to ensure access to particular minerals - might undermine such a policy by subsidizing the United States operating companies or offering other financial inducements. The Commission's policy of awaiting experience before proceeding further seems, however, a sensible approach which might commend itself to other States.

II. THE UNITED STATES NATIONAL INTEREST AND THE INTERESTS OF OTHER STATES

1. The United States National Interest

It seems likely that the Commission's recommendations will be attacked by critics in the United States mainly on the ground that they are

⁴⁸ See further below, p. 48.

⁴⁹ See Commission Report, p. 155.

⁵⁰ Ibid., pp. 153-54.

contrary to the national interest. The general lines of at least some of these attacks are already clear.⁵¹ It will be argued that: (1) The United States is already entitled to exclusive rights of exploitation of submarine minerals out to the bottom of the continental slope. (2) Agreement on any more landward limit on such exclusive rights will deprive the United States Treasury of very large sums by way of royalties, rents and bonus payments. (3) It would be irresponsible to turn over a proportion of the profits of exploitation of the mineral resources of the intermediate zone to foreign-controlled international institutions for purposes to be determined by those institutions. (4) Exploitation of the areas beyond the continental terrace is a very long-term, uncertain proposition. Progress in this direction is not being inhibited by lack of a legal regime but by lack of technical means. There is, therefore, no present need to set up expensive international machinery to regulate activities which, if they take place, will not do so for some considerable time. Moreover, any regime established now may in the event turn out to be ill-conceived to regulate the kind of exploitation which ultimately proves to be feasible.

In my view, the United States national interest would be ill-served in the long term if these arguments were to prevail. They do, nevertheless, have an appealing simplicity and they will be powerfully supported by the oil industry. It is for this reason that it is to be regretted that the Commission has not stated more directly and explicitly what the national interest is as it sees it⁵² and that it has not developed its proposals in sufficient detail to enable critics and sympathizers alike to determine the degree of control which the United States would have to be prepared to surrender to international decision-makers.

The Commission was clearly anxious to justify its proposals to, and attract the support of, the international community of States. It was possibly for this reason that it prefaced its proposals with a very explicit exposition of the internationalist criteria in accordance with which its recommendations were prepared. It is less than obvious from this passage, however, why it should be in the national interest to adopt the Commission's package. Yet, it is quite clear from other sections of the Report that the proposals are designed above all to serve clearly conceived American interests. It may perhaps be useful, therefore, first to summarize the Commission's statement of the internationalist criteria and to follow the summary immediately with an enumeration of the American interests which the Commission clearly hoped to further.

⁵¹ A very forceful case along these lines was made by Mr. Northcutt Ely at this Institute in 1968: "Deep Sea Minerals and American National Interests," III Sea Institute Proceedings (1969), pp. 423-30.

⁵² See, too, Panel Report, pp. VIII-2/4 on "Guides to United States Policy." The Panel stated that it "was guided by the policies and objectives enumerated by Congress in the Marine Resources and Engineering Development Act of 1966 and by the President in implementing the Act" (p. VIII-2).

(1) Internationalist Criteria

In the Commission's view, any international framework for the conduct of mineral exploration and exploitation should be judged by the extent to which it makes possible the achievement of the following basic objectives:⁵³ equality of opportunity; recognition of community interest; creation of investment climate; flexibility; and conflict resolution.

(a) Equality of Opportunity and Recognition of Community Interest

The Commission's starting point is that deep-sea mineral resources offer opportunities to benefit all States and promote international peace and order. At present, few, if any, national economic vested interests in these areas exist and States have not taken up fixed positions on a desirable legal regime. The first objective of the new legal regime must be to recognize, and provide for the protection of, the community interest by preventing exclusive, monopolistic claims and offering all States a "fair chance" to engage in minerals exploration and exploitation. Following President Johnson, the Commission therefore recognized that the regime must prevent a race to grab the submarine lands and to create a new form of colonial competition for the ocean bottoms, which must remain the legacy of all human beings.

Although I agree with the Commission's objective - to permit the use of a portion of the profits of submarine exploitation for the benefit of developing States - I cannot agree with their appreciation of the present position. In my view there are excellent arguments for holding that both under the Geneva Convention on the Continental Shelf (1958) and under international customary law, the exclusive rights of the coastal State to the exploration and exploitation of submarine mineral resources extend or may, subject to the criterion of exploitability, extend in the future to at least the outer limit of the continental slope.⁵⁴ So far as concerns the proposed intermediate zone, therefore, I would be bound to argue that it should be recognized that the task is to reach international agreement on a scheme which will effect a modification of the present position in favor of the developing States. As the Department of the Interior's practice under the Outer

⁵³ Commission Report, pp. 141-43.

⁵⁴ See further Brown Report, Part I, or "The Outer Limit of the Continental Shelf," The Juridical Review (Pt. II - 1968), pp. 111-46; and below pp. 35-38.

Continental Shelf Lands Act should have made clear, we are not working on a clean slate; we are no longer in 1958.⁵⁵

(b) Creation of Investment Climate

The Commission recognizes that, though the community interest has to be promoted and a fair chance given to all States, exploration and exploitation of deep-sea mineral resources will only take place if the international framework provides a congenial investment climate. The scientific and technological base will only be provided and the necessary capital invested if an orderly and economic operation appears to be feasible. And it will appear so only if provision is made for the recognition of exclusive claims to large enough areas for a sufficient time to justify the investment. At the same time, the community interest requires that mere paper claims should not be sanctioned; failing the proper working of a claim, the claim must be relinquished.

As has been noted, the significance of a clear legal regime as a prerequisite of large-scale investment in ocean mining has been questioned by a number of writers.⁵⁶ It may be noted, however, that the argument usually is that the writer concerned knows of no developments which have been inhibited by the lack of such a regime or that, given the technical means, companies would be prepared to proceed without the safeguards of such a regime.⁵⁷ Both of these statements may well be true but hardly

⁵⁵ The U.S. government clearly appreciates this point. In the Legal Sub-Committee of the standing UN Sea-bed Committee, the U.S. delegate "said he did not want to interpret Article 1 of the Geneva Convention or the recent North Sea case. The way to arrive at a precise boundary was by agreement, not by interpretations." (UN Press Release GA/3936, March 25, 1969, p. 3). Hence the U.S. attempts to ensure that current practice should not prejudice ultimate agreement on the outer line of the continental shelf (see further below, p. 29).

⁵⁶ See, e.g., F. G. Blake, "Industry's Needs - Technology," III Sea Institute Proceedings (1969), pp. 321-24, at p. 322, and G. T. Coene, "Profile of Marine Resources" (Conference on Law, Organization and Security in the Use of the Ocean, Ohio State University, 1967, Vol. I), p. 10.

⁵⁷ Mr. Coene, e.g., maintains that "Representatives of the mining industry indicate that they are not concerned about the absence of a sovereign power in deep-sea mining....[They] are also convinced that the United States cannot afford to let any mining operations conducted by U.S. industry be subjected to harassment by a hostile foreign power" (loc.cit., in n. 53, p. 10).

affect the case for having clear rules of law. I suspect that such rules would encourage the development of technical means of exploitation but, even if this were not so, they would certainly provide a commercially more attractive investment climate if and when technical means are made available.⁵⁸ If the argument against their present establishment is that they are premature and that we are legislating ahead of necessity,⁵⁹ I would suggest that we would be in less doubt over the present extent of the continental shelf if the Geneva Conference had thought a bit further ahead of necessity. Moreover, it seems likely that the present pressures in the United Nations to grant recognition to the rights of the international community in the resources of the ocean bed will grow and a stonewalling posture is not in the American national interest.

(c) Flexibility

Like its critics, the Commission is aware of the danger of imposing a strait jacket of legal rules on the exploitation of the seabed at a time when so little is still known about its economic feasibility and about the economic and political conditions which may obtain when large-scale exploitation becomes a practicable proposition in the area beyond the continental terrace. For this reason, the Commission was opposed to the extension of sovereign rights beyond the 200-meter isobath. It was felt that the creation of vested rights would entail the crystallization of the legal regime before experience in its operation had been gained.

This attitude seems a sensible one in the area beyond the continental terrace. In the intermediate zone, however, it again presumes either an extremely narrow interpretation of the present concept of the continental shelf or the acceptability of its revision in terms of the 200-meter isobath. As was mentioned above,⁶⁰ the Commission's attitude on this point also seems to reveal remarkable optimism on the capacity for change of international law. By what process are States to be deprived of their temporary exclusive rights in the intermediate zone?

⁵⁸ Cf. Henkin (loc. cit. in n. 25 at p. 41) who argues that the present law does not encourage exploitation by "sound," responsible business enterprise.

⁵⁹ As suggested by W. M. Chapman in III Sea Institute Proceedings (1969), at pp. 20-21.

⁶⁰ See above, pp. 5-8.

(d) Conflict Resolution

Finally, the Commission demanded of its regime that it must have as an objective the avoidance of international conflict. To this end, it should incorporate provision for the peaceful settlement of any disputes which might arise.

(2) The United States National Interest

It goes without saying that the Commission regarded the pursuit of these internationalist objectives as being in the national interest. It would seem useful, however, to identify the Commission's basic premises - the criteria which guided it in formulating its recommendations - in terms of more concrete American interests. If the United States government is concerned to achieve internationalist objectives, it is so concerned primarily for selfish reasons of national interest. It is better that the domestic and international debate should recognize this reality.

Though not expounded in the same way as a set of basic criteria, the national interest, in terms of security, economics and politics is quite clearly revealed in other sections of the Report.

(a) Security Interest

The United States, as one of the two super-powers of our age, has, by definition, world-wide interests and responsibilities in practically every sphere of human activity. In furthering these interests, it has a vital concern with the maintenance of the principle of the freedom of the high seas. As the power presently enjoying a position of pre-eminence at sea its policy must be "to limit national claims to the sea in the interest of the maximum freedom essential to the....military uses which [it] makes of the oceans."⁶¹ So long as its position of pre-eminence can be maintained, it has an interest in maximizing the deployment area of both its military-warning, tracking and detection systems and its surface and submarine weapons systems.⁶² It follows that exclusive claims by other States must be severely curtailed. Any claims smacking of sovereignty or "sovereign rights" are anathema and, accordingly, both the territorial sea and the continental shelf must be as narrow as possible. Similarly, claims to exclusive uses of any kind, if allowed at all, must be carefully circumscribed against extension to other categories and limited by area and time wherever possible.

⁶¹ Commission Report, p. 145.

⁶² See further E. D. Brown, "The Legal Regime of Inner Space: Military Aspects," 22 Current Legal Problems (1969), pp. 181-204.

This attitude has been made quite clear by the United States representatives in the United Nations debates, in discussing the geographic and material scope of proposals for demilitarization of the ocean bed.⁶³

It is unnecessary to stress that the Commission's proposals would have been quite unrealistic if they had not taken this basic security requirement into consideration. We have here, therefore, another reason why the Commission declined to extend sovereign rights to the intermediate zone. Being permanent in nature and possibly offering a pretext for extension to objects other than mineral exploitation, such rights may be considered to be contrary to this security policy. Once again, however, one must ask how long is temporary and how are the coastal State's temporary rights to be terminated? The longer they last the more likely they are to be assimilated to the rights enjoyed in the continental shelf. Moreover, it is arguable that the Commission is reading far too much into the distinction between the "sovereign rights" recognized by the Geneva Convention and the exclusive rights proposed for the intermediate zone. It is likely that exclusive rights granted for the minimum period which is conceivably negotiable would prove to be just as elastic as the limited sovereign rights in the continental shelf.⁶⁴

(b) Economic Interests

If the American economic interest in seabed minerals could be isolated from security and political factors, no one would probably dispute Mr. Ely's formulation of it at this Conference last year when he said that "American national interests would be best served...by the exercise of exclusive mineral jurisdiction in the greatest possible seabed areas adjacent to the Nation's coast."⁶⁵ As he pointed out, the federal Treasury had already

⁶³ Ibid. In the draft treaty which the U.S. delegation is reported to have tabled in the Eighteen Nation Disarmament Committee (The Times, May 23, 1969) the width of the coastal State's zone of exclusive military jurisdiction is set at three miles.

⁶⁴ Henkin, whose thinking on the "Buffer Zone" clearly influenced the Commission's recommendation for an intermediate zone (though he had in mind a permanent zone), after stating that "Inevitably, national 'sovereign rights' over mineral resources tend to expand, and threaten the right of other states to use the area for other purposes," acknowledges that, "This threat is not substantially less, I believe, if nations are allowed to explore and exploit without claim of 'sovereign rights'." (Loc.cit., n. 23, p. 99)

⁶⁵ Loc.cit., n. 48, p. 424.

received more than \$4 billion from bonuses and royalties on offshore minerals leases, with substantial increases in prospect. And the minerals produced flow directly into the economy, producing values which are subject to further federal and state taxation.

Fortunately or unfortunately, the Navy and the State Department have to view this interest in the wider context and what the Commission had to aim at was the correct balance between these sometimes diverging interests.

(c) The Political Interest

The political interest in accommodating the wishes of the various domestic lobbies which have found expression in recent Congressional debates⁶⁶ is self-evident.

The international political interest derives from the position of the United States as the richest nation on earth and the leader of a bloc which is in perpetual competition for the allegiance, the sympathy or, at worst, the continued neutrality of the uncommitted nations of the world. Much of the rhetoric of the third world spokesmen in the debates which have followed Malta's initiative in the United Nations may be based on wildly optimistic estimates of the exploitable resources of the ocean bed⁶⁷ but the resultant political climate is real enough. The acclaim which greeted President Johnson's emotively worded warning on the dangers of a new colonial grab⁶⁸ is a fair measure of the significance of this question in international politics.

⁶⁶ See G. Weissberg, "International Law Meets the Short-term National Interest; the Maltese Proposal on the Sea-Bed and Ocean Floor - Its Fate in Two Cities," 18 ICLQ (1969), pp. 41-102.

⁶⁷ See, e.g., Dr. Pardo's statement in the First Committee (A/C.1/PV.1515, pp. 12-25 and A/C.1/PV.1516, p. 4). See further Brown Report, pp. 32-39 and the works there cited and W. T. Burke, Towards a Better Use of the Oceans. A Study and Prognosis (Stockholm: International Institute for Peace and Conflict Research [SIPRI], 1968), pp. 51-58.

⁶⁸ "Under no circumstances must we ever allow the prospect of 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 to hold the lands under the high seas. We must ensure that the deep seas and the ocean bottoms are, and remain, the legacy of all human beings" (President Johnson's Remarks at the commissioning of the new research ship, the "Oceanographer," July 13, 1966, 2 Weekly Compilations of Presidential Documents (1966), pp. 930-31).

Whatever freedom of action the United States may have previously enjoyed to evolve a national policy for the seabed beyond the 200-meter line has now been seriously diminished. The much-publicized United States opposition to a "colonial grab" and her commitment to the "dedication as feasible and practicable of a portion of the value of the resources recovered from the deep ocean floor to world or regional community purposes"⁶⁹ have created or reenforced the expectations of the developing States. Will they now be content with a portion of the value of the resources of the ocean bed beyond the continental terrace when it is realized that the short and medium-term profits will come from the resources of the continental terrace? Legalistic emphasis on the words "feasible and practicable" and the limitation of the commitment to the deep-ocean floor, offer a way out but hardly one which is politically attractive. It may be that it was reflections such as these which persuaded the Commission of the necessity to subject exploitation in the intermediate zone to a production levy. This is a problem which faces anyone who favors a scheme to benefit the developing States - the reconciliation of the expectation of the coastal State to exclusive rights in the continental terrace beyond the 200-meter line with the expectation of the developing States to a share in the substantial profits of submarine exploitation.

2. The Interests of Other States

Given these internationalist and national objectives, the preparation of recommendations for an international legal framework is no easy task. Bearing in mind that the Commission's recommendations, if they are to be acted upon, must be acceptable first to Congress, secondly to the United States government, and thirdly to the world community of States, one of the tasks of the Commission was to displease all three as little as possible. In my judgment, they have succeeded in this to a remarkable extent by incorporating in their proposals an ingenious combination of checks and balances which seek to give recognition to the various interests involved. Nonetheless, the Commission's recommendations have serious defects as an adequate basis for international negotiations. Many of the doubts and questions to which the Commission's Report gives rise have been considered already in Part I. In this section an attempt will be made to gauge the attitudes which other States might be expected to take to the Commission's proposals in the light of their differing national interests. It will not suffice for this purpose to speak in terms of "mankind" or "the community interest." That interest, except in the most general terms, does not exist. What, in practical terms, we are concerned with are a large number of different national interests dictated by many different factors such as geographical position, mineral wealth and ideological persuasion. However, certain broad generalizations about various groups of States would appear to be justifiable.

⁶⁹ U.S. Draft Resolution Containing Statement of Principles Concerning the Deep Ocean Floor, submitted to Ad Hoc Committee, June 28, 1968 (A/AC.135/25; also reproduced in Panel Report, pp. VIII-30/31), para. 2(c).

The following presentation of the factors which will shape national attitudes is based mainly upon statements made by government delegations in recent United Nations debates. Naturally, the various groupings overlap and the policy of any particular State may be affected by many other factors peculiar to its own situation. It is hoped, however, that this brief analysis will indicate some of the difficulties with which negotiations based on the Commission's recommendations might be confronted.

(1) States with a Vested Interest in the Geneva
Definition of the Continental Shelf

The United States delegation in the United Nations has sought to ensure that exploitation "of the natural resources of the ocean floor that occurs prior to establishment of the boundary [of the continental shelf] shall be understood not to prejudice its location, regardless of whether the coastal [State] considers the exploitation to have occurred on its 'continental shelf'."⁷⁰

The following account of the positions taken by several of the delegations in the United Nations suggests that there may be considerable opposition to United States policy on this point.

The delegations of Iceland, the Philippines and South Africa, for example, started from quite a different assumption. Until agreement was reached on the limits of national jurisdiction, these countries reserved the right to claim sovereign rights for the exploration and exploitation of the resources of the continental shelf adjacent to their coasts in accordance with the Geneva Convention;⁷¹ and South Africa made it clear that any claim thus established could not, without the consent of the State concerned, be prejudiced by any future agreement on boundary delimitation.⁷²

More far-reaching still were the statements made by the delegations of Argentina, Chile, Costa Rica, Ecuador, Honduras and Peru,⁷³ all of

⁷⁰ Ibid., para. 2(d).

⁷¹ Iceland (First Committee, A/C.1/PV.1589, October 29, 1968, pp. 33-35); Philippines (A/C.1/PV.1597, November 4, 1968, pp. 77-78); South Africa (A/C.1/PV.1602, November 7, 1968, p. 57).

⁷² A/C.1/PV.1602, p. 57

⁷³ Argentina (A/C.1/PV.1594, p. 26); Chile (A/C.1/PV.1601, p. 91); Costa Rica (A/C.1/PV.1602, pp. 22-23); Ecuador (A/C.1/PV.1594, p. 37); Honduras (A/C.1/PV.1600, pp. 33-35); Peru (A/C.1/PV.1597, p. 51).

which have laid claim to very extensive maritime belts. So far as they were concerned, the United Nations debate was not even concerned with the areas over which they already claimed sovereignty and jurisdiction.

Perhaps more typical were the reactions of the Kuwaiti and United Kingdom delegations in the standing Committee on the Peaceful Uses of the Seabed. The Kuwaiti delegation reminded the Committee that the question of revising the Geneva Convention should be explored with caution since many arrangements had been inspired by that document.⁷⁴ Similarly, the United Kingdom spokesman placed the onus on those who sought to depart from this "basic document" to take account of the legitimate fears of coastal States. He stressed that the question of limits was closely linked with that of the arrangements to be made for the area beyond national jurisdiction.⁷⁵ He did not hesitate, however, to reject as being "not practicable" the proposal that the 200-meter isobath should constitute the limit of national jurisdiction.⁷⁶

It is interesting to note in this context that Dr. Pardo, who is second to none in his concern to protect the interests of the developing States, thought it necessary not to give the impression of depriving States of rights guaranteed under the Geneva Convention. He suggested accordingly that an acceptable formula should produce approximately similar results for all coastal States, while recognizing the security interests of States and taking account of the Geneva Convention. Most interesting of all, he concluded that it would not be realistic to restrict the zone of national jurisdiction to a width of 40-50 miles; any attempt to fix a band less than 100 miles wide would, he thought, be "doomed to failure" and it might be necessary to double this distance.⁷⁷

The response of the United States delegation was understandably cool, and Mr. Carter regretted the introduction into the discussion of "terms which tended to enlarge the maximum area under national jurisdiction."⁷⁸

Finally, it should be borne in mind that the depth-distance formula proposed by the Commission for the outer limit of the redefined continental shelf and the intermediate zone are based on the average depths and distances at which certain geological phenomena occur. It would be rash to suppose that all

⁷⁴ UN Press Release GA/3944, March 19, 1969, p. 7.

⁷⁵ Ibid., p. 2.

⁷⁶ UN Press Release GA/3963, March 25, 1969, p. 1.

⁷⁷ UN Press Release GA/3947, March 20, 1969, p. 4.

⁷⁸ UN Press Release GA/3963, March 25, 1969, p. 3.

coastal States would be happy to accept such average figures especially as they have little or no connection with the relative mineral value of the various shelves off their shores.

(2) Technologically Advanced States

States possessing the technical skill and resources to develop seabed minerals also have vested interests. It is in their interest to preserve "freedom" to exploit the seabed as long as possible and to accept only that minimum of "rules of the game" which will provide reasonable security and protect other users of the high seas. There seems to be no reason to suppose that all such States will feel it necessary to adopt the same protective attitude towards the developing States as has the United States.

(3) Developing States

The very term developing States is, of course, quite misleading in this context if it suggests that all States so described share a common interest in seabed resources. Clearly the interests of landlocked States will differ from those of coastal States and even within this latter category attitudes may differ for a variety of reasons, including the presence or absence of mineral resources in their offshore regions.

(a) The Landlocked States would seem to be the least difficult to please, be they developed or developing. As the Czech delegation has put it, the landlocked State has an "obvious interest in international cooperation which would be of benefit to all States irrespective of their geographical location."⁷⁹ This interest is of course shared by coastal States which are so situated as to be cut off from any substantial area of the continental shelf. Belgium's interest in restraining the appetites of coastal States is perhaps attributable to this cause.⁸⁰

(b) Coastal States. The position of those Latin American States which claim extensive maritime belts has already been noted.⁸¹ Iceland has taken up a similar position and would favor a formula which would give due consideration to the

⁷⁹ UN Press Release GA/3947, March 20, 1969, p. 7. See also the similar statements in the First Committee of Afghanistan (1595th meeting); Bolivia (1600th meeting); Cyprus (1599th meeting); Czechoslovakia (1598th meeting); Ecuador (1594th meeting) and Hungary (1599th meeting).

⁸⁰ UN Press Release GA/3941, March 18, 1961, p. 2.

⁸¹ See n. 73 above.

interests of States with little or no continental shelf.⁸²
In both cases, these States are clearly more concerned with establishing what they doubtless regard as equitable claims to exclusive fishery zones than with the mineral resources of the seabed.

Yet another complication might arise from the demands of Indonesia and the Philippines that the special circumstances of archipelago States should be taken into account. Is there, in this connection, any significance in the fact that the Commission's Report has not repeated the International Panel's suggestion that in some difficult cases it might be desirable to adopt a system analogous to the territorial sea straight-baseline system?⁸³

Even as regards developing States whose continental margins are potentially rich in mineral resources, it is by no means clear that the Commission's package will be seen as the most attractive scheme through which the community interest may be acknowledged. I am not qualified to make the kind of economic calculations which such States will certainly wish to make but, especially in view of some of the uncertainties in the Commission's plan (the duration of the regime of exclusive rights in the intermediate zone and the membership and voting patterns in the Registry), it is not clear that such States have more to gain by accepting the Commission's regime.

A number of elements will enter into the calculation and many of them are impossible to quantify.

Would it, first of all, be unduly cynical to question the significance of the redistribution of wealth which the International Fund will effect? My suspicion is that the United States, as a super-power in terms of wealth and technological capacity, must in any event expect to pay a preponderant share of the costs of the various oceanic research and development agencies and provide a large proportion of the funds for aid to developing States. The proposal to deny the United States Treasury income from claims beyond the 200-meter isobath and to demand from exploiters only the registration fees and production levy payable to the Registry, is in substance a method of providing foreign aid. It would, however, be ingenuous to think that Congress would ignore the scale of this contribution to international welfare when voting more orthodox aid funds. It is true that, in time, the development of the intermediate zone might be expected to provide a steady, reliable source of such funds which would be of great benefit to

⁸² UN Press Release GA/3957, March 24, 1969, p. 4.

⁸³ Indonesia (A/C.1/PV.1601, p. 41); Philippines (A/C.1/PV.1597, pp. 78-80); Panel Report, p. VIII-34. The Panel was referring to areas where the 200-meter isobath "traces a circuitous position." Actually, in the following paragraph the Panel confessed that they had been unable to solve to their satisfaction the problems raised by islands.

the operating agencies. It is also true, however, that Congress might demand for the "donor" States a controlling voice in the determination of the amount of the production levy.

A second element in the calculation is the effect on the technological capacity of the developing States which established and presently conceived future aid schemes may have. Dr. Chapman has reminded us of the "reversing action" which may be induced by the provision of funds for exploitation of the seas.⁸⁴ In his example, it was pointed out that a number of developing countries are now establishing long-range fisheries largely as a result of the substantial expenditure on pre-development fisheries programs by the UN Development Program through the FAO. The present lack of technological capacity in relation to seabed exploitation must similarly not be regarded as a constant in our calculations. Given internationally financed pre-investment surveys and pilot projects, some of the less advanced States might in the future prefer to retain the more certain right to exploit the resources of an extensive continental shelf rather than depend on the uncertain benefits of the international regime. Permanent access to strategic minerals and an understandable desire for self-reliance rather than dependence on international largesse⁸⁵ are considerations which might underline the economic argument. The alternative would be to accept the right to develop the intermediate zone for an indeterminate time and to have their income from that source augmented by present development funds plus an indeterminate share in the distribution of the new International Fund to which they would be required to make an indeterminate contribution.

(4) Socialist States

No doubt a good Marxist case can be made out for the Soviet Union's record of non-participation or minimal participation in the functional activities of the United Nations. Cooperation with capitalism in such enterprises as the World Bank can hardly be expected to commend itself to Soviet policy makers. More important, perhaps, is the fact that American wealth in the early post-war years enabled the United States to establish a dominant position in many of the United Nations functional agencies and to influence their policies in accordance with United States foreign policy objectives.⁸⁶

The Soviet camp's attitude to proposals to establish international machinery for the development of submarine resources was, therefore, fairly

⁸⁴ W. M. Chapman, in III Sea Institute Proceedings (1969), pp. 359-60.

⁸⁵ See, e.g., the statement of the Kenyan delegation in the standing Committee on the Sea-bed, UN Press Release GA/3959, March 25, 1969, p. 6.

⁸⁶ I. L. Claude, Swords into Plowshares, 3rd ed., 1964, pp. 363-67.

predictable. Thus, both in the First Committee and in the General Assembly, the Soviet bloc of nine States unsuccessfully voted against the adoption of a resolution requesting the Secretary-General to study appropriate international machinery for the promotion of the exploration and exploitation of submarine resources.

The Soviet delegation had already firmly rejected the notion of "an international regime of common ownership by the whole of mankind" in the First Committee debates. Such proposals were said to disregard "the objective realities of the present-day world,"⁸⁸ including "the fact that on our planet there co-exist States with differing social systems and differing systems for the ownership of property."⁸⁹ "No matter how democratic the form of management or administration in that common ownership might be, no matter how sincere the motivations and desires of most States to see an equitable distribution of resources in such an undertaking, the principal posts of command in such a system would inevitably be in the hands of the capitalist monopolies of certain imperialist powers and the entire system, despite the pious wishes of its sponsors, would become just one more mechanism for the enrichment of rapacious monopolies and the execution of neo-colonialist policies."⁹⁰

It was even hinted that the establishment of international machinery based on the principle of common ownership might "lead to a complete breakdown of international cooperation"⁹¹ or to "difficulties for existing bodies."⁹² Presumably the reference is to the coordination of scientific research by the Intergovernmental Oceanographic Commission of UNESCO. The Soviet Union has always attached great importance to IOC's role and indeed proposed in 1967 that an IOC working group should be set up to draft a convention on "the international norms of exploration and exploitation of the mineral resources of the high seas."⁹³

⁸⁷ UN Chronicle, January, 1969, pp. 56-62.

⁸⁸ A/C.1/PV.1592, p. 16. For similar passages see A/AC.138/7, pp. 25 and 37.

⁸⁹ A/C.1/PV.1592, p. 17,

⁹⁰ Ibid.

⁹¹ Soviet Union (A/C.1/PV.1603, pp. 27-30).

⁹² Bulgaria (A/C.1/PV.1598, p. 57): It was said to be "well known that in many international bodies which gravitate closely in the orbit of the United Nations, work on and the preparation of solutions and decisions are in the hands of officials nominated by countries making the highest contributions, or at least by a combination of States belonging to a particular alliance."

⁹³ See W. T. Burke, "A Negative View of United Nations Ownership," 1 Natural Resources Lawyer (1968, No.2), pp. 42-62, at pp. 44-45.

That the Soviet Union favors the development of such "ground rules" and is opposed only to the concept of common ownership and to machinery based on that concept is apparent also from the above quoted statement of Mr. Mendelevich. "Our aim," he said, "must be to work out legal principles that will foster the development of international cooperation, on an equal footing, in the exploration and exploitation of the sea-bed in the interest of all peoples, while ensuring the legitimate rights and interests of all States and taking duly into account the needs of the developing countries."⁹⁴

As compared with many other proposals for an international regime, the recommendations of the Commission are very restrained and moderate. It seems more than doubtful, however, whether the Soviet Union would be able to accept even this scheme. The fact that they have felt able to contribute modestly to the United Nations Development Program does, however, suggest that their position may not be altogether rigid.⁹⁵

(5) The Commission's Rigidity

The Commission has stressed in its Report that its major recommendations are interrelated and that if one part of its proposals is rejected it might have to think again about the remainder.⁹⁶ Given the doubts which some aspects of the recommendations raise and the virtual certainty that many States will object to this or that aspect, this rigidity seems unfortunate and would certainly put United States negotiators in a very difficult position. If, for example, it became clear in the negotiations that agreement on the outer limit of the continental shelf was possible and that "ground rules" for exploitation in the area beyond were negotiable, is a deal with the Soviet Union to be rejected? A little more flexibility and consideration of options seems called for.

III. THE COMMISSION'S REJECTION OF THE NPC PROPOSALS AND SUGGESTED VARIATIONS ON THE COMMISSION'S THEME

1. The NPC Proposals

Before proceeding to develop its own recommendations on a revised definition of the continental shelf, the Commission referred in some detail to the definition proposed by the National Petroleum Council's (NPC) Committee on

⁹⁴ A/C.1/PV.1592, pp. 18-20.

⁹⁵ E.g., as of November 30, 1968, the three Soviet UN members had pledged to UNDP for 1968 the sum of \$3,525,000 as compared with \$11,750,000 from the United Kingdom and \$75,000,000 from the United States, the latter subject to the proviso that it did not exceed 40 per cent of the total contributions to the program (UN Docs.DP/SF/C/L.59 and DP/TA/C/L.59).

⁹⁶ Commission Report, p. 147.

Petroleum Resources under the Ocean Floor.⁹⁷ Its treatment of this definition would in any case have been of considerable interest because of the origins of this proposal - presumably representing the considered views of the most influential group likely to oppose the Commission's recommendations. It is all the more interesting, however, because the proposal to adopt the bottom of the continental slope as marking the edge of the legal continental shelf is more than merely a workable formula which can be argued to be consistent with the Geneva Convention. It may also derive some support from the language of the ICJ in its recent judgment in the North Sea Continental Shelf Cases (1969).⁹⁸ Since in certain limited respects my own views are closer to those of the NPC than to the Commission's, a few comments on the Commission's reasoning in rejecting the NPC formula may usefully preface and complement the suggestions which I shall offer for revision of the Commission's recommendations.

The NPC Report recognized that there was uncertainty over the definition of the continental shelf and accordingly urged that the United States should declare in the Truman tradition that it would exercise sovereign rights over the continental shelf as defined by the NPC and invite all other coastal States to issue similar declarations. According to the NPC definition, the continental shelf would extend, subject to exceptions,⁹⁹ to the line where the submerged portion of the land mass meets the abyssal ocean floor, i.e., the legal continental shelf would be coterminous with the geophysical continental terrace.¹⁰⁰

The Commission rather summarily dismissed the NPC interpretation as being warranted neither by the language of the definition in Article 1 of the Convention nor by its history.¹⁰¹ I would certainly agree that such a precise quantification of the vague formula of Article 1 is difficult to accept but would nevertheless hold that it is a reasonable concretization of the intention

⁹⁷ Ibid., pp. 144-46.

⁹⁸ North Sea Continental Shelf. Judgment, I.C.J. Reports 1969, p. 3. See further below.

⁹⁹ An area of the ocean floor contiguous to the submerged land mass would have to be added in cases where the continent drops off sharply to the abyssal ocean floor near the coast (Commission Report, p. 144).

¹⁰⁰ Plus "at least the landward portions of the geological continental rises" (ibid., p. 144). On these geological terms, see n. 11 above.

¹⁰¹ Commission Report, p. 144.

of the parties and undoubtedly much more so than the formula proposed by the Commission.¹⁰² Moreover, it will not have escaped the notice of the NPC and other parties interested in opposing the Commission's formula that the NPC proposals are much closer to the spirit of the International Court's judgment in the North Sea Cases. It is true that the Court was dealing in those cases with the concept of the continental shelf under international customary law but, as the convention concept has never been regarded as embracing a narrower shelf than its customary equivalent, the Court's comments would seem to be apposite.

The Court described as the most fundamental of all the rules relating to the continental shelf the rule "that the rights of the coastal State in respect of the area of the Continental Shelf that constitutes a natural prolongation of its land territory in and under the sea exist ipso facto and ab initio, by virtue of its sovereignty over the land..."¹⁰³ (emphasis added). And, again, the Court held that "What confers the ipso jure title which international law attributes to the coastal State in respect of its Continental Shelf, is the fact that the submarine areas concerned may be deemed to be actually part of the territory over which the coastal State already has dominion, - in the sense that, although covered with water, they are a prolongation or continuation of that territory, an extension of it under the sea."¹⁰⁴

In another passage, it is true, the Court stated that "it is evident that by no stretch of the imagination can a point on the Continental Shelf situated say a hundred miles, or even much less, from a given coast, be regarded as adjacent to it, or to any coast at all, in the normal sense of adjacency.... This would be even truer of localities where, physically, the Continental Shelf begins to merge with the ocean depths."¹⁰⁵ As I have suggested elsewhere,¹⁰⁶ it is perhaps illegitimate to consider isolated points rather than areas when determining adjacency. But, in any case, this passage must be read in its proper context. It occurs in a section of the judgment in which the Court is minimizing the significance of the concept of adjacency or proximity as compared with the fundamental notion of prolongation of territory and in which it is

¹⁰² See further Brown, loc.cit. in n. 54 above.

¹⁰³ I.C.J. Reports 1969, p. 3, at p. 23, para. 19.

¹⁰⁴ Ibid., p. 32, para. 43.

¹⁰⁵ Ibid., p. 30, para. 41. This passage was referred to by the U.S. delegation in the standing Committee on the Sea-bed (UN Press Release GA/3963, March 25, 1969, p. 3). If the following interpretation of the judgment is correct, Mr. Carter's attempt to rely on this passage in opposing a Maltese proposal to adopt an extensive continental shelf (see above p. 30) is ill-founded.

¹⁰⁶ Brown Report, p. 6.

stressed that the notion of adjacency only implies proximity in a general sense. Thus, the fact that there are points in the North Sea 170 miles from the nearest coast which are not adjacent to any coast does not lead the Court to the conclusion that they are not subject to a coastal State's sovereign rights in the continental shelf - but rather to the conclusion that they are because they lie on the natural prolongation of that State's territory under the sea.

The alleged inconsistency of the NPC definition with the Geneva formula was, however, the least of its defects in the eyes of the Commission. Having examined its pros and cons, the Commission concluded that its adoption would be contrary to United States interests. In favor of the definition was the fact that it would entitle the United States to permanent sovereign rights over 479,000 square miles of seabed beyond the 200-meter isobath - an area in which rich oil and gas deposits are expected to be found. The Commission acknowledged too that some of the U.S. oil companies would prefer to deal with the coastal States enjoying jurisdiction over the world's continental shelves rather than face the unknown perils of international legal-political arrangements yet to be negotiated.¹⁰⁷

The Commission was not persuaded by these arguments and gave four reasons for the rejection of the NPC definition.

First, it was argued that it would benefit other coastal nations of the world proportionately more than the United States and give them exclusive authority over the natural resources of immense submarine areas. A number of comments must be made on this argument.

Estimates of the average depth at which the continental slope meets the abyssal floor seem to vary¹⁰⁸ but, taking the Commission's figure of 2,500 meters, a glance at a chart reveals three interesting points. First, it confirms that the configuration of the seabed off the United States coast is such that, relatively speaking, it would not gain very much by extending its exclusive jurisdiction from the 200-meter line to the 2,500-meter line (the Commission's estimate of an additional 479,000 square miles rather confirms this

¹⁰⁷ The Commission described as short-sighted the assumption that U.S. private enterprise would be better off to deal with the coastal States in the absence of any recognition of the interest of the international community in them (Commission Report, p. 145). In the absence of any firm knowledge of how the assessment of a production levy would be made by the proposed International Registry Authority, speculation on the comparative merits of the two systems seems unrewarding. See, too, n. 42 above.

¹⁰⁸ See further Brown Report, p. 41, n. 139.

if the length of the U.S. coastline is borne in mind).¹⁰⁹ It must be added, however, that the position is not radically different off most of the other continents, with the notable exception of the regions in the far north of the globe - very roughly speaking, those north of 60° N. latitude. Secondly, it is also true that the United States would benefit proportionately more than a large number of other coastal States which, for example, have very narrow continental margins; or have short coasts in relation to their areas; or lie at the head of a bay; or are situated in a position like some of the North Sea or Persian Gulf States, that is, are cut off from the open oceans by continental or island neighbors.¹¹⁰

Thirdly, it appears from the charts that the same objection could be raised against practically any other isobath short of 2,500 meters. Taking even the 550-meter line - the isobath which would include all of the world's continental shelves¹¹¹ - relatively little would be gained by States lying south of 60° N. latitude; on the other hand, again, the northern regions would make very large gains - see, for example, the area north of the Arctic Circle and between 10° and 100° E. longitude.

It may also be noted that the Commission's proposed intermediate zone is open to similar objections.

Finally, the point should be made that if it is true that the NPC definition would favor other States more than the United States, it is a very good reason why at least some of these States should reject the Commission's proposals and base their more extensive claims on the present law. As has been suggested, both the Geneva Convention - vague though it is - and international customary law certainly envisage the extension of the shelf beyond the 200-meter line. Not every coastal State is handicapped by the same security and political interests as the United States and some may feel they have more to gain from permanent exclusive rights in a wide shelf than from the uncertain benefits of a temporary intermediate zone and a fund designed primarily to assist the developing States.

The Commission was critical of the NPC formula, secondly, because it "would create the danger that some coastal nations without important mineral

¹⁰⁹ Panel Report, P. VIII-22 and n. 82. According to Prof. Auerbach (III Sea Institute Proceedings (1969) at p. 6), "181 billion barrels of oil and 1,440 billion cubic feet of gas may ultimately be produced from the subsoil of the seabed between the 200 meter and the 2,500 meter isobaths."

¹¹⁰ Cf. F. T. Christy, in III Sea Institute Proceedings (1969), at p. 18.

¹¹¹ Brown Report, p. 41, n. 139.

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deposits on or under their continental slopes and rises, will feel justified in claiming exclusive access to the superjacent waters, the living resources in them, and the air above them."¹¹²

This argument is not convincing. If States are tempted to follow the example of the Santiago Declaration¹¹³ and claim exclusive rights in the waters superjacent to the seabed beyond territorial waters, they can do so now, and could still do so under the regime of the intermediate zone, with the same prospects of success and the same risk to their good relations with other States as the Latin American States have experienced.¹¹⁴

Whether this view is correct or not, it is still a curious case for the rejection of a particular definition of the geographical scope of the legal continental shelf to argue that it might be taken to justify some States in extending the material scope of the doctrine of the continental shelf. Other States may sympathize with the fact that, since 1961, half of the United States tuna vessels have either been chased, shot at or seized and that about \$400,000 has been paid to Central and South American States for the release of vessels and crews.¹¹⁵ They are hardly likely, however, to regard the United States difficulties as being a reason for accepting an otherwise unattractive proposal.

The third reason given by the Commission for the rejection of the NPC formula was that such a formula would be contrary to traditional United States policy of limiting national claims to the sea in the interest of the

¹¹² Commission Report, p. 145.

¹¹³ For the text of the Agreement/Declaration of Santiago (1952), in terms of which Chile, Ecuador and Peru proclaimed their sole jurisdiction and sovereignty over the area of sea adjacent to and extending 200 nautical miles from their coasts, including the sea floor and subsoil of the said area, see UN Doc. A/AC.135/10/Rev.1, p. 11. Costa Rica subsequently acceded to the Agreement (see statement in First Committee, A/C.1/PV.1602, p. 22). See also the supplementary Agreement of December 4, 1954 (ibid., p. 12), ratified by Peru and Ecuador (ibid., p. 12, n. 2) under para. 4 of which the parties undertake "not to enter into any agreements, arrangements or conventions which imply a diminution of the sovereignty over the said zone."

¹¹⁴ Cf., n. 64 above and n. 115 below.

¹¹⁵ Commission Report, p. 109. The U.S. Fishermen's Protective Act 1954, amended 1968, requires the Secretary of State to withhold from any foreign aid funds an amount equal to the unpaid U.S. claim against a country which has seized a U.S. fishing vessel (ibid., p. 109-10). The Commission has recommended repeal of this requirement (ibid., p. 110).

maximum freedom essential to the multiple uses, including military uses, which the United States makes of the oceans. It is, of course, a matter for judgment whether exclusive rights recognized for one purpose will be abused and claimed for another purpose, and it may be that the more limited rights proposed by the Commission for the intermediate zone would also prove to possess this unfortunate elasticity both ratione materias and ratione temporis.

It is not difficult, for example, to make out a case in support of the coastal State's right to deny other States the right to place military installations on the bed of the continental shelf or intermediate zone, however defined.¹¹⁶ Such a foreign military presence might well be regarded as constituting an impediment to the exercise by the coastal State of its exclusive rights of exploration and exploitation. Similarly, given exclusive rights of exploration and exploitation, it seems likely that there will always be a need for resistance to claims to subject scientific research to the prior consent of the monopoly State. And, of course, it hardly needs stressing that, irrespective of their legality, claims to exclusive rights to the living resources of the superjacent waters must be expected to continue.

What is questionable, however, is the Commission's proposition that such encroachments on the freedom of the seas are peculiarly linked to the notion of the continental shelf.¹¹⁷ It would seem more realistic to suppose that if exclusive rights of exploration and exploitation of seabed minerals are enjoyed by the coastal State, even subject to the restrictions imposed by the regime of the intermediate zone, there will be a tendency for the coastal State to interfere with the exercise of other users by other States.

The reconciliation of one user with another, of new users created by advancing technology with those sanctioned by long usage is a very important question. But it is one which will raise difficulties irrespective of whether the continental slope is to be recognized as part of the continental shelf or as being subject to the regime of the intermediate zone.

Finally, the Commission argued that the NPC proposal is unfair to landlocked States which would not understand why the rich mineral deposits on and under the continental slopes and rises should belong only to the coastal nations. United States action in pursuance of the NPC formula would, it was thought, be regarded as a grab.¹¹⁸

¹¹⁶ See further Brown, loc.cit., in n. 62 above, p. 186.

¹¹⁷ Cf. n. 64 above.

¹¹⁸ Commission Report, p. 145.

This argument may prove to be mischievous in itself creating the very protests it purports to forestall. There is evidence enough that a great many States - and not only landlocked States - would vigorously oppose the extension of the legal continental shelf out to oceanic median lines in accordance with an extreme interpretation of Article 1 of the Geneva Convention. On the other hand, there would, in my view, have been little reason to expect widespread protests against the interpretation of the continental shelf as extending out to the bottom of the continental slope in the absence of the encouragement which it now seems to be United States policy to give.¹¹⁹

2. Variations on the Commission's Theme

If the general conclusion which must be drawn from this study is that the Commission's proposals are probably not acceptable to the international community in their present form, this is not to say that they do not offer a very useful basis for further discussion of the problems involved. I would like in conclusion to offer a few suggestions for a revised version of the Commission's plans.

Basic to my proposals are three value judgments. First, I believe that the chief priority must be to reach agreement on the outer limit of the submarine zone within which the coastal State enjoys exclusive rights of exploration and exploitation of natural resources. This is required for a number of reasons. Both internationally and intra-nationally a definite boundary cannot but contribute to a dispute-free climate for submarine research and development and exploitation of the resources of the seabed. Moreover, the difficulty of arriving at such a determination will increase as technology improves and nationally-licensed claims move ever further from the coast. Finally, a definite boundary is of course a sine qua non of a regime for the area beyond the shelf. Ideally, it is to be hoped that a settlement of this question may be arrived at in the context of a more comprehensive arrangement which will inter alia recognize the interests of the developing States. It would seem to me to be unwise, however, to link proposals on this question so closely to recommendations on the wider issues that they must stand or fall together.

My second basic desideratum is that the submarine regime must ensure that a proportion of the profits of submarine exploitation is channelled to international community purposes. I am aware that there is no necessary connection between submarine exploitation and the provision of aid; that other channels exist for any increase in aid thought desirable; that an increase in aid through a levy on submarine production may be neutralized by a cutback in aid through other sources; that governments such as my own (the United Kingdom) will not welcome the prospect of contributing a slice of the profits of continental shelf exploitation to an international fund at a time when the IMF has

¹¹⁹ See above p. 30 on Malta's readiness to contemplate a 100-mile or even a 200-mile continental shelf.

its economy under strict surveillance. The fact remains that there are sound political reasons for not disappointing the expectations which the United States government among others has thought fit to encourage in the developing States. And, much more fundamentally, there are sound reasons for augmenting the funds available to inter alia the United Nations Development Program. The history of the first UN Development Decade has illustrated the difficulty of achieving a sustained, substantial flow of assistance and capital from developed to developing States by means of voluntary contributions (the target was one per cent of the combined national incomes of the economically advanced countries).¹²⁰ The merit of earmarking a proportion of submarine profits for such purposes is that it is a new source of national wealth and therefore easier to tap than existing sources.

My third assumption is that it may well prove to be extremely difficult to negotiate and bring into force a universal treaty regime. If this proves to be so, I would hope that contingency planning would provide for the gradual attainment of these basic objectives by means of narrower, multilateral (perhaps in the first instance regional) arrangements. This is very much a second-best but, if it could provide definite boundaries, security of exploitation and a redistribution of wealth on the same principles as the proposed universalist scheme, it would seem to be worthy of consideration.¹²¹

(1) The Outer Limit of the Continental Shelf

I have suggested above¹²² that the differences between the regime of the proposed intermediate zone and that of the present continental shelf are less significant than the Commission has pretended and that national calculations as to the acceptability of the Commission's scheme would be aided if the allocation of the area of the intermediate zone to the coastal State were to be regarded as permanent. The only essential difference, it seems to me, is that the regime of the continental shelf does not recognize any community interest in the resources of the area beyond the 200-meter line. The need to provide for this point can be satisfied by other means which are discussed below.¹²³

My proposal is that the outer limit of the continental shelf - possibly renamed - should be the 2,500-meter isobath or 200 miles from the baseline of the territorial sea, whichever gives the greater area. In the light of

¹²⁰ See, e.g., "The United Nations Development Decade at Mid-Point. An Appraisal by the Secretary-General" (Doc. E/4071 and UN Publication, Sales No. 65.I.26) and "Why Now?", a statement by Paul G. Hoffman, Administrator, to the Fifth Session of the Governing Council of UNDP.

¹²¹ See, also, Brown Report, p. 58 et seq.

¹²² See above, pp. 8-9, 26, 40-42.

¹²³ See below, pp. 45-47.

the ambiguity of the present law, State practice and the recent decision of the International Court of Justice, there will, in my view, be many States unwilling to accept a definition which denies them the right to extend their shelves out to the edge of the continental terrace if and when technology permits of resource exploitation out to such limits.

According to the Commission, the average depth of the edge of the continental terrace is 2,500 meters and the corresponding average distance from the coast is 100 miles. According to Mero,¹²⁴ about 12 per cent of the total area of the ocean floor lies between the 200-meter and the 2,500-meter isobaths. The result of my proposal would be to give about 20 per cent of the ocean floor to the coastal State, since about 8 per cent is represented by the seabed landward of the 200-meter line.¹²⁵ For reasons which I have suggested elsewhere, I would be inclined to link the 2,500-meter depth criterion with a 200-mile distance criterion.¹²⁶

(2) Military and Scientific Interests

It was suggested above¹²⁷ that the security threat considered to be implicit in a wide continental shelf is hardly likely to be diminished by reclassification of the area as an intermediate zone. I see no reason why clearly limited "sovereign rights" should be any more elastic from this point of view than the proposed exclusive rights in the intermediate zone. It may be that by the time a convention is negotiable, the current discussions in the Eighteen Nation Disarmament Committee will have produced a new security context but, failing this, specific conventional reaffirmation of the restricted nature of the coastal States rights in the continental shelf would seem to be all that is required.¹²⁸

Similarly, as regards freedom of scientific investigation, the problem already exists of reassessing the efficiency of the present rules in the Geneva Convention on the Continental Shelf. If, on the available evidence, there is agreement that new rules are required or that different rules should apply in, say, the zone between the 200 and 2,500-meter isobaths, then, again, specific rules may be incorporated in the new regime.

¹²⁴ J. L. Mero, "Alternatives for Mineral Exploitation," L. M. Alexander (ed.), The Law of the Sea: The Future of the Sea's Resources (Kingston, R.I.: University of Rhode Island, 1968), p. 96.

¹²⁵ Brown Report, at p. 41, n. 139.

¹²⁶ For a detailed statement of reasons, see ibid., pp. 40-43.

¹²⁷ See above, pp. 41-42.

¹²⁸ See further, Brown, loc.cit., in n. 62 above, pp. 185-88.

(3) The Region beyond the Shelf

I would agree with the basic proposals of the Commission that a Registry and Fund should be established for the region beyond the shelf; that claims should be registered by States or associations of States; that a flat-rate registration fee should be paid; that claims should be limited as to area and duration and subject to inspection to prevent "sitting" claims. I would propose a different basis for raising and spending the Fund, however, and would wish to be more specific over the composition and voting rules of the Registry and the Fund.

(a) Raising the Fund

Those who wish to allocate a proportion of the proceeds of submarine exploitation to international community purposes have to recognize that such proposals will only in the foreseeable future be meaningful if they relate to resources lying near the coast. An International Fund will be poorly endowed for many years - many decades perhaps - if it relates only to the area beyond the continental shelf as I have suggested it should be redefined. The problem, therefore, is to provide machinery for a levy to be placed on production within the outer limit of the continental shelf. My suggestion is that production in the whole of the submarine area beyond a line drawn at a distance of twelve miles from the baseline of the territorial sea (or, if this is clearly not negotiable, that part of the submarine area lying seaward of a specified line) should be subject to a percentage profits levy, the minimum and maximum rates of which would be set in the founding treaty. Obviously, the rates might be set lower if the more landward areas were included in this regime.

Such a formula would fulfill two functions. First, the existence of a minimum rate would take account of the interests of the developing States by guaranteeing a reasonably stable minimum source of development funds.

The existence of upper and lower rates on the other hand would enable national treasuries and exploiting companies to estimate the extreme limits of the effects of the levy on their respective budgets.

Further safeguards for both the developing and developed States would be provided by the composition and voting rules of the Registry's Governing Body which would be responsible for determining the actual rate of levy in particular cases. The membership of the Governing Body should, it is suggested, provide adequate representation of the

interests of (i) coastal developing States, (ii) landlocked developed and developing States, including States which are virtually landlocked¹²⁹ and (iii) the main geographical areas. The technologically advanced States (perhaps even those of the Western world)¹³⁰ would, however, command a controlling majority. Such a system would (a) permit the amount of the levy beyond the specified minimum to be tailored to the needs of the market, recognizing, for example, that the rate of levy should reflect the degree of risk inherent in any particular enterprise,¹³¹ (b) allow the aid-consuming States to influence the levy rate by having it decided in a public international forum where the political sensitivities of the advanced States could be exploited, but (c) nevertheless leaving the advanced States with a controlling majority.¹³²

¹²⁹ See above, p. 39.

¹³⁰ The following model has been constructed on this basis. As was indicated above (pp. 33-35), the prospects of the Soviet bloc States cooperating in such organizations are not bright.

¹³¹ See above p. 17. Cf. the Commission's recommendation that, when deemed necessary to stimulate exploration, the Secretary of the Interior should be granted the flexibility to award rights to develop hard minerals on the outer continental shelf without requiring competitive bidding (Commission Report, p. 137).

¹³² The Maltese delegation in the standing Committee on the Sea-bed has recognized that "major powers could not be expected to consent to the establishment of an organization with important administrative functions if their voting powers were not greater than that of small countries." And again, "All States should have a voice [in the agency having 'global competence for the marine environment as a whole'], and those States which had special responsibilities under the Charter, along with perhaps one or two others, should enjoy a weight commensurate with their financial and technological capabilities" (UN Press Release GA/3947, March 20, 1969, pp. 6-7).

Either a simple-majority or a weighted-majority system could be designed in accordance with the above criteria. The following pattern might be based on a simple-majority system.¹³³

REGISTRY GOVERNING BODY

Technologically Advanced States

North America, Western Europe and others	22	
Eastern Europe	<u>4</u>	26

Developing States

Africa	5	
Asia	5	
Latin America	5	
Yugoslavia	1	
Landlocked States	<u>1</u>	17

<u>Total Membership</u>		<u>43</u>
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¹³³ This model is, of course, purely illustrative of the application of the above criteria and closer study would doubtless suggest modifications.

(b) Spending the Fund

It was noted above that if the Fund is to be expended through existing agencies such as the IOC, the UN Development Program and the Specialized Agencies, the role of the Fund may be limited to deciding on behalf of the international community how the available fund is to be allocated among these agencies.¹³⁴ Since it has been stressed that the Fund is intended "to compensate the common owners of the mineral resources of the deep seas,"¹³⁵ it would seem appropriate to adopt a framework similar to that of the UN Development Program in which the developing States enjoy a majority.¹³⁶ The two main organs would then be a Governing Body and an Inter-Agency Consultative Board. Suggestions for the membership pattern of such a Governing Body are given below. As regards the Inter-Agency Consultative Board,

134 See above pp. 19-20.

135 Commission Report, p. 149.

136 The Governing Council of UNDP is elected by ECOSOC and provides "equitable and balanced representation of the economically more developed countries, on the one hand, having due regard to their contribution to [UNDP], and of the developing countries, on the other hand, taking into account the need for suitable regional representation among the latter members and in accordance with [the following prescribed pattern]:

Developing Countries

Africa	7	
Asia	6	
Latin America	<u>6</u>	19

(with Yugoslavia accommodated)

Developed Countries

Western Europe and Other Countries	14	
Eastern Europe	<u>3</u>	17

Rotating Seat 1

Total Membership 37

See further Resolution 2029 (XX) of November 22, 1965, by which the General Assembly established UNDP and made the above provision for the election of its Governing Council (Yearbook of the United Nations, 1965, pp. 273-75).

it is envisaged that it should comprise the executive heads of the IOC, UNDP and the various Specialized Agencies which would be concerned with the expenditure of the Fund. Its broad function would be to advise the Governing Body on the allocation of the Fund's Resources.¹³⁷

FUND GOVERNING BODY¹³⁸

Technologically Advanced States

North America, Western Europe and Others	14	
Eastern Europe	<u>3</u>	17

Developing States

Africa	7	
Asia	6	
Latin America	<u>6</u>	19
(with agreed provision for Yugoslavia)		

Landlocked and Virtually Landlocked States 1

Total Membership 37

¹³⁷ Cf. the composition and functions of the Inter-Agency Consultative Board of UNDP as laid down in Para. 6 of Res. 2029 (XX) (loc. cit. in n. 136 above, at p. 274).

¹³⁸ Cf. too the composition of the 42-member standing Committee on the Sea-bed in which the developing countries are much more heavily represented. See UN Monthly Chronicle, January, 1969, p. 58.

CRITIQUE

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The Marine Science Commission would redefine the continental shelf, as that term is used in the Geneva Convention on the Continental Shelf, to extend to the 200-meter isobath, or 50 nautical miles from the baseline for measuring the territorial sea, whichever alternative would give the greater area to the coastal nation for the purposes of the Convention, and would establish a new regime for the exploitation of the mineral resources underlying the high seas beyond this boundary. The governing provisions for this latter area, to be administered by an International Registry Authority, and the fees and production payments to be paid (with the latter to be disbursed by an International Fund) would be identical throughout the entire area with a single exception. This exception would reserve to the coastal nations or their licensees the exclusive authority to explore and exploit the mineral resources in an intermediate zone extending from the redefined boundary of the continental shelf to the 2,500-meter isobath, or 100 nautical miles from the baseline for measuring the territorial sea, whichever alternative would give the greater area for the intermediate zone.

As a member of the drafting committee which prepared the National Petroleum Council Report,¹ which concludes that the natural resources jurisdiction of the coastal nations, as confirmed by the Geneva Convention, extends in general to the outer edge of the submerged prolongation of the continental land mass, I am gratified to note that Professor Brown finds greater legal support for this position than for that advanced by the Commission.

The Commission bases its objections to the National Petroleum Council position both on legal grounds and on an assertion without supporting argument that "National security and world peace are best served by the narrowest possible definition of the continental shelf for purposes of mineral resources development."² It seems to me, however, that both of these positions are undermined by the Commission's proposal for an intermediate zone, which it justifies on two grounds: first, the need of meeting to some extent the raised expectations of some of the coastal nations as to their national rights resulting from what the Commission describes as the uncertainties surrounding the present definition of the continental shelf; and, second, in the language of the Truman Proclamation

¹ Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, 1969).

² Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 145 [hereinafter referred to as Commission Report].

of 1945, the need for recognizing that "self-protection" may compel "the coastal nation to keep close watch over activities off its shores which are of the nature necessary for the utilization of" the mineral resources lying reasonably beyond the shelf.³

If the coastal nations have "raised expectations" of natural resources jurisdiction over their entire continental margins, and the considerable number of them that have granted concessions in waters more than 200 meters deep definitely suggests that they do, what conceivable reason would they have for relinquishing all of their present rights under the Geneva Convention in the submarine areas beyond the 200-meter/50 nautical mile boundary, while obtaining in return only the right to designate the business entity to explore and exploit under international license and the right to collect whatever amount, if any, is possible over and above the international fees and production payments? It is difficult to understand the suggestion of the Commission that a coastal nation could be regarded as making a "grab" by asserting its rights under established international law, when the World Court has characterized those rights⁴ as "ipso facto and ab initio, by virtue of its sovereignty over the land" of which the continental shelf is a natural prolongation, adding that "In short, there is here an inherent right."

The Commission and the National Petroleum Council are in agreement that "Petroleum and natural gas will be critical components of the energy needs of our country throughout the foreseeable future" and that "The continental margins of the United States offer an important opportunity to increase significantly our domestic reserves of these fossil fuels and to help offset the forecasted widening gap between domestic demand and production."⁵

How, then, can national security be served by a narrow shelf, if self-protection is going to require the coastal nations to keep a close watch over activities in the intermediate zones off their shores? Not only would we have no assurance of greater freedom of military action in other nations' intermediate zones than we now have under the Geneva Convention, which assures high seas status of the continental shelves subject only to the specific provisions of that Convention; we would, as noted by Professor Brown, be faced with international inspection teams fifty miles off our own coasts. Is it for this we would surrender control over potential petroleum reserves of major proportions which might well be essential to the future mobility of our military forces?

³ Ibid., p. 151.

⁴ North Sea Continental Shelf Cases, ICJ Reports (1969), para. 19.

⁵ Marine Resources and Legal-Political Arrangements for Their Development (Washington: U.S. Government Printing Office, 1969), p. VII-187 [hereinafter referred to as Panel Report].

The view to which I lean is that the military uses of the seabed are not going to be determined by the terms of any treaty governing the exploitation of natural resources, but are going to depend, instead, on the eventual outcome of the discussions that got under way a few months ago in the Eighteen Nation Disarmament Conference in Geneva. The fact that these discussions are covering the entire expanse of the high seas beyond territorial waters, whether on or off the continental shelf, is proof enough of that; and I would even venture a guess that not one word has been uttered at Geneva regarding the possible effect of the provisions of the Continental Shelf Convention on freedom of military action on the ocean floor. In any event, as pointed out by Professor Brown, if there is any national security problem to be resolved under the present wording of the Convention, it would be just as easy to protect military interests by a clarification of that wording in the present Convention as to do it in a new convention establishing, inter alia, an intermediate zone.

Accordingly, it is my feeling that we should reject the proposal for an intermediate zone and stand instead on the interpretation of the Geneva Convention recommended by the National Petroleum Council and supported by the rationale of the World Court in the North Sea Continental Shelf Cases.

It is interesting to note that Professor Brown would himself favor a broad continental shelf extending to the 2,500-meter isobath or 200 miles from shore, whichever is the farther. I find myself in full accord with his proposal for a 200-mile minimum width; as, without such a minimum, I do not believe that it would be realistic to anticipate the possibility of any significant number of the Latin American countries joining in an international consensus. As for the 2,500-meter isobath, the differences in area provided by this test and by the test of the outer edge of the submerged continent proposed by the National Petroleum Council would be relatively insignificant. As a matter of fact, the drafting committee of the National Petroleum Council considered the possibility of recommending the 2,500-meter isobath itself, but rejected that test on the ground that it bore no clear relationship to the outer edge of the continental margin, which was a more justifiable test under the Geneva Convention, and particularly under the rationale of the World Court judgment in the North Sea Continental Shelf Cases, in addition to which there would be technical difficulties in the application of any isobath as a boundary line.

It was fifteen years between the first consideration by the International Law Commission of the United Nations in 1949 of the desirability of a Convention on the Continental Shelf and its entry into force in 1964 and I number myself among those who believe that only the most urgent reasons should impel us to take any action other than to interpret and live with the Convention as it now stands.

As for Professor Brown's suggestion that a portion of the proceeds of exploitation of the continental shelf beyond the 12-mile limit, or some other agreed distance, should be allocated to an International Fund, I shall content

myself with two comments. In the first place, I suspect that most national legislatures would prefer to make their own determinations of international aid on a year-to-year basis. In the second place, why should a coastal nation surrender vested rights in ocean floor resources any more than in land resources, particularly since the relationship of such resources to GNP and per capita income is likely to vary radically from country to country?

Turning to the proposals of the Commission for the area beyond the intermediate zone, I find myself in accord with the Commission's statement of the current state of the law, namely, that any nation is free to explore and exploit and to keep what it finds, but that it has no assurance of protection from "poachers."⁶ While at least some hard minerals operators are disposed to regard nodules in more or less the same light as fish and to dismiss the need of exclusivity as a condition to nodule harvesting operations in the deep-sea, I am also in agreement with the views of the Commission as far as the oil industry is concerned as to the need for exclusive rights over an adequate area and for a sufficient number of years, and on terms and conditions such as to give a reasonable promise of adequate profits throughout the life of the agreement, before an oil company could be expected to commit itself to the expenditure of the vast sums that would be involved in an offshore search for oil or gas in the deep-sea beyond national jurisdiction.

I also agree that it is appropriate to start the prolonged discussions that will be necessary before international agreement can be reached. At the same time, it is clear that there is no real urgency about the matter if the coastal nations end up by standing on their rights under the present wording of the Geneva Convention, as I myself am inclined to think that the overwhelming majority of them will do. This fact, when coupled with the seriously limited knowledge of the deep-sea environment now at hand and the many unanswered questions about the Commission's proposal for an International Registry Authority and an International Fund which Professor Brown has pointed out so clearly, emphasizes the desirability of proceeding with caution. While Professor Brown has suggested answers to some of the questions which he raised about the Commission proposals and has proposed a composition for the governing body of the International Registry Authority which he feels would give reasonable assurance to the developed nations, there is, of course, no assurance at this time of what kind of a governing body would have to be accepted in order to get a workable consensus among the widely diverse interests found within the membership of the United Nations; and what we would find acceptable in the way of powers of the governing body might vary radically with minor changes in its composition.

The United States can commit itself only once to the regime for the exploitation of the mineral resources of the deep sea and before we take that irrevocable step we should be sure of the direction in which we are headed. I

⁶ Commission Report, p. 146.

would favor continuing study of this problem alongside the efforts through the proposed International Decade of Ocean Exploration to obtain a better knowledge of the deep-sea environment which we are proposing to regulate, but I share the concern of the National Petroleum Council over the dangers of a premature commitment to an international regime.

I do not foresee the danger that the Commission anticipates of nations taking things into their own hands if there is failure to reach an early international agreement. For one thing, the economic and technical deterrents to deep-sea activity militate against the development for many years to come of competitive activity beyond national jurisdiction of an intensity that could not be handled under existing principles of international law. For another thing, there has been such an international consensus in the recent United Nations debates against assertions of sovereignty or sovereign rights in the area beyond national jurisdiction that I find it hard to visualize the possibility of any international tribunal's recognizing the validity of such an assertion with the one probable exception of semi-enclosed seas, which would seem to constitute a special case.

In closing, I would like to comment briefly on the Commission's discussion of the statement of principles which the United States proposed to the United Nations Ad-Hoc Committee a year ago. The Commission states that one of these principles called for the "redefinition" of the outer limits of the continental shelf and "quite properly seeks to reserve the areas beyond the 200-meter isobath for future international decision."⁷ The actual fact, as the record shows, was that the statement called not for a "redefinition" of the outer limits of national jurisdiction but for the "establishment," as soon as practicable, of an internationally agreed boundary for the deep-ocean floor, "taking into account the Geneva Convention of 1958 on the Continental Shelf."⁸ Spokesman for the State Department advised Congress at the time that the Administration had not yet decided where the boundary should be fixed, so that it would not appear that the statement of principles is reasonably capable of the interpretation placed upon it by the Commission.

For the United States to modify the present statement of principles, as the Commission recommends, by the addition of a proposal that, pending international agreement on a new boundary, no nation should claim or exercise sovereignty or sovereign rights over any part of the seabed or subsoil beyond the 200-meter isobath,⁹ would, in my judgment, compromise the rights of the United States under the Geneva Convention to a critical degree and would also have a serious adverse effect on further developments in oceanography, even if Congress

⁷ Commission Report, p. 155.

⁸ UN Doc. No. A/7230, p. 55.

⁹ Commission Report, p. 156.

were to take the to-me-doubtful step proposed by the Commission of indemnifying American industry against the consequences of such a declaration.

Three things should be remembered by everyone who works on this problem. First, there was never any thought in the minds of the drafters of the Geneva Convention that national jurisdiction should be limited to the 200-meter isobath. Even when the draft of the International Law Commission at an intermediate stage contained that limitation, it was explained on the ground that there was no immediacy about exploitation beyond 200 meters depth, that in the meantime there were practical advantages to a narrow limitation and that, when advances in technology made exploitation beyond 200 meters depth feasible, the matter could be reexamined.¹⁰

In the second place, the final language incorporated in the Geneva Convention was in no sense a power play on the part of the industrial nations at the expense of the developing nations. On the contrary, it stemmed from a demand of the Latin American States, first voiced at the Ciudad Trujillo Conference of the Organization of American States, March, 1956, and carried over to the Eighth Session of the International Law Commission held only a few weeks later and from there to the Geneva Conference on the Law of the Sea in the spring of 1958. One of the final acts at Geneva was the rejection of a proposal to cut back coastal nation jurisdiction under the Convention to the 200-meter isobath and the developing nations represented at Geneva were virtually unanimous in rejecting that proposal and supporting the final language of Article 1 of the Convention.¹¹

Third, and finally, there is no indication whatever of any sentiment among the other coastal nations of the world to cut back their national resources jurisdiction to the 200-meter isobath and that should be enough, to my way of thinking, to resolve any lingering doubts that anyone might otherwise have about the proper direction of United States national policy.

¹⁰ ILC Yearbook, 1953, Vol. II, p. 46.

¹¹ United Nations Conference on the Law of the Sea, Vol. II, Plenary Meetings (A/CONF.13/38) at p. 13.

CRITIQUE

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The preceding two speakers were so provocative I find it difficult to confine myself to the outline of the remarks I had previously sketched in for this panel. Many of us are familiar with the fine work of the Committee which operated under Professor Brown's chairmanship in the British Branch of the International Law Association in 1968. This Committee, among other things, suggested that one of the best criteria in a redefined shelf would be the addition of a fixed geographic distance from the coast. His remarks during the session this morning, however, have included the suggestion that the distance be 200 miles and the isobath 2,500 meters for the proposed future zone and I disagree with this rather thoroughly. I also find that his suggestion about the intermediate zone misconceives the interrelation and integrality of the Commission Report.

I would also like briefly at this time to register some disagreement with Mr. Finlay who, while advancing the position of the National Petroleum Council, omitted to mention that the NPC is interested not only in security of tenure wherever its leases may be, but also in two other matters of significant economic importance to the American oil industry but perhaps of much less importance to the international community; I refer both to the depletion allowance and import quota problems. I expect that during our panel discussion we will hear some questions and have further discussion on these points. It is worth noting, however, that the questions which Mr. Finlay asked, as well as the proposal of Professor Brown, suggest that the shelf or its long-term substitute, whatever it is called, would be a rather wide area. This is recommended both for reasons of industry and of government security. However, on each of these questions - both the economic and the military security aspects - it should be evident that all States, indeed most or many entrepreneurs, find themselves sitting on a two-edged sword. On the one hand, the question is how far out from a given coastal nation may the zone of exclusive jurisdiction extend. On the other hand, how far in may others come? Or, translating this question a bit, how far in towards the shores of other coastal nations may our enterprise go? On this question, of course, a wide continental shelf would place larger areas of the ocean floor under the exclusive jurisdiction for economic purposes of various coastal nations. It would mean that the leases obtained in deeper waters off foreign nations would then be subject to the exclusive jurisdiction of those coastal nations, and I am quite certain that the petroleum industry has calculated the net advantages and disadvantages of a lease in such an area being subject to the jurisdiction of a foreign State.

These few preliminary remarks suggest, as do the preponderance of the comments of the preceding speakers, that much of what the Commission had to say

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about the deep-seabed pertains not to the jurisdiction, the rights, the activities which are occurring on the seabed as much as to the shape of our world community - what are the economic, what are the security implications, for States of the world? We are discussing really a number of questions and I would like to outline a few remarks with respect to the Commission proposal.

The first area that the Commission addressed itself to was whether a new framework, a new law regime, encompassing not only provisions for rights on and in the seabed but also a comprehensive international organization and economic distribution scheme, is in fact necessary. A second major area was the advancing of a few specific recommendations, outlined in general terms, for dealing with regime problems. The third major area of comment of the Commission was United States government relations with the business entities on whose behalf it would register claims. The fourth area concerned interim actions pending the establishment of an international regime.

Turning to the first of these areas; are new laws and new frameworks necessary? The Commission answered that question in the affirmative. I think there are a few observations which we should entertain today in response to that basic conclusion of the Commission. This conclusion has, in effect, led to the Commission's proposing both a wide seabed in conjunction with a relatively narrow continental shelf, and led to the proposal for the establishment of a comprehensive regime. The conclusion that more law is necessary for the deep-seabed is a difficult one to argue against. I think we would all find that some new law, some new regime, is necessary. Whether this means that we go to the next step of adopting the proposal of the Commission is an entirely different question, but the Commission noted that there is the danger of international conflict under the present situation of uncertain legal rights in the deep-ocean floor, adopting Professor Henkin's conclusions from a paper he had prepared for the National Council of Marine Resources and Engineering Development a couple of years back. The Commission notes that no reasonable advice can be given today to an entrepreneur that he would have exclusive rights for any time to any area of the deep-ocean floor beyond national jurisdiction. While this is in its generality a true statement it, in conjunction with the rather detailed proposals of the Commission, obscures a third alternative which I would like to advance for the sake of discussion.

The existing law for the deep-ocean floor, so the Commission says, is comprised of the general principles of international law. The Commission recognizes - and other commentators have emphasized the fact - that Article 2 of the High Seas Convention provides there should be reasonable regard to the interests of other States in their exercise of the freedom of the high seas, and the Commission draws from this the conclusion that more law is necessary. Other commentators have drawn the conclusion that there may be an evolution of customary law. I think between the alternatives, broadly stated, of no further action, or of the evolution of customary law by unilateral declaration or by bilateral or multilateral arrangements, that there is indeed a spectrum rather than a

single package as suggested by the Commission which should be brought up for deliberate consideration. Indeed, if one considers that it will be a number of years, perhaps five or six at least, before a comprehensive package would be concluded as a result of discussions in the Sea-bed Committee, one must consider that certain steps must be taken in the interim, perhaps steps other than those which the Commission has suggested.

The National Petroleum Council in its Report suggested that there be no further action or steps by the United States for resource exploitation of the deep-ocean floor and I am pleased to note that Mr. Finlay today withdrew that part of the NPC position which would declare its stand with respect to the hard mineral industry. Indeed, it is likely that if exploration and exploitation of these resources becomes feasible on a significant scale policies parallel to those of other mineral resource development will be demanded in order to secure action by the entrepreneur; this will require some area and some time for an exclusive exploitation of the discovered resource.

Turning to the specific recommendations, Professor Brown had a number of comments and criticisms of the international regime, with which I agree. His suggestion, however, of the nature of the intermediate zone is one which does not expose the full intention of the Commission and this, I think, is because two of the underlying assumptions of the Commission in this area were not stated but merely alluded to in the Report. One is the assumption that there is a tendency to expanding jurisdiction, that jurisdiction granted for one purpose may, or necessarily will, expand to claims of rights for other purposes. Now this assumption is one with which there is a bit of practice and experience but I believe it is over-considered by the Commission. Indeed, the answer is not necessarily to prescribe an intermediate zone in which the international rules and regime would apply but rather to take those problems with which our nation, and indeed any nation, must be concerned and separate these out for other specific agreements. This is being done, in part, as Mr. Finlay stated, by the consideration of military problems at the Eighteen Nation Disarmament Committee and it can be done, I think, in other areas.

The other assumption which the Commission operated on to provide a wide seabed and a narrow shelf is, in my opinion, a more justifiable one. That is, within this interim period in order to obtain an agreement which would provide for a fixed limit on the continental shelf or its future substitute - an agreement which would also provide for rights in the deep-ocean floor - it is necessary to stake out certain parameters for the discussion. If, indeed, the United States and other advanced maritime nations were today to move to the claim of a wide shelf (which incidentally I do not think we are entitled to under the Convention until exploitability reaches those areas) then there would be no room for bargaining. There would be relatively little pressure in the Sea-bed Committee for a comprehensive, overall arrangement.

Consideration of the Marine Science Commission Recommendations

Monday, June 23, 1969

O'Connor

It is entirely appropriate and desirable, I think, at this stage to provide some area of moratorium, that is, a termination of further extensions of continental shelf claims of States, perhaps at the 200-meter isobath as the Commission suggests, although other limits may indeed be chosen since exploitability now goes beyond the 200-meter isobath, for a limited period, under stated conditions. There should also be an interim statement of legal principles for the activities which will take place beyond that moratorium limit in order to continue the discussion for a reasonable period.

These discussions can involve other aspects of international organization - economics and the like. Indeed there is a most plausible basis for international concern and, therefore, a portion of the revenues - royalty if you will - from those resources taken beyond the continental shelf could be allocated to the developing countries, to an International Fund such as the Commission suggests, or to some other body. But this, as I see it, should be during an interim period and the United States and other major maritime countries should keep open these two options that I have referred to: on the one hand, the option of going to a wide shelf, much as the National Petroleum Council suggests - using, in other words, the 1958 Convention to its fullest; on the other hand, should agreement fail to be achieved for rights to the resources of the deep-ocean floor, the option of developing customary international law likewise should be kept open. These are, of course, matters up for current discussion - discussion in the August meeting of the Sea-bed Committee - and I believe that our panel will have some further discussion on these possibilities in the question period.

CRITIQUE

Louis B. Sohn
Professor of Law
Harvard University
Cambridge, Massachusetts

Professor Brown's report is divided into three parts. The first part contains Professor Brown's criticisms of the Report of the Commission, most of which are well-taken. I believe, however, that he has misunderstood some of the Commission's proposals on the intermediate zone which would be in effect until the United States should agree to different provisions. While the future of that zone would be indeterminate, its termination would depend on the consent of all the States concerned.

The second part deals with the United States national interest and the interests of other States. While, again, I agree with most of Professor Brown's comments, I feel there is no clear distinction between short-range and long-range interests. The Commission's proposals are clearly justified from the long-range point of view even if they might impinge on some short-range interests which appear out of proportion because of their immediacy.

The third part of the Report is more controversial as it contains Professor Brown's own proposals. I do not believe his proposals for extending the limit of the continental shelf are preferable to the Commission's proposal concerning the intermediate zone. In international law we are used to so-called contiguous zones for various purposes, and it would be quite appropriate to have such a contiguous zone on the bottom of the sea as well. The rule is quite clear that a zone granted for a certain purpose does not confer jurisdiction for other purposes. This would be crucial with respect to the extension of jurisdiction for a particular purpose to the bottom of the continental slope.

On the other hand, I find rather attractive Professor Brown's proposal with respect to the division of revenues from this additional area. One can easily imagine the possibility of increasing the share of the international community by, say, five per cent for each 100 meters down or for each ten miles further from the baseline. In this way, after some 2,000 meters or 200 miles, the whole revenue would accrue to the international community.

Professor Brown's formulas for the membership of the two governing bodies are also ingenious, balancing the majority of the technologically-developed States in the Registry with a majority of the developing States in the Fund. One could argue perhaps about some of his figures. In particular, there is an over-representation of the Western States in the first group, and there is in both groups an under-representation of the landlocked States.

Professor Brown approves the main feature of the Commission's Report, namely, an International Registry Authority which would allocate tracts of

undersea territory on the "first come, first registered" basis. In some circumstances this may be a dangerous way of determining priorities. I remember the Brown case, which was the subject of an arbitration between the United States and the United Kingdom. A Mr. Brown, an American citizen, took advantage of some unclear provisions in the South African mining law and, having mobilized a large force of natives, was able to stake claims on a first-come basis to a tremendous area. The local government, prior to the conquest of South Africa by the United Kingdom, had to enact retroactive laws and dismiss its Supreme Court in order to get rid of these supposedly unjust claims registered by Mr. Brown. While the case was not decided on the merits, as the Court held the United Kingdom not responsible for the alleged torts of its predecessors, the case does show the dangers of this approach to dividing valuable lands.

Suppose a convention based on the Commission's and Professor Brown's proposals should come into effect in 1975 and the International Registry Authority opens its office on the first of July of that year. One can easily imagine that on the very day Liechtenstein, Panama, and Liberia might arrive at the Registry with 100 applications each for all the likely places, each application being properly backed by a Japanese conglomerate with all the necessary financial and technical competence. Should the Registry grant all those 300 applications without waiting for some applications from other countries? This idea is not as far-fetched as one could think. We all know that United States administrative machinery is rather ponderous, and we might get lost in a fight whether we should develop the bed of the sea through a "chosen instrument," or through a small group of carefully-selected companies, or again on the "first come, first registered" basis. While we argue other countries which are used to the idea of the flags of convenience and which can proceed expeditiously might easily get there first. As the criterion is not the competence of the country, but the competence of the corporation which will do the actual exploiting it might be very difficult to prevent small countries backed by astute companies to corner the market. Clearly, from many points of view this would be a very undesirable development. We need to think through more thoroughly how to cope with this problem.

DISCUSSION

Christy: In the discussion that has occurred so far, two points emerge that might be helpful as a guide to further discussion. One is the different time horizons adopted by the speakers. Some may be thinking in terms of the pioneer developer of the high seas, others in terms of the short-run situation in which conflict over competing claims may or may not be very significant, and still others over a much longer-run situation in which we can envisage the uses of the seabed as complicated and overlapping as the uses on land. It is important to clarify these different time horizons because they affect consideration of the need for new institutions and regimes.

The second point that struck me was that many of us seem to be second-guessing the interests of other States with respect to the rules and with respect to limits. It is difficult for us in the U.S. to appreciate the positions of other countries, because we sit in an area surrounded by large oceans and with large open vistas. Our perspective on limits is quite different than those of States facing small seas. I hope that during the discussion many of the representatives of other States will speak up and will help us provide more information and less speculation.

Brown: I would like to comment on the point made by Professor Sohn - suggesting that I had misunderstood the Commission's intention as regards the duration and termination of the intermediate zone regime. I appreciate that this regime would continue until States, including the United States, agreed on its termination. It seemed to me, however, that, precisely for this reason, it would be either misleading or naive to describe such a regime as being designed "to meet the needs of the immediate future" or to think that, once recognized, an intermediate zone would be any more renegotiable than a permanently recognized continental shelf.

The only other point I wish to make is in clarification of my position as far as Mr. Finlay is concerned. I think he rather misread my interpretation of Article 1 of the Geneva Convention. I hope that I did not say that I regarded the National Petroleum Council's interpretation of the Convention as being correct. Until the United States can exploit the resources of the continental margin to the bottom of the rise, it cannot in my view, as a party to the Geneva Convention, claim sovereign rights over the entire continental margin. Assuming, however, that the United States acquires such capacity, the NPC formula seems a reasonable concretization of the intention of the parties as to the maximum extension of the shelf - though not one I would personally favor. It was in this context that I criticized the Commission's dismissal of the NPC interpretation as being rather summary and suggested that, judged by the same standards, the Commission's proposals were a good deal more open to criticism.

Finlay: With respect to Professor Sohn's comments about a colonial-type grab, I would now like to mention three things. The first is that there never was in the minds of the drafters of the Geneva Convention the thought that the 200-

meter isobath should be the limit for all time. Even back at the time of the 1953 draft of the International Law Commission, when the 200-meter isobath was promulgated as the limit, they stated that it was done because the current state of technology had made that limit adequate for some time to come but they felt the limit should be reexamined in the future if technical developments required it. In the second place, the broad interpretation of national rights as going beyond the geophysical or geomorphological continental shelf was not the brain child of the United States or of any industrial nation. This concept was put forward by the developing States of Latin America and was accepted by the United States at the Ciudad Trujillo Conference in 1956 and in turn by the International Law Commission, and finally by the drafters of the Geneva Convention. One of the last steps at Geneva in 1958 was a vote on whether to cut jurisdiction back to the 200-meter isobath. That was rejected by a large majority and virtually every developing nation represented at Geneva voted in favor of the wide jurisdiction and against setting it back to 200 meters. In the third place, and this bears on the point that we shouldn't judge what other nations are thinking, I fail to find any indication whatsoever of any sentiment among the world community to cut back on the kind of broad rights under the Geneva Convention that we feel are vested by that Convention.

Sohn: Throughout the history of the Convention - my reading of it is slightly different than Mr. Finlay's - I always thought there was really agreement on 200 meters, because the Latin Americans pointed out that to use the continental shelf as the criterion would be inequitable since on the western coast of Latin America the shelf is quite narrow and they felt they ought to get something more because of this limited continental shelf. Therefore, 200 meters was accepted as the proper compromise. This is quite different, I think, from saying that the countries which already have a large continental shelf, especially on the eastern side of the Western Hemisphere - such as, the United States, Argentina, and others, in addition to the tremendous area they already have should get some more. Whatever limit you accept, the countries on the western side won't get very much. In addition, and from the equitable point of view, it seems to me that this really is not going to improve the situation but would really make it, in a way, worse. Those that have already received a lot under the Geneva Convention are going to receive even more, and those that have received very little under the Geneva Convention will not receive very much more than they have received already.

O'Connor: Professor Brown's proposal for a wide continental shelf, perhaps under some other name, and the demand by the National Petroleum Council that the United States interpret, and with expanding technology employ the full potential of the existing Continental Shelf Convention, differ fundamentally from the proposal of the Marine Science Commission. Under the wide shelf proposals, the coastal State would have exclusive jurisdiction over mineral resources of the seabed. The Commission's assumption - which I question as to its importance although certain of the elements thereof are extremely important - is that jurisdiction for this purpose could be interpreted or expanded by coastal nations to include jurisdiction to affect other activities than mineral resource exploitation. One possible

answer to this is the proposal suggested by Professor Burke last week in Miami, that the matters of fisheries, research, and military uses be separated out from the discussions of mineral resources of the seabed. It would also perhaps be a useful approach to consider very specific delimitation of the rights of the coastal State. If the treaty were specific enough perhaps this problem of migrating or expanding jurisdiction could be avoided.

Professor Brown also suggests that the first step, the first order of priority, is agreement on, or development of, a fixed boundary for the continental shelf. My reading of what has happened recently in the Sea-bed Committee of the United Nations leads me to conclude that further discussion on boundaries, limits of the shelf and, conversely, of the deep-seabed are likely to be frustrated, just as the Legal Subcommittee of the Sea-bed Committee was unable to issue a report after its March meeting. I would suppose that any further discussions in the Sea-bed Committee on boundaries, because of the positions of the Latin American States (certain of them) and other States, is likely to be stalemated and that we had better proceed as a first order of business to clarifying what legal rules we can for protection of entrepreneurial rights under an appropriate international regime for the deep-ocean floor.

Schaefer: One cannot really consider the regime of the sea floor without also considering regimes for other purposes. I think this is best illustrated by the 200-mile claims. The people in Peru and Chile are not tremendously interested in the extent of national jurisdiction over the sea floor. They are much more interested in extended jurisdiction for other purposes. I think you ought to take this into account in considering an international regime for the sea floor. There is always a tendency for a regime for one purpose to impinge on a regime for another purpose, and I think we need some discussion of how, for example, a 200-mile limit for an international regime for the seabed would tend to affect the international regime for such things as fisheries, freedom of navigation, and even overflight. In the case of Peru, for example, the assertion of 200 miles is not for the seabed, nor for jurisdiction over resources alone, but essentially for the extension of the territorial sea. My question is, how does a regime for the seabed affect the other regimes, and can you consider it without considering all of these regimes simultaneously?

Finlay: I think it is a rather difficult question to answer. There have been people who contend that fish are just as much a resource of the world community as are the hard minerals and living resources of the deep-seabed and that you should try to have a comparable regime for all of them. From the standpoint of the oil industry, I would assume that the only reconciliation that would be necessary is the type of reconciliation that is already in vogue on the continental shelf itself where the exploitation of the mineral resources - be they hard minerals or petroleum and natural gas - has to be harmonized with competing uses. We have got that problem in a very active way at Santa Barbara right now. It is a problem of harmonization and that problem exists whether you are talking of the deep-sea beyond national jurisdiction or the continental shelf within national jurisdiction, and the National Petroleum Council Report ends with a chapter which recognizes the necessity of harmonizing the competing uses of the sea.

STATEMENT

Hon. Claiborne Pell
U.S. Senator - Rhode Island

At the outset, I once again would like to congratulate all of those responsible for the holding of these annual Law of the Sea Conferences. Your continuing efforts to focus attention on the full range of ocean affairs and activities are as laudatory as they are necessary; of particular importance, I think, is the fact that these efforts will encourage others to concentrate on the ocean space issue, and in this regard, I would like to mention the interest being taken in this subject by the newly-founded Woodrow Wilson International Center for Scholars. With the expertise available to it, I am sure that the Center will make a lasting contribution, particularly with respect to the political aspects of this issue.

In view of this morning's discussion and at the risk of covering some of the same points made during that session, I would like to give you my views and observations on the Marine Science Commission's recommendations relating to the continental shelf and a new legal and political regime for the international marine environment. Having devoted much of my time and effort over the last several years to grappling with these interrelated problem areas, I firmly believe that the recommendations of the Marine Science Commission strike the proper sense of urgency with respect to U.S. policy requirements.

In its recommendations covering these areas, the Commission basically said that this country's national interest in the ocean space environment demands the following course of action: (1) that coastal State jurisdiction over the natural resources of the continental shelf be limited to a depth of 200 meters or a distance of 50 nautical miles, and (2) that beyond the regime of the continental shelf, a multilateral legal and political framework be established encompassing the following provisions: an International Registry Authority, with limited policing functions; an International Fund; an agreement as to the powers and duties of registering nations; an arrangement for the settlement of disputes; and a provision for an intermediate zone, over which the adjacent coastal State would have a veto power as to who may exploit the resources of the zone area.

For the most, I wholeheartedly endorse the thrust of these recommendations, and in fact, I would seriously question only the need for the proposed intermediate zone, which, while it would afford the United States a veto power over who may exploit the area immediately adjacent to our continental shelf, it also would provide all other nations with the same veto power, which, of course, could be used to the detriment of the United States. Here, I think, it is important to point out that the United States has but roughly ten per cent of the total continental shelf area of the world. As the leading nation in the field of applied marine technology, I cannot help but feel that the intermediate zone arrangement might unduly restrict the advantage this country holds in the exploitation of marine resources.

Nevertheless, I do feel that, overall, the Commission's recommendations on international marine policy adequately encompass the legitimate national interests of this country in terms of international community objectives, with the overriding objective, naturally, being the elimination of potential areas of conflict. In this regard, I think anyone familiar with the ocean space issue would have to agree that potential for conflict does exist, in fact, due to the inadequacies of the present legal regime.

Accordingly, we must realize that the 1958 Geneva Conventions on the Law of the Sea did little more than codify customary legal principles regarding the traditional uses of the sea, namely, transportation, communication, and fishing. With respect to coastal State jurisdiction over continental shelf resources, the Geneva Convention, with its open-ended definition of the shelf, has created more problems than it has solved.

The point which I want to make is that the international legal principles covering these issues were not formulated with a view to solving the kinds of problems presented by a state of technology which now permits the effective exploitation, if not occupation, of the seabed and ocean floor. Indeed, our whole body of international law of the sea, dating from the seventeenth century, originated from the premise that man could not occupy the ocean deeps. But, today, our advancing marine technology is creating an entirely new set of circumstances, which, in turn, require a new set of answers, a new set of rules and regulations, and unless the international community faces this new reality, and faces it in terms of the international political setting, the future of ocean space may offer little more than protracted anarchy and chaos.

I have perhaps belabored this point, but I think many of you would agree that this is the most crucial issue now confronting the whole marine resources question. It is an issue which was of central importance during the recent meeting of the Marine Technology Society in Miami. For example, in commenting on that meeting the New York Times noted that several professional papers presented by Department of Interior officials forecast a gloomy future for marine resources development in view of the many unresolved legal issues now bearing on the whole question of exploitation of the continental shelf and deep-ocean floor.

The same point is now being raised directly by industry itself; in a recent issue of Newsweek,¹ in an advertisement, the Olin Corporation, after noting the potential wealth of the seabed and ocean floor, set forth the following questions and answers in a two-page spread:

How does one go about staking a claim in the middle
of the Pacific Ocean?

¹ Newsweek, June 16, 1969, p. 133.

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Pell

If two little countries disagree on a copper field under the Arctic Ocean, do the big countries go to war?

Wouldn't the "finders keepers" principle of ownership give all the ocean to a few nations, to the consternation of the rest?

In trying to answer these questions, the Olin Corporation advertisement goes on to say:

In no other field are the legal questions so knotty. And the answers so necessary.

Because if we don't set up some international agreements soon, we'll be stuck with "to the victors belong the spoils."

Not only is agreement crucial for governments, but for private corporations as well.

Olin then concludes its remarks by stating:

With all this at stake, we have a more than passing interest in seeing that law and order prevail under the high seas.

It could determine what happens on top.

With many of these same questions and issues in mind, I have taken the rather unprecedented course of action of introducing a draft treaty on ocean space in the form of a Senate resolution. In taking this action, I was guided by the principle that the marine environment beyond the present limits of national jurisdiction should be recognized as the legacy of all mankind. This principle, as you all know, was first enunciated three years ago by President Johnson when he declared, "We must ensure that the deep seas and the ocean bottoms are, and remain, the legacy of all human beings."

In accordance with this principle and U.S. government policy, my treaty seeks to guarantee that ocean space will be explored and exploited in the interests of all mankind, that it will be free from national appropriation, that it will be devoid of weapons of mass destruction, that it will be immune from atomic waste and other pollutants, and that it will be developed in accordance with and respect for existing international law and the Charter of the United Nations. To give added meaning to these principles, I suggested in my draft treaty the establishment of an international authority to license all exploration and exploitation of the ocean space environment; in addition, I suggested the creation of an international sea guard to ensure compliance with these

principles and to work in concert with the licensing authority. In proposing this treaty I have held steadfastly to the conviction that unless man is forever to be a slave to his own technology, his political and diplomatic efforts must be commensurate with, if not superior to, his technological achievements.

From the reports out of the Eighteen Nation Disarmament Committee, it seems clear to me that a meaningful seabed arms control agreement is now very much in the offing. This is an area in which our diplomatic endeavors are ahead of the "state of the art," and, as I say, the prospects appear most encouraging. I believe the Nixon Administration is to be congratulated on its efforts in Geneva and I would urge the new Administration to take the same initiative with regard to the establishment of a viable international legal and political framework for the development of ocean space.

Here I would like to repeat the warning contained in the Marine Science Commission's Report, "unless a new international framework is devised which removes the legal uncertainty from mineral resources exploration and exploitation in every area of the seabed and subsoil, some venturesome governments and private entrepreneur will act to create fait accomplis that will be difficult to undo, even though they adversely affect the interests of the United States and the international community."²

While Vice President Agnew's remarks to the Marine Technology Society on June 16, 1969, were criticized by many, my own thoughts are that the Nixon Administration must now prove by word and deed the intent of the United States to exert the kind of meaningful leadership in the field of oceanology to which the Vice President referred. In this regard, I might point out that the Subcommittee on Ocean Space of the Foreign Relations Committee has tentatively scheduled hearings for the end of July, with a view to receiving comments on the draft ocean space treaty which I have proposed, as well as with a view to ascertaining Administration policy on this entire issue.

In considering the legal and political ramifications of the ocean space issue, I think the Nixon Administration would do well to concentrate on the following thoughts expressed by Professor Ferkiss in his recent book, Technological Man: "Those who love the majesty of the open ocean may regret its becoming a farm or workshop for humanity; how much more should they fear its becoming a perpetual battlefield?"³ I believe that Professor Ferkiss has placed this issue in its proper perspective, and I would remind the Administration that the longer it delays in moving ahead on this whole question the greater the possibility that meaningful options will be foreclosed to us. As the leader in the field of undersea technology, the United States cannot afford to delay any longer.

² Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 146.

³ Victor C. Ferkiss, Technological Man: The Myth and Reality (New York: Braziller, 1969).

REBUTTAL TO STATEMENT OF SENATOR PELL*

Hollis D. Hedberg
Professor of Geology
Princeton University

I would like to correct what appears to be a serious misapprehension on the part of Senator Pell concerning the recommendations of the National Petroleum Council. In his speech, Senator Pell intimated that the NPC was now trying to redefine the geological continental shelf so as to include in it not only the shelf but also the continental slope and a part of the continental rise, and that he deplored repeated redefinitions of geological terms merely to support changing points of view.

As a geologist, let me assure everyone that for NPC the geological continental shelf is the geological continental shelf and will always remain so. However, the framers of the Geneva Convention, not wishing to see the extent of coastal State jurisdiction confined to the limitations of the geological continental shelf, coined a new concept, a purely legal concept, that of the legal continental shelf, encompassing not only the geological continental shelf but extending out beyond it. The history of their discussions, as interpreted in the NPC Report, indicates that their legal continental shelf was meant to extend out to the edge of the submerged continent, and would thus include the geological continental shelf, the continental slope, and locally the landward portion of the continental rise. NPC attempted no redefinition of the true continental shelf, only an interpretation of the concept of the "legal continental shelf."

* EDITOR'S NOTE: It was agreed to print Professor Hedberg's rebuttal since there was no discussion period following Senator Pell's luncheon address on Monday afternoon.

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Panel: Regimes of the Deep-Seabed

Griffin

Chairman - William L. Griffin, Attorney, Washington, D.C.

Members of the Panel - Victor Basiuk, David S. Browning, John E. Flipse, Robert L. Friedheim, Thomas F. Gaskell, George Miron, W. Langeraar

INTRODUCTION

Basically, what we are talking about here today and tomorrow is really political oceanography with a natural resource emphasis, and world ocean space is our oyster. Political oceanography, I think, is fairly new eo nomine. I would like to read to you a little political oceanography that was written many years ago by a famous New England poet-philosopher because he captured in a few short sentences exactly what we have already been talking about this morning and what we will be talking about this afternoon and tomorrow. I am referring to Robert Frost:

Something there is that doesn't love a wall
That sends the frozen-ground swell under it,
And spills the upper boulders in the sun;
And makes gaps even two can pass abreast.

Later in the poem Frost speaks of the neighbor who owns the property on the other side of the wall:

There where it is we do not need the wall:
He is all pine and I am apple orchard.
My apple trees will never get across and eat
The cones under his pines, I tell him.
He only says, "Good fences make good neighbors."

Towards the end of his discourse on political oceanography, the poet tells us:

Before I built a wall I'd ask to know
What I was walling in or walling out,
And to whom I was like to give offense.

We are talking here about two kinds of walls in political oceanography - political boundaries and also terms and conditions of a legal regime for each side of the political boundary. One of the things we should bear in mind is that if we want to build lasting walls we should consider what we are walling in and what we are walling out and to whom we might give offense by building a wall in a particular place.

THE OCEANS AND FOREIGN POLICY: LAISSEZ-FAIRE
OR A STRONGER NATIONAL PURPOSE?

Victor Basiuk
Institute for the Study of Science in Human Affairs
Columbia University
New York, New York

I would like to address my comments to two aspects of the Report of the Commission on Marine Science, Engineering and Resources: (a) The need for policy guidance within the legal framework proposed by the Commission, and (b) the necessity for a clearer delineation of institutional responsibility for providing such policy guidance.

The Commission proposed a legal regime for the ocean areas, and there is no need to repeat the details of that regime. Briefly, the Commission's Report divided the seabed into the national continental shelf, the intermediate zone, and the international zone. Further, the Commission proposed national leasing in all of these areas, an International Registry Authority in the intermediate and international zones, and an International Fund to collect a portion of the revenue for international purposes.¹ What, however, is to be the policy content of American exploitation within this legal framework?

The Commission does not directly address itself to this question. Implicitly - and indirectly - it does attempt to answer the question. The Report states that, under the proposed legal framework, private enterprise would run little risk in exploiting ocean resources. If, however, U.S. industry were to encounter losses and face risks because the legal framework proposed by the Commission were not adopted, the Congress should compensate the industry for the losses incurred.

Since the Commission provides no further guidance with respect to foreign policy implications of ocean development, the underlying assumption of the Report appears to be as follows: once the U.S. government provides adequate security for investment and stimulates the expansion of American private companies into the oceans by developing the necessary technology and furnishing various useful services for industry,² the interests of U.S. foreign policy will be

¹ For the details on the regime of the seabed proposed by the Commission, see Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), pp. 143-57. [Hereafter cited as Marine Science Commission, Our Nation and the Sea.]

² Among other things, the Report proposed that the federal government help to develop "fundamental" marine technology through the establishment of a system of laboratories. It also recommended the establishment of Continental Shelf Laboratories to develop man's ability to stay and operate at continental shelf depths,

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Basiuk

achieved in the process. I suggest that such an assumption is a gross oversimplification. It may indeed be seriously injurious to the U.S. national interest.

Historically, there have been many instances when it has proved detrimental to a nation not to have regulated an activity of private enterprise. British and American companies were instrumental in constructing the radio and telephone network in Japan in the 1920's; American private companies were providing technical assistance to the Soviet Union in the 1930's. Let me quote you from a report of the U.S. Strategic Bombing Survey which investigated the Japanese aircraft industry immediately after World War II:

For assistance other than financial, the Japanese aircraft industry owed more to the United States than it did to its own government. It is sad, but true, that United States fighter and bomber pilots fought against aircraft whose origins could be traced back to United States drafting boards. Many Japanese engines and propellers came from American designs which had been sold under license in pre-war years....Here and there, war-time German influence was evident,...but it can be fairly stated that the Jap[anese] fought the war with aircraft on which the strongest influences in design were American.³

These days, U.S. government normally provides guidance to American private enterprise in its activities outside of the United States, but the formulation of policy guidance in such new and yet unexplored areas as marine development is still badly needed. To illustrate: American private companies have leased ocean areas beyond the 200-meter depths from foreign governments, and exploitation of these areas will follow. This is perfectly legal under the Convention on the Continental Shelf but, in accordance with the "rubber boundary" provision of the Convention, such activity extends the jurisdiction of the coastal State over the seabed. Thus, through American technology and capital, American private companies would be extending the jurisdiction of foreign States over the seabed and increasing their power potential. Over a period of years, this might have serious consequences for American foreign policy and defense.⁴

the development of power systems necessary for undersea operations, improved marine weather services, systematic mapping of the sea bottom, more extensive navigational services, and so on. See *ibid.*, pp. 25-30, 161-65, 209-26.

³ The Japanese Aircraft Industry (U.S. Strategic Bombing Survey [Washington, D.C.: U.S. Government Printing Office, 1947]), p. 4.

⁴ For a more extensive treatment of this subject, see Victor Basiuk, "Marine Resources Development, Foreign Policy, and the Spectrum of Choice," Orbis, Vol. XII (Spring, 1968), pp. 58-60.

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The above instances, actually or potentially injurious to the American national interest, occurred not because American private companies were unpatriotic, but because their primary goal is to make a profit and not to conduct American foreign policy. In many cases, foreign affairs are so complex that it is practically impossible for a private enterprise to see the long-range foreign policy implications of its actions. However, all of the developmental activities in the deep ocean areas - and many on the continental shelf as well - have a direct bearing on foreign relations. Hence, foreign policy guidance is essential here to safeguard America's interest.

The Commission has basically adopted a laissez-faire approach to ocean development. The question arises whether this approach would adequately serve the economic interests of the United States, let alone those of foreign policy. In the short run and with respect to the continental shelf adjacent to the United States, the policy may prove to be reasonably satisfactory; the situation here is somewhat analogous to the economic conquest of the American West. However, the interest of our private enterprise is not limited to the U.S. continental shelf and the intermediate zone; it is world-wide. Would adequate access to marine resources be available to U.S. private enterprise if it were merely "let loose" into the oceans, but aided by federally subsidized technology and Congressional guarantees against risks?

We know from history about the effectiveness of German cartels assisted by the German government. It is likely that foreign nations may resort to similar devices to counter the advantages of superior technology and capital enjoyed by U.S. industry.⁵ On the continental shelf of other coastal nations, and especially as marine development moves to the ocean ridges in the deep-sea areas, would American private enterprise be able to derive full advantage from the exploitation of the oceans against the organized and government-directed efforts of foreign companies? Couldn't such problems be forestalled by early planning of cooperative programs which would take into account American foreign policy needs?

As was more extensively discussed elsewhere,⁶ marine resources development presents the United States with multiple opportunities for achieving both economic and foreign policy goals, provided that appropriate organization

⁵ There are indications that foreign nations are concerned about the U.S. superiority in marine technology and capital and that some countries might undertake a concerted action to counter this superiority. For example, the Bow Group, the influential political research society of young Conservatives closely related - but not formally linked - to the British Conservative Party, has recently published a pamphlet entitled Ocean-Space - Europe's New Frontier. The pamphlet calls on European countries to pool their technical and human resources in marine science and to undertake other economic and political measures to counter "the American challenge" in the exploitation of marine resources. Laurance Reed, Ocean-Space - Europe's New Frontier (London: The Bow Group, May, 1969), pp. 32-41.

⁶ See Basiuk, op.cit., pp. 43-47, 67-70.

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and policy guidance are given. This, in particular, applies to cooperative programs with other nations. The federal government's current scarcity of funds, in part, impedes ocean development. Through regional cooperative programs, we can share the costs of marine exploration and development with those nations which are deficient in natural resources but are capable of sharing the burden of development, such as, for instance, Western European countries. Cooperative marine programs can help us to gain access to marine resources which otherwise might not be available to us. They can strengthen political or military ties with selected nations, contribute to the stability of certain underdeveloped areas, and bring other benefits.

In particular, I would like to emphasize the potential role of marine programs in developing a future regime of the seabed. The United States' position is gradually evolving as the nation seeks to further the acceptance of certain broad principles leading to the formulation of the regime. The current efforts are confined to diplomacy, primarily in the United Nations,⁷ with practically no contingency planning in case these efforts fail. There is, however, no assurance that a future regime of the oceans desirable to the United States will be successfully implemented through the United Nations or through a general international treaty. In fact, the outlook for a general agreement on a future regime of the oceans and its implementation through a multi-national treaty is not very promising.

It is difficult to overemphasize the importance to the United States of the present international process of forming a future regime of the oceans. The regime will be a very important factor in molding the future world order, in international stability and in the capability of the United States to enhance its own prosperity and that of other nations. The relatively small cost which the United States might, by oversight or conscious choice, refuse to pay now for a desirable regime of the oceans could result in a very heavy price for America in the decades to come. Contingency planning for the purpose of a timely implementation of a desirable regime of the oceans is essential.

Principles leading to such a regime as well as specific provisions of the regime itself (when officially formulated by the United States) could be implemented through regional marine programs with other nations. Inasmuch as such regional programs - e.g., with Western Europe, Japan, Australia and New Zealand, and other regional groups - dealing with marine R&D, exploration, and cooperative exploitation of resources, would be advantageous to the nations concerned,

⁷ For a summary account of relatively recent U.S. efforts in this area, see Marine Science Affairs - A Year of Broadened Participation (The Third Report of the President to the Congress on Marine Resources and Engineering Development, January, 1969), pp. 51-54.

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these nations might be perfectly willing to accept the legal provisions on the seabed when packaged in program agreements.⁸ Since virtually all coastal nations are now in the process of formulating their positions with respect to the seabed, undue delay in utilizing the potential of cooperative marine programs as instrumental entities in molding a future regime of the oceans can be seriously injurious to the U.S. national interest.⁹

In this connection, the importance of an expeditious resolution by the U.S. government of the present deadlock among the various interests in the United States on the issue of a future regime of the oceans and the formulation of a firm American position is obvious.

Next, I want to address my comments to the necessity of providing an effective institutional capability for U.S. participation in international marine affairs. Such an institutional capability is essential if we are to derive full advantage of the potential of marine resources development as an instrument of American foreign policy and, at the same time, to mobilize the intellectual and other resources of our foreign policy makers in support of ocean development. The institution concerned must conduct a continuous appraisal of marine affairs and foreign policy; it must determine the points of mutual support between the two; it must plan our policies and programs, and have a capability for an energetic and timely action as the situation requires.

⁸ There are precedents in diplomatic practice for concluding bilateral or regional treaties leading to a "regime" in a particular field. For example, bilateral and regional conventions in the field of fisheries add up to a global "regime" regulating the catch of fish. See, e.g., the convention which established the International Fisheries Commission dealing with the catch of halibut, 43 Stat. 1841 (1924), T.S. No. 701 (it eventually [1953] evolved into the Pacific Halibut Commission); Convention Between the United States of America and Canada Concerning the Sockeye Salmon Fisheries, May 26, 1930, 50 Stat. 1355, T.S. No. 918; and International Convention for the Northwest Atlantic Fisheries, February 8, 1949, I U.S. Treaties 477, T.I.A.S. No. 2089.

While in the case of fisheries, the treaties were concluded over a period of many years with little effort at over-all planning (thus resulting in a highly uneven and not particularly satisfactory structure), it is conceivable that a more farsighted and purposeful policy on the part of the United States could produce more uniform and consistent results with regard to a future regime of the seabed.

⁹ To illustrate the point: the Bow Group Pamphlet (op.cit., pp. 47-49) advocates that Western Europe should raise claims to the seabed extending to the 13,500 (4,000 meters) isobath. Because of the island possessions, this would give Western Europe a very large part (about 5 million square miles) of the North Atlantic seabed. It is not certain at this time whether or not this claim will become an official position of the British Conservative Party, Great Britain, and Western

Had the Commission recommended such effective institutional capability, it would have compensated at least in part for the fact that its Report did not provide foreign policy guidance in marine affairs. As it is, the Report is rather vague on this subject and tends, in effect, to divide authority in this area among three institutions. These institutions are the proposed National Oceanic and Atmospheric Agency (NOAA), the State Department, and the Executive Office of the President.

The Report states that the NOAA "will have the ability to participate in planning U.S. participation in international marine and atmospheric affairs."¹⁰ It does not elaborate on the nature of this "ability" and its relationship to other policymaking bodies in foreign affairs. The Report acknowledges a role of the State Department in international marine affairs by stating that the NOAA "will be a central point on which the State Department can draw for the scientific and technical advice it needs in this international area."¹¹ This statement appears to imply that the State Department would preserve its pre-eminence in foreign policy, including its marine component. However, the Report stops short of considering the adequacy of the Department - in terms of authority, organization, and personnel - to handle the rapidly-expanding role of marine affairs in foreign policy.

Elsewhere, the Report asserts that "functions of leadership and control remain that can be exercised only within the President's own office. Presidential staff groups will, of course, intercede as necessary on the President's behalf to identify problems not being addressed, to mediate issues, and to exercise leverage in getting agencies to work together on matters of common concern. The marine programs need to be related to other program activities at the Presidential level."¹² Presumably, this would also apply to marine policy and programs in international affairs.

In short, the recommendations of the Commission carry the danger that, in the critical area of international marine affairs, the U.S. government would run the great and indeed unnecessary risk that effectiveness and true responsibility will be lost somewhere between the three institutions.

Europe as a whole. However, timely negotiations by the United States with Western European countries for a cooperative U.S.-European program for exploration and exploitation of the North Atlantic Ocean, which would embody certain principles and provisions applicable to a future regime of the oceans, might prevent such extensive claims for appropriation of the seabed by European coastal nations.

¹⁰ Marine Science Commission, Our Nation and the Sea, p. 235.

¹¹ Ibid.

¹² Ibid., pp. 246-47.

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It is not my intention to advocate a particular form of organization in the area of foreign policy and marine affairs. However, having in mind the interest of effectiveness in marine development and in foreign policy, I would like to suggest three possibilities.

One possibility would be to establish a planning body for marine-foreign policy in the Executive Office of the President, perhaps in the Office of Science and Technology (OST). This Planning Body would cooperate closely with the Office of the Director, International Scientific and Technological Affairs (SCI), the Policy Planning Council (S/P), and - especially where a future regime of the seabed is involved - with the Bureau of International Organization Affairs (IO) of the State Department, but it would be ultimately responsible for recommendations to the President in this area, including budgetary recommendations. The plans and programs of the Planning Body would be executed through the NOAA, if established, and through other departments, if a particular marine activity were to be located elsewhere. The placement of the Planning Body in the Executive Office of the President, combined with the President's support, would give it the necessary effectiveness for the task. On the liability side of this alternative should be mentioned the growing tendency of recent years to burden the Executive Office with additional responsibilities (thus creating a sort of "super-government" on the President's level), a phenomenon which presents problems of its own.

Another possibility would be to create such a Planning Body in the State Department, perhaps in SCI. If, however, the Planning Body is to be placed in the State Department, the Department's appreciation of, and role in, functional approaches to foreign policy would have to be considerably strengthened. Traditionally, the State Department has had a tendency to view foreign policy more as "diplomacy" than as "national strategy," and the organization of the Department and policy have followed along country or regional lines. Only relatively recently has the functional approach - economic, military, and scientific-technological - been incorporated into the activity and organization of the State Department. Its potential has not yet been fully realized. If the Planning Body is placed within the State Department, it would have to plan policies and programs involving many millions and eventually billions of dollars and would require a stature sufficient to ensure that such programs are adopted by the U.S. government. The present authority and activity of the State Department in the field of science and technology are too modest to meet such requirements.

A third possibility would be to place the Planning Body within the NOAA. In this case, it would have to cooperate very closely with SCI, S/P, and IO in the State Department and OST in the Executive Office. It would have to include senior personnel from these two agencies among its own staff, and it should have an adequate stature to ensure acceptance of its recommendations (including budgetary) on the highest level of the U.S. government. The disadvantage of this alternative is that, even with very close ties with both the Executive Office and the State Department, the effectiveness of the Planning Body would, of necessity, depend on the stature of the NOAA and its administration.

Since the NOAA would be a new agency, its stature still remains an imponderable element at this point. On the other hand, there is a possibility of another extreme: if the NOAA became a very strong agency, it might pursue an aggressive policy with a narrowly technological orientation which may be detrimental to U.S. foreign policy interests.

In concluding my comments, it may be helpful to place them in the context of some fundamental changes in the political process in the United States over the last three decades. In turn, this might provide us with a better understanding of where the Commission's recommendations stand in a broader perspective of the governmental process.

Traditionally, the democratic political process in general and that of the United States in particular was viewed as a power process based on inter-group relationships.¹³ Group interests - those of business, labor, farmers - were viewed as the animating forces in political decision-making; the task of the government was to maintain an over-all legal framework for society and to act as the arbitrator and mediator among the various groups. To be sure, the government had some influence in directing the development of society by allowing the "right" special interest to win and perhaps to receive some services or other assistance which favored its growth; but basically it was the interplay of the various interests which determined the direction of society's development.

This model of the political process is badly out-of-date at the present, for in recent decades our national policy has been profoundly altered by three factors: the influence of foreign policy, the "future-orientation" of society, and the increasing role of "technical" decision-making.¹⁴

Foreign policy (including defense) is shaped in accordance with great power and ideological interests, and not primarily in response to domestic group interests (although the latter may have some influence on decision-making). Foreign policy and defense have concentrated enormous power in the hands of the federal government and have redrawn the social and economic map of the United States in the past twenty-five years. The nation is committed to the pursuit of stable economic growth and new dimensions of social change. In turn, this has stimulated a renewed emphasis on planning, a greater need to be conscious of national goals and of the "alternative futures" which a highly advanced and purposeful society can bring about.

¹³ See, e.g., Charles E. Merriam, Political Power (New York: McGraw-Hill, 1934), pp. 18-23; V. O. Key, Jr., Politics, Parties, and Pressure Groups (2d ed.; New York: Thomas Y. Crowell Co., 1947), pp. 6-9.

¹⁴ See, e.g., Daniel Bell's "Notes on the Post-Industrial Society (II)," The Public Interest, No. 7 (Spring 1967), pp. 106-8.

The increasing role of technical decision-making is largely a product of the factors discussed in the previous paragraph. The shaping of conscious policy - in foreign affairs, defense, or economics - requires the talent and conceptual instruments to outline the constraints and to assess the consequences of choice. Political scientists played a role in the transformation of foreign policy from "diplomacy" into "national strategy." Scientists initiated the revolution in military technology (nuclear warheads, missiles), while political scientists and economists revolutionized strategic thinking and management in the Pentagon (concepts of deterrence and limited war, systems analysis, and cost-effectiveness). The management of the national economy also increasingly leans on technical decisions. Technocratic rationality, as distinguished from political bargaining, has become a highly important factor in national decision-making.

So far, political theory has failed to absorb these developments into a new and comprehensive conceptual structure. It has been suggested, however, that the modern political process is more a steering process rather than a power process.¹⁵ If it is both, then it is not quite clear where the balance lies between the two.

By deliberate choice or oversight, the Commission's recommendations in international marine affairs lean heavily on a model of political process inherited from the nineteenth century, but not enough on the important forces shaping our national policy today. A shift in emphasis might be precisely what is needed.

¹⁵ Karl W. Deutsch, The Nerves of Government (Glencoe, Illinois: The Free Press, 1963), pp. ix, 182-99.

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Browning

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I think that after this morning's session, and after what has been said already, the best thing that I could do right now is to briefly set before you again just what the recommendations of this Commission are, in order to more or less set the stage for those that are to follow and give them something to bite onto.

First of all, it has been mentioned that the recommendations of the Commission are interrelated and the comment was made that if one part of the recommendations were to be rejected this would be grounds for reconsideration of all of the recommendations. I think this may have been overstated a little bit. The thing that the Commission was saying is that the main relationship is between the regime within national jurisdiction, whatever that may be, and the regime beyond national jurisdiction. As one gentleman mentioned earlier today, if you have an acceptable international regime for areas beyond the national jurisdiction, this might be incentive for States to agree to a relatively narrow continental shelf and, conversely, if nobody liked what was established in the international area, this would be grounds for a wider national continental shelf. I would imagine that a few minor changes in one side or the other would not force a reconsideration of the entire set of recommendations, but the main relationship is between the two regimes as such.

We recall that the Commission proposed a relatively narrow continental shelf, defined in terms of the 200-meter isobath or the fifty-mile line, whatever alternative would give the coastal nation greater area. Within this continental shelf the coastal nation would continue exercising its continental shelf jurisdiction as it presently has under the Geneva Convention of 1958. Now beyond this 200-meter/50-mile line, is the so-called intermediate zone that has been mentioned so many times today. This would reach between the 200-meter isobath or the 50-mile line and the 2,500-meter isobath or the 100-mile line, again whichever alternative would give the coastal nation the greater area of intermediate zone jurisdiction. Now in this intermediate zone, the coastal nation could do so itself, or license someone else to do so, or prohibit any exploitation at all of the resources in the intermediate zone. The international regime, which I will mention shortly, would be applicable to the intermediate zone and really the only exception to this would be that the coastal nation would have exclusive rights to mineral exploitation. Within the intermediate zone the coastal States' laws and regulations, insofar as not inconsistent with the principles of the international regime, would be applicable. In the intermediate zone, and also in the international area, a potential operator could, under the international regime, do preliminary reconnaissance work without having to get a permit; but when the need arose for a more detailed exploration

activity a permit would be necessary in the intermediate zone from the International Authority to conduct the exploratory operations. After the exploratory operations were over, assuming that something were found, the exploratory permit would be converted into an exploitation permit. This same situation would prevail both in the intermediate zone and in the deep areas beyond, the so-called international zone.

I believe that it has already been mentioned that only a nation or a group of nations would be eligible to make application for exploration or exploitation permits in either the international zone or the intermediate zone. I have been talking about the intermediate zone and the international zone more or less as the same area and this was intentional because the international principles, as I said before, would apply under the Commission's recommendations to the intermediate zone.

Speaking solely of the international regime itself, remember that there are two main organs of the international regime: first, is the International Registry Authority, which would register claims to explore and claims to exploit on a more or less first come-first registered basis. The International Registry Authority would have no discretion initially to deny registration of a claim provided that the company that was going to operate, or the other economic entity, would have sufficient technical and financial assets to carry out the job. With regard to the International Fund, this is the part of the Commission recommendation that would provide for a royalty-type payment, that is, a portion of the value of production, if any, would be paid into this International Fund. This production would be either in the international area that we are talking about or in the intermediate zone. This payment would be paid to the International Registry Authority and turned over to the Fund, and the Fund would use it for general purposes of marine development or perhaps economic development activities, but the Commission specifically recommended that these moneys not be used for the general purposes of the United Nations.

That is a rather brief sketch of the Commission recommendations which we are going to be discussing. One primary reason that the Commission thought of this intermediate zone approach as a method to give the coastal nation some right to the resources beyond a relatively narrowly-defined continental shelf, is the problem of what could be described as the tendency toward the vertical expansion of coastal State sovereignty, as Dr. Schaefer mentioned this morning. That is to say, if you have expansion of clear, exclusive coastal jurisdiction for a relatively large distance beyond the 200-meter isobath or the 50-mile line, let us just say the usual coastal State continental shelf jurisdiction, there would be, in my opinion and I think in many people's opinion, a very strong tendency on the part of many countries to expand these offshore claims into broader, more complete territorial claims, perhaps even going so far as to having territorial waters out to the outer edge of the shelf, wherever that may be. Under the Commission's recommendations, any rights that the coastal nation would have beyond the 200-meter/50-mile line would arise only by virtue of the international regime, where the international agreement would be set up and not

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because of any pre-existing rights in that area. In this way, it seems that this alternative would be the one least likely to result in more expansive coastal nation claims.

Another reason the Commission made such a proposal was more or less a compromise between the advocates of the expansive wide definition of the continental shelf - let us say all the way out to the end of the continental land mass, and those who propose just a clean cutoff at the 200-meter isobath, or some other more or less abrupt termination of coastal State rights on the continental shelf. The Commission intentionally did not go into too much elaboration on the details of the international regime that would prevail beyond the narrowly defined shelf. The proposal was advanced mainly as a method to start discussion on the issue and enough details were put in to give the proposal enough meat for people to get hold of and just to see, frankly, what else people would propose to do in these areas.

One thing that I would like to mention has come up this morning, and that is the very interesting and well done report of the National Petroleum Council. We have all heard two or three times, I think, that the report states that there is support in the so-called legislative history of the Geneva Conventions, and in the actual interpretation of the Convention itself, for the concept that the coastal nation has continental shelf jurisdiction now all the way out to the end of the continental land mass, that is, that it includes the continental shelf, the continental slope, and at least the landward portion of the continental rises. Now it appears that in the preliminary prints of the NPC report this statement was, in fact, made - that there is present jurisdiction out to this extent, that is to the end of the continental land mass. But the final edition of the report, I believe, modifies that somewhat and says that there is not presently-existing coastal State continental shelf jurisdiction all the way out to the end of this land mass but that there is more or less of a rolling or forward-advancing outer edge that advances with the state of technology, that is, with exploitability.

Be that as it may, I would just like to add my voice to some of those that have already been sounded here that the legislative history of the Geneva Convention on the Continental Shelf could be read in such a way as to, in fact, support the contention of the National Petroleum Council, whether it is the presently-existing jurisdiction or the gradually-expanding jurisdiction that eventually would get out to the outer edge of the submerged land mass. However, a close and full reading of the legislative history of this Convention would indicate that there is stronger evidence to support the contention that the authors of the Convention intended some sort of a limited definition of the continental shelf; a definition that did not go too substantially beyond the 200-meter isobath, certainly not one that would include all of the continental slope and landward portions of the continental rise. In fact, the express language was considered to the effect that the coastal nation would have jurisdiction over the continental shelf and the continental slope. The authors of the

Convention specifically rejected any reference to the slope and it is, I think, reading just too much into the legislative history of the Geneva Convention and into the language of the Convention itself to say that the coastal nation has jurisdiction out to the outer edge of the submerged continental land mass, or whatever you want to call it.

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Flipse

John E. Flipse
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I was impressed this morning by the greetings that the conglomerates received. I would be happy to be identified with Tenneco, an oil-based natural gas company that is now diversified and has decided to operate a company called Deepsea Ventures to develop the technology necessary to recover manganese nodules from the deep ocean floor. This investment is made with full expectation of financial return. The program started as a feasibility study in 1962, so we are approximately on schedule if it requires a decade to develop any new industry. Our program also includes exploration of the ocean and of the ocean floor which is proceeding at this time.

The research vessel PROSPECTOR made a considerable search of the Blake Plateau where we videotaped the sea floor in an area where there are approximately 600,000 tons of low-grade nodules. We expect to use this area as a test site to test recovery equipment and determine the effectiveness of this equipment in bringing the nodules to the surface. The water in this area is about 3,000 feet deep. The PROSPECTOR is currently surveying a body of water that I choose to call the "American Pacific Ocean," operating between San Diego, California, and Honolulu, Hawaii. The depths in this region vary from 12,000 to 18,000 feet. The assays are about twice that of the Blake Plateau and the economic promise is infinitely higher. We are also frequently approached by representatives of other countries' corporations and asked if we are willing to use our exploration techniques to explore their oceans. We have exhibited willingness, based on profit motive.

The prototype operation will be a test of equipment which was described in some detail in Houston, at the Offshore Technology Conference, in May, 1969. I will not go into the details of this equipment, but it will be a simulation of the equipment necessary to handle the dredge system, an actual deep sea dredge, a collecting head so that the superficial sea floor deposits are concentrated and can be fed into the pipe and, of course, a pumping system and a device to separate the manganese nodules from sand, sponges, and miscellaneous marine nuisances.

The results of this test, we trust, will be the engineering data allowing up to extrapolate from the 3,000 foot experiment to a 12,000 foot mining equipment. It should also result in a body of very useful "second generation" patents, and, we trust, cost information that will provide good guidance for future investment studies. Simultaneously, we have undertaken the research to process and win the metal values from these deposits. We have several alternatives that are currently working in what we call mini-plant or continuous flow glass processes. We expect to install, at our Virginia facility, early next

year at least one pilot plant to determine the effectiveness, the costs, and the technology for removing the metal values from the nodules. If this work progresses as planned, we will be selling our technology to rich, willing, brave corporations that will get together to form a consortium and enter into the first deep ocean mining program in the early 70's.

I would like to address briefly the question of what we consider as the necessary environment for this to go ahead. These assumptions are a mixture of optimism and realism which I am sure, as businessmen, at least some of you will understand. We believe first that the metals will compete in the international metal markets. This is a significant statement because we believe the usefulness of these materials should be decided in the economic battlefield rather than on the political battlefield. We are using for pricing purposes the incremental cost of production of the world's current suppliers of the several metals. Unfortunately, as you all know, the marine deposits are not in the proper proportions to meet the current market needs of any nation, as we may have a considerable excess of cobalt. I suggest that if you are in the cobalt business you start to look for alternate uses of that particular metal. We expect to generate also a significant part of the United States', or if this is a foreign operation a significant part of the free world's, high purity manganese. Realistic production levels will have little effect on the copper, nickel or other trace element markets.

Now, one of the points that was raised earlier is do we require a new legal regime? My conviction, and this is a personal conviction, is that the major capital investment that will be required for a dredge ship and a processing plant will require, as Dr. Gaskell suggests, some right to the sea floor material. We are very certain that the deposit itself will be a particular deposit rather than the very colorful pictures used to describe the "infinite extent" of this material. It will be a specific deposit because the recovery equipment must be somewhat tailored to the deposit itself, to the soil mechanics conditions, the current conditions, the distribution of the nodules on the sea floor, and so on. The mining system will be convertible, but it will not be universally useful. The processing plant will indubitably be tailored to the metal mixture that is in a given deposit, and, although these deposits are constant over fairly large areas, they are not constant over the whole world. Of course, the proximity of the mine to a shore where sufficient power, water, and so forth, exists to do the processing is an important factor. And so, although nature has been gracious in distributing manganese nodules on the sea floor, there will be good, better, and perhaps optimum deposits.

One thing that certainly concerns all of us that are encouraging others to get into this business, is the question of stability of legal and governmental requirements. You can play football or baseball, but you shouldn't change the rules with the runner between first and second base. And I suggest that the legal fraternity has an obligation to stabilize the so-called law of the sea. We would like to have an interest, perhaps even pay royalty for the

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right to exploit this interest, because with it go some things that were mentioned this morning - depletion allowance, import quotas, and other considerations of value that can be exchanged. I would like to suggest that the last thing in the world any ocean mining company would like to be would be a "trading good" in a State Department bargaining session.

I would like to make one further comment on this distribution of income. It reminds me of the lawyer who brought his horse down from Washington to board it in Virginia. When he went to the first stable and they told him it was \$120.00 a month, his look of anguish made the stable master suggest, "But you will get the manure to take home for your garden." When he went to the next stable he was sophisticated and when the price was quoted at \$90.00 a month he asked promptly, "Well, what about the manure?" and the stable manager agreed he could have it. When he went to the next stable, which was not nearly as attractive, he was told it would be \$40.00 a month. This sounded much better and he asked, "What about the manure?" and the stable manager said, "At \$40.00 a month, there won't be any manure." I am afraid that the speaker this morning who suggested for each increase in depth we ocean miners get a 5 per cent discount is going to get the manure!

THE MARINE COMMISSION'S DEEP-SEABED
PROPOSALS - A POLITICAL ANALYSIS

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The Marine Science Commission's proposals for the deep-seabed must be evaluated on a number of criteria. But the one criterion that probably will be dominant in the action phase is the political. As Francis T. Christy, Jr., has reminded us a number of times, a proposal for the deep-seabed must be politically "acceptable." I would add, acceptable in a special political environment of the United Nations General Assembly, its permanent Committee on the Peaceful Uses of the Sea-bed, or a special multilateral conference called by the General Assembly to consider creation of machinery for handling the problems of the sea-bed. Ultimately the suggestions contained in the Commission's proposals will probably come before one of these organs if they are to bear fruit.

Thus we must examine or critique the Commission proposal for an International Registry for the deep-seabed as a political document. We can do this in two ways: First, we could consider it as an example of political theory or theories; I have done this to some extent in a paper available to many of you.¹ Some of what will follow, therefore, will be familiar. Second, it could be thought of as a proposal which fits the opinions of the requisite number of States to be adopted or fail of adoption. I will do a bit of both.

I hasten to add that I am here guessing on the fate of the proposal; but I hope not without some basis. I am now in the process of content analyzing the UN seabed debates. For comparison we also have available the UN Secretariat's own breakdown of the debates.² Thus my estimate of how States would greet the proposal is - I hope - consistent with what States have said on somewhat similar ideas. This is not to say that the States themselves will necessarily be as consistent if the Commission's proposal were put to the vote. But I must emphasize that this exercise in speculation is my own opinion as a private scholar and does not represent the opinion of the Center for Naval Analyses, the U.S. Navy, or the U.S. government as a whole.

The Theory of an International Registry

Politically, what are the key features of the Commission's proposal? The most central is the proposed creation of an International Registry Authority

¹ Understanding the Debate on Ocean Resources, Occasional Paper No. 1 (Kingston, Rhode Island: The Law of the Sea Institute, February, 1969).

² Proposals and Views Relating to the Adoption of Principles, UNGA, Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction, A/AC. 138/7, March 6, 1969.

whose principal function is to register and grant exclusive rights to States to explore and later exploit seabed minerals within a claimed area. This would be done on a first come-first registered principle. Initiative in the claiming process would be in the hands of the State members of the system. In addition they could apply many of their domestic laws and practices in the claimed area.

A second feature are the powers of the Registry Authority. These are largely regulatory. They would enable the Authority to set time, area, work and capability requirements for States to meet in order to be granted or retain a claim.

Associated is a third characteristic, the relative silence of the Commission on the new international agency's composition, rule-making authority, and administrative practices. These are implied rather than stated in the Report.

Fourth is the International Fund, into which the royalties are to be paid "to compensate the common owners of the mineral resources." The Registry Authority will have nothing to do with the management of the Fund, but the assets will presumably be used "for purposes specified," possibly aid to less developed countries, since it cannot be used to support the general purposes of the United Nations.

Fifth is the area of application of the scheme. States would be required to register claims in all areas beyond 200 meters depth of water or 50 miles from shore. But shore States would have a veto power over who is allowed to sustain a claim in an "intermediate zone" beginning where the legal continental shelf ends and ending at 2,500 meters depth of water or 100 miles from shore.

The Commission's proposal fits within the middle two categories of the four category typology I created in the earlier paper. At one extreme are (1) normative nationalist proposals, which would put more and more seabed areas under direct national sovereignty or jurisdiction in order to increase the power or pride of the shore State. (2) A bit further toward the center are functional nationalist proposals which would put selected sea floor areas or activities under national jurisdiction in order to provide essential services or to handle problems which originate offshore but have an onshore effect. (3) Toward the internationalist side are functional internationalist proposals, which rely upon international agencies who perform tasks which, it is claimed, are larger than those which are appropriate to national agencies; the accent here is still upon service to the States of the international system. (4) To the other extreme are normative international proposals, which are trying to use the oceans to reform and restructure the international system and remove as much power and jurisdiction from the nation-State members of the system as possible.

The Commission comfortably straddles the functional center. The international agency that it would create would be service-oriented - services would be provided to the States, the States in turn could grant clear title to mineral

resources to their ocean exploitation companies or State monopolies. In other words, "rational" exploitations would be encouraged and conflict reduced. Moreover, the proposal would be international, in that a new international agency with a new bureaucracy would come into being. This growth of a new civil service has implications for "spillover." That is, as the bureaucracy "proves itself" and demonstrates its usefulness, States will rely upon it more and more and entrust even more functions to it. The agency's growth is implied rather than stated in the Commission's Report. The Commission's statement that the agency would not be given police powers initially I take to imply it might be given police powers eventually. Spillover also is implied in the Commission's statement that a new principle of allocating claims might be sought if the first come-first registered principle does not work well. But in the meantime the future existence of no nation-State is threatened, and the new international agency does not promise to restructure the international system overnight.

This is not to say that the Commission's proposal does not offer something to nation-States other than service performed by a new international organization. It offers the "intermediate zone" - a blend of national and international jurisdiction, and - for those nation-States that need it - the possibility of tapping the new International Fund to assist in their nation-building.

I support the Marine Commission's proposals. It certainly falls within the range of my normative preferences. But I also believe it was very well and artfully designed as a political document. Of all the proposals that have been made in the recent debates on the fate of the deep-seabed, I believe it has a better chance than any other particular proposal to be acceptable to the widest variety of States. Despite the statement in the Commission's Report that the various sections of its proposal are so interrelated that the failure to adopt a part may jeopardize the whole, this is a most negotiable document. It is a blend, a combination of nationalizing and internationalizing influences. All sorts of modifications are possible in the proposal before it would lose its essential character.

But this is the age of the non-negotiable demand. Despite its having the best chance of any reasonable scheme, the Commission's recommendations would not have smooth sailing if put to a vote before an international conference or assembly in the near future. There are States with strong commitments to viewing the world through their ideology - or theory - and who will register vehement objections to the Commission's proposal - or any reasonable variant thereof.

Nationalists of all stripes - official and unofficial - will not like the proposal for a number of reasons. First, because the zone of application would begin "too close" off their shores. Second, they would view payments made directly to their national treasuries as their due. Third, they would rather not create any new international machinery which would constrain their freedom of action. And fourth, for some developed States, they prefer to give

bilateral foreign aid rather than see funds available to the developing States from an International Fund over which they have little control.

A number of States have made their opposition to all or part of Commission-type proposals clear. The west coast Latin American States do not approve of any proposal which does not begin the area of non-national jurisdiction at least 200 miles off of their coasts. In fact, in the beginning of the current UN seabed debate they looked upon the Maltese initiative as a disguised Yankee trick to force them to back down from their claims. A number of other less-developed countries were also unenthusiastic about any scheme that would affect "coastal State's rights," feeling that the best defense of their new nationhood is the right to keep foreigners as far away from their shores as possible. But the most serious opposition comes from the Soviet bloc. According to Russian explanations, until the perfect world of socialism comes into existence, any international agency to manage or allocate seabed resources simply will be a subterfuge for capitalist monopoly control of seabed resources. Until the millenium, the Soviets implied, socialist and developing countries, on a planet where "states coexist with differing social systems and differing systems for the ownership of property," should rely upon more nationally controllable schemes of allocating seabed resources.³

No doubt internationalists will be somewhat disappointed at both what was recommended and - probably more important to them - what was not recommended in the Commission's Report. For some critics the recommendation that the new agency use the first come-first registered principle will be anathema, first because this still puts essential control over seabed resources in national hands, and second, because it is not the "best" solution. The "best" solution will vary with the commentator; some will prefer "need" as the criterion, others accommodation to the requirement of efficient use of the resources, perhaps by using an auction system. But the most important problem is the omissions. No international title or "internationalization" of seabed resources was recommended. This will certainly disappoint Sweden, Malta, Iceland, Yugoslavia, Cyprus, Trinidad and Tobago, all of which spoke in favor of such an idea. Little emphasis was put on enforcement powers or machinery that would be granted the new agency. And, most central to internationalists, the new agency is to be insulated as much as possible from the vagaries of world politics or depoliticized, and therefore it is not tied into larger reforms of the international system.

The Opinion of States

A general pattern of State opinions on the question of the allocation of seabed resources has emerged in the UN debates. It goes beyond questions of theory and includes the most basic questions of the relationship of States in the present international system. Essentially the pattern is one of a North-South or developed versus less-developed split. Complicating this bifurcation,

³ UN Doc. A/C.1/PV. 1592, p. 17.

and overlapping it, is the East-West split. The difficulties that a Commission-type proposal would encounter range from the very purpose of a new seabed institution through the detailed rules by which it would operate, to the question of in whose benefit the institution will operate. There is little question that this last consideration has been dominant in the debate. As the table below listing preferred phrases used in the seabed debate shows, the South/LDCs States obviously wish to have a new institution molded to protect their interests, while the North Developed States have a very different set of interests they believe worth protecting.

Table 1
Key Phrases in the Seabed Debate

South/LDC Preferences

Protect the rights of coastal States
Protect economies of developing States
Prevent exploitation by technologically advanced
Prevent colonialism, imperialism
Close gap between developed and developing
Strengthening ocean capabilities of developing
Take into account special needs of developing States
No rights to sovereignty or exploitation implied by scientific research

North/Developed Preferences

Protect freedom of the high seas
Protect fishing rights
Protect freedom of scientific research
Protect the rights of all
Protect the access of all
Protect maritime interests
Take into account international law
Take into account UN Charter
Take into account existing treaties

A new institution having responsibilities for the seabed implies that it will control or importantly influence access to the resources therein. If a State or organization's future is affected by its ability to gain access to the seabed for itself or deny it to another, the struggle may become extremely bitter.

What particular features of the Commission's recommendations are likely to run into objections from the Less Developed States because they do not protect their interests as they see them at present? Inter alia they are likely to include:

1. Where does national sovereignty end and the new intermediate zone begin? Perhaps they would even attack the very idea of an intermediate zone as an insult to their nationhood and a violation of their sovereignty.
2. The autonomy of the Registry Authority is likely to be repugnant to them. They would prefer an organization more closely tied to the General

Assembly and more susceptible to manipulation to their now permanent majority of votes.

3. The first come-first registered principle as being discriminatory against those whose present seabed technological capability is slight or non-existent. They are likely to favor positively discriminatory measures which will favor the exploitative activities of their national entities or reserve areas from exploitation by the developed until they are prepared to use them.

4. Membership in the Registry Authority on a "multiple principle" of technological capability as well as geographic representation is likely to be particularly resented by the less-developed States and be viewed as confirmation of the Soviet charges that "the principal posts of command in such a system would inevitably be in the hands of the capitalist monopolies of certain imperialist powers...." Any system which seeks to establish an international organization less subject to the pressure of the LDC's numbers, that is inherent in a one-nation one-vote formula, is likely to be fought by those who have the advantage of numbers to play off against capability.

5. The amount of the registry fee and the royalties to be paid. The Commission has reminded us that it would not be in the interests of the Agency to set the fees so high that these costs would discourage exploitation. But it is not necessarily true that setting fees so high as to discourage exploitation might not be in the interest of some of the State members of the Authority system. LDC members might wish to do this if seabed raw materials exploitation proves to be - in the words of the LDC preferred version on the Seabed Exploitation Principles - "detrimental...to the activities undertaken - within the national jurisdiction of those countries...."⁴

6. The compulsory settlement of dispute features in the Commission's Report. This may prove no more popular with the less-developed than the 1958 Optional Protocol did with a number of west coast Latin American States.

Many features of the Commission's recommendations will be looked upon with suspicion by the developed States. Some of these will be similar to the complaints of the developing, but most will be the polar opposites. Let us examine some of these briefly:

1. Compulsory settlement of disputes. The Soviet Union and the other Eastern European States have never disguised their opposition to compulsory settlement measures in the past. I doubt if they will make an exception for a seabed Registry Authority. Many of their Western developed colleagues are likely not to find this too disappointing a development. In initial stages "motherhood" proposals such as compulsory settlement clauses receive paeons of praise from Western delegates. However, their governments prove much more reticent in the ratification stage.

⁴ UN Doc. A/AC. 135/36.

2. The International Fund. Two types of objections are likely to be registered. (1) On the one hand, from ultraliberal States such as Sweden, we would be likely to hear the complaint that the Fund should be used to make the UN, through some financial independence, more politically independent of its members, and (2) on the other hand, there will be those developed States who do not appreciate the International Fund because it provides a source of development funds to the less developed independent of themselves.

3. The bureaucratic nature of Authority decision-making. As described by the Commission, the Authority's powers would be regulatory. But how do you regulate an infant industry in a very difficult environment? We have little experience to fall back upon. For example, what is the "right" size area for a claim to a particular mineral to be worked, with a "reasonable" return on the investment? We simply do not know. In any case, the rule-making of the Authority may well be cumbersome, full of paper work, bureaucratic, and at worst it might be highly arbitrary.

4. The first come-first registered principle might prove to be inefficient and unworkable despite the attempt of the Commission to discourage hoarding of claims through such devices as work requirements and the transferability of the claims from State to State. An existing international regulatory agency - the International Telecommunications Union - has already failed to stop hoarding of the valuable commodity it regulates. Some developed States might see fit to support an auction system.

5. The Intermediate Zone. That the less developed are more vocally nationalistic is indisputable. That they are more nationalistic is still in doubt. There will be developed States that know they have, or will soon have, the capability to exploit seabed resources up to a depth of 2,500 meters and who might attempt to put the seabed at that depth entirely under their national jurisdiction.

6. The possibility of spillover. Functionalists always hope that an agency by proving itself useful will come to be considered indispensable by its clients and eventually given more power, which will be used gradually to transform the international system. Among some of the more nationalistic developed States this knowledge of the functional hope may lead them to fight against any new international agency, or construct an agency that will be so constrained as to be utterly incapable of "spilling over" into new areas of responsibility. Those States inclined this way may hold out for a Registry Authority composed essentially of a handful of clerks who merely receive, process and hold national claim papers.

7. The constitution, structure and powers of a Registry Authority. Many of the developed will watch most carefully here to be sure that the Authority is so constituted that it cannot be used by the developing to threaten the security of tenure to the seabed resources they claim. The vagueness on these matters in the Commission's Report will make them uneasy.

Conclusion

Despite this litany of objections and problems from all sides that we can infer from the UN debate, I believe that the core of the Commission's Report is still the most feasible proposal for international acceptance. It certainly was designed with a little something for everyone in mind - access and security of tenure for the developed, an International Fund for the developing, a new International Registry Agency for the internationalists, and a new "intermediate zone" for the nationalists. But now we must convince all those who wish to play sum-zero-type games with the oceans that the risks of holding out for all they want is too high and the odds are they will get nothing. A little something is better than nothing. I wish the Commission's Report well.

OIL INTERESTS IN THE DEEP-SEABED

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When we talk about political oceanography, and walling things in or out, we should begin with the realization that about 90 per cent of the wealth that we presently get from the oceans is in the form of oil. I always make a slight apology for this by explaining that our product is so much easier to handle than most other peoples'. We don't have to go about catching it like some of the fishermen friends I have, and we don't have to go and bring it up in large lumps and cart it around. We have a fluid, either oil or gas, which we can bring up under its own pressure and send around the place in a pipeline. But, of course, we do have our problems and one of them is the problem that every ten years the consumption of crude oil seems to double. I don't know how long it is going to continue that way, but it has certainly been operating on that rate of increase since I joined the oil company just after World War II. And this means that we produced 2,000 million tons of crude oil this year. We shall need to produce 4,000 million tons by about 1980, and so all the time we are exploring for more. We now know that oil is, in general, associated with sedimentary-type rocks and we learned ages ago that the continental shelves are, in a geological sense, exactly the same in part as the continental land masses. Therefore, we have been able to make estimates, and we believe that at least one-quarter of the world's oil is to be found on these shallow-water-fringing continental shelf areas. Since we have been operating for many years in these offshore areas, we are very interested in the rules of the game that various nations and the United Nations have made for us in the past.

Although this morning we have had a certain amount of criticism of the 1958 Convention, you must admit it has worked fairly well so far. We have had a case on our own doorstep - in the North Sea - and there has been little argument about that situation. It was an inland sea (perhaps not quite an inland one) which was virtually all continental shelf. There was a slight argument in the earlier days because of the deep trench off the Norwegian coast, but those of us who knew about the geological structure realized that it was only a fold in continental rocks and, although it went below the 200-meter mark, we knew it was not an indication that there was a bit of deep ocean there and that Norway's continental shelf ended within a few hundred yards of the shore. We agreed that the boundary went out to the median line facing Britain on the opposite side of the North Sea. The only complaint, and I think it has been settled more or less now, was on the part of the Germans who had picked a piece of coastline when they settled their country which is very strongly concave. If you have a strongly concave piece of coastline and you agree to a median line rule, you just don't get very much of the offshore territory. I think these things have to be accepted.

There have to be some rules in life. Some people live in nice hot climates and some people have to suffer the sort of miserable weather we get in England; you can't always expect everybody to be equal, and you must take the rough with the smooth in this life. This is why I rather like the definition of the continental shelf regime that has been put out in this new National Petroleum Report, because this is one that follows what Senator Claiborne Pell was saying at lunchtime today. This could be an enduring mark because it is based on proper geological principles. If you look at the oceans from the proper point of view, from an oceanographer's point of view, you should try the exercise of imagining all the water drained away. Now your regime covers about 70 per cent of the earth's surface and around you the continental masses will tower up three miles from the floor, and the normal place to call the end of your regime - or the beginning of the continental one - is where the land mass starts to grow out of the ocean bed; that is, at the foot of the continental slope and possibly down into the rise. You might make a comparison with the way we view land boundaries. We have some cliffs facing the English Channel and we would not draw the boundary of England at the tops of the Cliffs of Dover; we put the boundary at the bottom. In much the same sort of way I think we want to do this with the continental shelf. That great lump of rock is the lump of continent, and it is different in regime from the ocean.

I am not supposed to talk too much about where the division should be, this was discussed in the morning session today. However, I would like to make one point. A lot of people seem to worry about being fair to everybody; some of the South American countries have only a narrow shelf and, therefore, we ought to think of some way of giving them a bit more. I think, again, it is like our North Sea business. You just have to take what you have been given. Some countries find oil in their territory because they have sedimentary rocks as underlying structure. Other countries do not find any oil because they may be underlain by igneous rocks. That is too bad, but it doesn't mean that we have all got to be the same. Nature has compensated in many ways. I was in the exploration department for many years and I know as a certainty you will find that most of the big oil fields in this world are either in some terribly hot desert or in some miserable swampy jungle or in the frozen north of Alaska, always in some terribly unpleasant place in which to work. That is nature compensating again. You have oil in those countries and, although it may be a rotten climate, there is substantial mineral wealth; and I am sure that there are compensations for the people who have not got any continental shelf. I won't cry any tears for people who have only a narrow continental shelf; I think of places like Switzerland, which has no continental shelf at all. I feel when we are formulating rules we would do much better in the long run to accept what nature has decided and that is that continents are continents and oceans are a different geological regime, and on that basis we should make the division where nature intended it. You can bring up hundreds of little exceptions in various parts of the world, but I assure you a panel of good marine geologists could easily sort these out individually. Perhaps one needs an arbitration panel to sort it out but I am quite sure there are plenty of people with sufficient knowledge to do so.

The attitude of the British oil companies in this matter might be said to be as follows. With respect to the regime of the deep oceans, I would say first of all that we don't think there is anything to be found down there in the near future, but we could be confounded. In the prewar years when we were doing early experiments studying the rock structure at the bottom of the English Channel people in the oil industry said that there would never be interest in looking for oil offshore and the whole pattern has since changed. In just the same way, the experiments that are being carried out by this deep sea drilling project, the JOIDES Project, may unearth some interesting oil fields in really deep water. I think it will be a very expensive operation to produce the oil but we could do it. You can do almost anything in this world if you spend enough money; but I think any oil in the really deep oceans would have to be in a very big field to be an economic proposition. However, one must think about these things. In case there are any riches there, one ought to decide how they should be allocated, how the exploration and exploitation from it should be allocated.

Our view in the oil company is that we go along with anything. It really isn't our business to interfere too much. We have three requirements in any organization that is obtaining mineral resources from the deep ocean. The first of these is there must be some sort of firm security of tenure. We have to pay royalties to somebody; that is all right. We have to pay it to an individual country, or to a local landowner, or we pay it to this international body; but we must have a good certainty that once we put our expensive money into an operation we can continue doing it without interference and without sudden stoppages. The second thing that is needed from an industrial point of view is the guarantee that individual industries - individual companies - be allowed to apply for and obtain licenses. This is what was done in the North Sea; licenses were allocated to individual companies or groups of companies. Nations did not come and say, "We would like to do some prospecting in the North Sea or do some drilling operation"; it was individual companies. I think there should be no discrimination against individual companies in an international regime of the oceans. Finally, and this is bothersome to people who like to get on with the job, there has to be reasonable speed in the allocation of the property. There is the fear that an international organization might be slow in making decisions. A company would be disturbed if it could not make its plans and sort out logistics; a great deal of risk capital is involved in such undertakings and there has to be a reasonable timetable.

The final warning concerns the problem mentioned by several people this morning and that is how would the money earned from all these mineral resources of the deep ocean be divided. My experience in the oil business is that for the first ten or fifteen years you would get a negative amount of money from the till. You pour out a lot of money and many years elapse before it starts to come back. Consequently, I don't think we should be too worried. There will be plenty of time to allocate all these riches from the sea ten years after operations have begun there. There will be plenty of time to make the decisions concerning who will get the cash.

PROPOSED REGIMES FOR EXPLORATION AND EXPLOITATION
OF THE
DEEP-SEABED

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It is not necessary, before this august assemblage of oceanographic lawyers and jurisprudential oceanographers, to recount the events which have led to the widespread discussion of proposed regimes for the deep-seabed.¹ It is sufficient to note that the subject can no longer be put out of mind simply by referring to the nascent state of the art of deep-ocean mineral exploitation, and the remoteness of the prospects for economic success in mining the deep-seabeds.

I will not discuss every one of the proposed deep-seabed regimes today. Instead, I will focus my attention on the regime proposed by the Commission on Marine Science, Engineering and Resources, in its recent report Our Nation and the Sea.² I use the Commission Report as the basis for my discussion for two reasons. First, since the Commission was established by an Act of the Congress of the greatest oceanographic power in the world, and since the membership and staff of the Commission are comprised of distinguished experts in various fields of oceanography, their report will carry great weight and create great controversy. My second reason is more pragmatic - the Commission Report is a handy document for discussion purposes because it collects all the errors

¹ A brief sketch of the recent history of proposed legal regimes for the deep seabed is given in Miron, "The Management of the Mineral Resources of the Ocean Floor - A Critique of Certain Aspects of the Proposal of the Commission on Marine Science, Engineering and Resources," 4 Stanford Journal of International Studies, August, 1969. The views I express herein are largely drawn from that article.

² Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969) [hereinafter cited as "Commission Report"]. The proposal with respect to ocean floor minerals is found in that Report at pp. 141-57. The Commission was created by Section 5 of the Marine Resources and Engineering Development Act of 1966, 80 Stat. 203, 33 U.S.C. 1101-8 (Supp. II, 1965-1966). The Act provided for a Commission of fifteen members appointed by the President, to include individuals drawn from federal and state governments, industry, universities, laboratories and other institutions engaged in marine scientific and technological pursuits. Not more than five members could come from the federal government. The Commission was directed to investigate all aspects of marine science "in order to recommend an overall plan for an adequate national oceanographic program that will meet the present and future national needs." The Commission Report embodies the Commission's recommendations in discharge of that responsibility.

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in one place. Indeed, I resisted the temptation to title my paper, "The Commission proposal. Shallow Thinking About a Deep Subject."

First, let me describe what I believe to be the essence of the Commission Proposal. The Marine Commission Report recommended that a new regime be established by agreement among interested nations. Two zones would be established:

(1) An intermediate zone, "encompassing the bed and subsoil of the deep sea," to begin at the seaward limit of each nation's "Redefined Continental Shelf" - which ends at the 200-meter isobath or 50 miles from the coastline, whichever gives the greater area³ - and to extend seaward to the 2,500-meter isobath, or 100 miles from the coastline, "whichever alternative gives the coastal nation the greater area for the purposes for which intermediate zones are created."⁴

(2) A zone seaward of the intermediate zone.⁵ In the intermediate zone only the coastal nation or its licensees (which may or may not be its nationals) would be authorized to explore and exploit the mineral resources. In the deep-sea zone exploration and exploitation privileges would be conferred through the framework of a new entity, called the International Registry Authority.⁶

The exploration for and the exploitation of mineral resources of the deep sea zone could be carried out only pursuant to "claims" registered with the International Registry Authority. Such claims could be registered only by nations or associations of nations.⁷ Registration of a claim to explore for a particular mineral in a particular area would confer upon the registrant an exclusive right to engage in such exploration.⁸ Upon "proof of discovery" the registrant could require the International Registry Authority to convert the claim to explore into a registered claim to exploit.⁹ The registered exploitation claim would also be exclusive, "in a large enough area and for a long enough

³ Commission Report, p. 145.

⁴ Id. at 151.

⁵ Id. For convenience of reference the zone seaward of the intermediate zone will be referred to hereinafter as the "deep-ocean zone."

⁶ Commission Report, pp. 147-48.

⁷ Id. at 148.

⁸ Id.

⁹ Id.

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time to enable the producer to operate economically and not wastefully and to recover its original investment as well as an adequate return thereon. The size of the area covered by the claim and the term of years for which it is registered should be fixed by the authority."¹⁰

Both exploration and exploitation claims would have to be registered by the International Registry Authority on a "first come, first registered" basis, subject to the condition that the claimant "satisfy the Authority that the individual, association, corporation, or national organization that will undertake the exploration or exploitation is technically and financially competent and willing to perform the task."¹¹ This condition is said to be for the purpose of preventing claim-registration from being used to "sit on" the rights derived therefrom.¹² The Report comments that "Nations thus will be free to engage in or authorize preliminary investigation to determine whether it is worthwhile to register a claim to explore."¹³ The Report gives no explanation of the difference between "preliminary investigation" and "exploration."

The participating nations would be required to pay a fee for each claim to explore and for each claim to exploit, to cover costs of the Authority. The Authority would be empowered to fix the fee.¹⁴ The Commission Report anticipates that those actually seeking to explore and exploit would apply to governments to register claims on their behalf.¹⁵ Registrants would be required to pay as a royalty "a portion of the value of the production, if any, into an International Fund...."¹⁶ The applicant nation would therefore assume the primary obligation to pay all fees and royalties assessed in connection with the award of its claim.¹⁷

That, in short, is my understanding of the management aspects of the Commission proposal. I next propose to offer some criticism of the proposal beginning with the discussion of exploitation rights.

¹⁰ Id.

¹¹ Id. at 148.

¹² Id.

¹³ Id.

¹⁴ Id. at 149.

¹⁵ Id. at 153-54.

¹⁶ Id. at 149.

¹⁷ Id. at 153-54.

As noted above, the Commission Report specifies that a nation may obtain an exclusive right to explore an area by being the first registrant, subject to satisfying the Authority that it is capable of and willing to perform the exploration and exploitation. The registrant would obtain an exclusive right to exploit the area "upon proof of discovery." While the proposal presupposes that nations may engage in preliminary investigation to determine whether it is worthwhile to register a claim to explore, there is no attempt to explain the difference between preliminary investigation and an exploration, and no mechanism to reconcile disputes on the question. It is impossible to ascertain, therefore, whether one may engage in preliminary investigation of an area where another has been given an exclusive claim to explore and/or to exploit. This uncertainty would lead to misunderstanding and could have a stifling effect on the freedom of the seas for both commercial exploration and scientific inquiry.

A more serious problem created by the first-in-time, first-in-right, system of awarding claims is that which is likely to occur when the Registry Authority opens its doors for business. It is not unexpected that with respect to many areas of the ocean floor claims will be filed simultaneously by a number of different nations. At that point the selection is a critical one. The successful claimant is given an exclusive right to explore and upon proof of discovery to exploit. By definition the area will be one as to which no discovery has yet occurred. At that point the Registry Authority will have to decide which of the applicants is most willing and able to engage in the exploration work and to develop any deposit which is discovered. However, since the area would be one which is yet to be explored, the nature and extent of the deposit will still be unknown and it is most unlikely that meaningful answers can be given to questions involving the probable cost of recovery, processing, transportation and capital and the impact of the mineral production on the market. Indeed, even the full cost of exploration may not at that point be foreseeable. How then is the Registry Authority to select among the applicants? The evaluation of a variety of development promises would require the exercise of judgment as to (a) bona fides of the applicant; (b) the most technologically promising program of development; and (c) the capabilities of the applicant (or the entity it sponsors) to perform the development commitment. These are difficult questions, requiring a high degree of expert judgment. Such a decision-making process leaves room, at worst, for discrimination and, at best, for suspicions of discrimination.

Moreover, if the area is promising it is likely there will be more than one financially responsible entity to select from. Indeed, the same entity, or affiliates of the same entity, may be sponsored by different nations since companies are able to shift their capabilities to work under auspices of different governments as the global character of the major oil companies demonstrates. In addition, it is possible that some nations might seek to register claims on behalf of State-owned enterprises. One may foresee political difficulties in having an International Registry Authority pass upon the capabilities of governments to fulfill their commitments.

Turning now to the treatment of exploitation rights in the Commission Report, it should be recalled that under the Report an exploration claim can be converted to an exploitation claim by "proof of discovery." The Commission Report, however, does not explain what is meant by "discovery."¹⁸ In the case of oil and gas it must be emphasized that discovery of a deposit of oil or gas cannot be ascertained except by drilling into the target formation.¹⁹ However, drilling in deep water is an expensive proposition and it is doubtful that oil companies will be willing to make substantial investments in drilling unless they are assured of tenure²⁰ if they discover oil. Therefore, the critical time for the giving of assurance of tenure would have to be prior to drilling, which means prior to the discovery of oil. Thus the discovery requirement, as it relates to oil and gas, is illusory. It can mean only that there must be a showing of some geophysical evidence that oil might be found. In turn, this means that award of an exploration claim would assure tenure if geophysical work shows structures which are favorable to the existence of oil and gas.

¹⁸ The discovery concept is basic to the Mining Law of 1872, 17 Stat. 91, 30 U.S.C. 22 (1964), under which the discoverer of certain minerals on the public domain is entitled to exclusive possession and enjoyment of the area of his mining claim for the purpose of mining the minerals. The term "discovery" has been the subject of many interpretations and much litigation. See United States v. Coleman, 390 U.S. 5-9 (1968); speech by Frank J. Barry, Solicitor, Department of the Interior, "Basic American Mining Law," before the Symposium on American Mineral Law, University of Arizona, Tucson (March 21, 1966). Repeal of the Mining Law was recommended by Secretary of the Interior Stewart L. Udall in a letter of January 15, 1969, to the Chairman and Members of the Public Land Law Review Commission. The letter stated that "This outmoded law has become the major obstacle to the wise conservation and effective management of the natural resources of our public lands." On February 20, 1969, Congressmen Saylor (Penn.) and Dingell (Mich.) introduced H.R. 7354 (91st Cong., 1st Sess.), a bill to repeal the Mining Law of 1872.

¹⁹ "In the case of both geophysical and geological surveys it must be remembered that none can indicate the actual presence of oil. At the very most, they can suggest the existence of an underground structure which may be favorable to oil accumulation. Only the drill can prove the presence of oil." The Petroleum Handbook (5th ed.; Shell International Petroleum Company, Ltd., 1966); offshore exploration techniques are described in Report of The Secretary General to the United Nations Economic and Social Council on the Resources of the Sea, UN Doc. E/4449/Add. 1 (February 19, 1968), pp. 38-54.

²⁰ In 1965 the average cost (including platform cost) of drilling and equipping an offshore well in the relatively shallow waters of the United States continental shelf was \$413,000. United States Petroleum Through 1980 (U.S. Department of the Interior, 1968), p. 59. A detailed tabulation of offshore drilling costs is given in Petroleum Facts and Figures (American Petroleum Institute, 1967), p. 39.

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Experience on our own shelf is unmistakably clear that, in contrast to exploration by drilling, the lack of assured tenure is not an impediment to geophysical explorations. Oil companies are free to engage in such investigations on the continental shelf for oil, but must bid competitively to obtain exploitation leases.²¹ Under this system there has been no paucity of geophysical activity, and on the basis of data obtained by geophysical methods companies have bid very substantial sums of cash for the right to obtain leases, fully cognizant that their pre-drilling data offers no guaranty that they will find oil, let alone in quantities sufficient to justify the cash bonuses they pay for the leases.²² Therefore, there is no reason why tenure should be guaranteed solely on the basis of favorable geophysical evidence.

In the case of surficial deposits, such as manganese nodules and phosphorites, the discovery procedure would pose a different problem. A number of promising localities of these deposits are already known to exist, and some have been fairly extensively investigated.²³ There is no question as to the existence of such deposits, and the extent and quality of the minerals is fairly well understood. Additional information is obtainable by existing sampling techniques at relatively low costs. Indeed, it is far easier to estimate the extent and quality of these deposits, and with greater accuracy, than to make such estimates with respect to oil and gas, or alternative upland sources of the same minerals. Thus the procedure for granting claims to the discoverer is meaningless with respect to surficial deposits.

Moreover, in view of the widespread knowledge of and interest in the manganese nodules it is possible that a number of claims would be filed simultaneously at the moment when claims registration was to begin. Since these deposits are already "discovered" the procedure for awarding a claim to the discoverer would provide no basis to select the appropriate claimant. The Commission Report offers no explanation of how the Registry Authority would extricate itself from this impasse.

It must also be recognized that the only ocean floor minerals which are likely to be exploited for many years to come are oil and gas and the surficial deposits. Very little is known of the character of the minerals in the

²¹ Section 8 of the Outer Continental Shelf Lands Act of 1963, 67 Stat. 462, 468; 43 U.S.C. 1331, 1337 (1964).

²² At three sales of United States outer continental shelf leases between May, 1967, and May, 1968, oil companies paid, prior to drilling, a total of \$1.7 billion in cash bonuses. United States Petroleum Through 1980, *op.cit.*, p. 59.

²³ See J. L. Mero, The Mineral Resources of the Sea (New York: Elsevier, 1965), pp. 127-241, 277-80; D. Brooks, Low-Grade and Nonconventional Sources of Manganese (Baltimore: The John Hopkins Press, 1966), pp. 93-109; Cruickshank, Romanowitz and Overall, "Offshore Mining - Present and Future," Engineering and Mining Journal 84 (January, 1968).

bedrock beneath the unconsolidated sediments of the ocean floor. It is generally believed that if deposits of valuable minerals exist in the bedrock, they would not occur in geological settings more favorable to recovery than of the same kinds of minerals in the bedrock of the continents.²⁴ So far as is known these minerals would have to be removed from the rock by such traditional techniques as room-and-pillar shaft mining. Indeed, some conventional techniques such as open-pit mining might have to be ruled out.²⁵ In addition, studies of the special problems for working in the context of an overlying ocean, such as transportation of the minerals to the surface and from there to land, the disposal of spoil, and the maintenance of safe conditions, are only beginning. Until these problems are better understood, any prediction of the economic outlook of such ventures is wild speculation. As a consequence it is generally believed that significant mining activity for hard minerals in the bedrock of the ocean floor is very far off.²⁶ It is, therefore, impossible to predict what kind of legal regime will be required to facilitate the development of such deposits.

Another consequence of the Commission's first-in-time, first-in right system is that it has no propensity to return fair market value for the right to exploit the resource. The Report specifies that the Authority would fix the royalty and rental rates. Although unstated, it is fair to infer that the rates will have to be fixed in advance of the time when the claimant actually undertakes an obligation to pay. Undersea exploitation is likely to be expensive and risky. Any prudent entrepreneur would need to know the resource costs in advance in order to determine whether it is worthwhile to undertake the investment.

²⁴ Potential Mineral Resources of the United States Outer Continental Shelf (U.S. Geological Survey [Department of the Interior, 1968]), pp. 89-95. See also undated paper by V. E. McKelvey, B. E. Stoertz, and J. G. Vedder, U.S. Geological Survey, "Subsea Physiographic Provinces and Their Mineral Potential," distributed informally to the Economic and Technical Sub-Committee of the United Nations Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction; V. E. McKelvey, U.S. Geological Survey, "Progress in the Exploration and Exploitation of Hard Minerals from the Seabed," Statement before the Economic and Technical Sub-Committee of the Committee on the Peaceful Uses of the Seabed and the Ocean Floor beyond the Limits of National Jurisdiction, Press Release of the U.S. Mission to the United Nations, March 13, 1969.

²⁵ Potential Mineral Resources of the United States Outer Continental Shelf, id., p. 91.

²⁶ Even with respect to bedrock deposits submerged by the shallow depths of the continental shelf, it has been said, "In short, the prospects for the development of subshelf sedimentary bedrock resources, either on the basis of need or opportunity, seems so remote as not to justify estimates of their potential," id.

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Without competitive bidding, however, it would not be possible for the Authority to fix a fair market value rate for the right to exploit the resource.

In the absence of a market mechanism for ascertaining the value of the resource, the Authority must recognize that if the rates it sets are not acceptable to the claimant, there will be no development. Thus the Authority will have to accept the claimant's judgment of the maximum value of the right. This figure necessarily will not exceed that which might have been received under competitive conditions, and it is likely to be less.

In addition, the negotiation of rates leaves room for favoritism. Only accidentally will a uniform rate be appropriate for different claims. It can be expected that differences in weather, water depth, the quantity and quality of deposits, nearness to markets, and marketing conditions will influence costs and rates of output, and therefore signify differences in the value of the right to exploit different deposits. And even if the Authority could successfully avoid giving discriminatory treatment, it is not unthinkable that it will be suspected of having been discriminatory. Controversy of this character can create unpleasantness in domestic resource-disposal programs. It is hardly to be recommended where the suspicions may have geopolitical implications.

The absence of a market mechanism for setting rates also leaves room for discrimination in the fixing of the length of the term of occupancy, the size of the claim awarded, and the other terms of tenure, simply because there is no impersonal mechanism to demonstrate that the winning claimant in each case paid fair market value for the bundle of rights which the award of his claim conferred.

To this point, my criticisms have been directed at the resource management system embodied in the Commission proposal without significant reference to international relations implications of the resource allocation scheme. It is in the area of international relations, however, that I think the Commission proposal contains its greatest flaw.

The Report specifies that only nations or associations of nations may register claims. It also specifies that each nation registering a claim agree to enact domestic legislation to insure that:

The business entity on whose behalf the claim is registered complies with the conditions imposed by the International Registry Authority and reasonably accommodates other uses of the subsea area covered by the registered claim, the superjacent and surface waters, and the air above them along the lines specified in the Convention on the Continental Shelf.

The specified fees and payments are submitted to the International Registry Authority.

Its civil and criminal laws are applied to protect exploration and exploitation activities under its registered claims, including personnel involved, and the necessary installations and other devices against piracy, theft, violence, and other unlawful interference.

The registering nations' failure to discharge these obligations effectively should subject its registered claims to revocation by the International Registry Authority.

The registering nation, of course, will be able to apply any other of its domestic laws not inconsistent with the recommended framework to the exploration and exploitation activities under its registered claims, such as laws concerning working conditions; the production, marketing, and pricing of the extracted minerals; and the taxation of income from such activities.²⁷

The Commission does not explain why nations need be interposed, as the tenants of record, between the mineral entrepreneurs and the Authority. If the purpose is to insure that each nation control and be responsible for its own nationals, that could be accomplished simply by requiring a commitment to that effect from nations as a prerequisite to the bidding eligibility of their nationals. And each nation's right to protect, regulate and tax its own nationals could be expressly stated in the agreement establishing the Authority, if that is considered necessary.

Thus the only reason for restricting claims registration to nations would seem to be to vest nations with jurisdiction over the nationals of other countries. This control is unnecessary if the award of areas to entrepreneurs is restricted to those whose nations commit themselves to exercise such control over them.

Moreover, the extension of jurisdiction by one nation over the nationals of another in the area of the high seas, particularly when the scope of jurisdiction has distinctly territorial implications, would be most unfortunate. The United States views its domestic shelf legislation as limiting the right to exploit to nationals of the United States.²⁸ It has stated that minerals

²⁷ Commission Report, p. 159.

²⁸ "Mineral leases issued pursuant to Section 8 of the Act may be held only by citizens of the United States over 21 years of age, associations of such citizens, States, political subdivisions of a State, or private, public or municipal corporations organized under the laws of the United States or any Territory

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recovered from the continental shelf are not subject to United States customs duties when landed in the United States.²⁹ In one court pleading it asserted a right to prevent the creation of artificial structures and islands on the shelf, without having to show that such structures might interfere with the exploration for or exploitation of the natural resources.³⁰ In an area which the Commission views as belonging in common to all nations,³¹ it is not necessary to take the risk that such exercises of national territorial jurisdiction might develop in the high seas.

In addition, the creation of national jurisdiction over claims areas is likely to generate attempts to give customs-free treatment to minerals recovered from one's own claim, but not from the claims of the others. The effect would be for entrepreneurs to channel their exploitation claims through nations which are the likely markets of the products.

Most important, the Commission Report, by interposing sovereigns between the entrepreneurs and the Authority, would necessarily make every dispute a dispute between sovereigns. Thus with every dispute there would be a risk of international political controversy, requiring political solution. On the other hand, there is no reason to assume, if entrepreneurs could deal directly with the Authority, that every dispute which might arise would necessarily cause a quarrel between sovereigns. It is not unthinkable that direct landlord-tenant relationships on the ocean floor would be amenable to the customary mechanisms by which men of international commerce settle their differences without direct confrontations between their governments.

It must be apparent by now that I find little in the Commission Report to recommend. Since I have used it as a punching bag, however, it is only fair that I offer suggestions of my own for others to assault. In making the

thereof." Bureau of Land Management, U.S. Department of the Interior, 43 C.F.R. Sec. 3380.1 (1964) (Outer Continental Shelf Deposits - Persons Qualified to Hold Leases).

²⁹ U.S. Treasury Department, Bureau of Customs, letter from E. F. Kilpatrick, Director, Division of Tariff Classification Ruling, to J. Leslie Goodier, United Aircraft Corporation, T C 417.371 0 (May 18, 1967).

³⁰ See United States v. Ray, No. 65-271-Civ-CF, Memorandum Opinion (S.D. Fla. Jan. 2, 1969). Also, see letter from Edward Weinberg, Deputy Solicitor, U.S. Department of the Interior, to Brigadier General John A. B. Dillard, Corps of Engineers, U.S. Army (February 1, 1967).

³¹ Commission Report, p. 149.

suggestions I accept as true certain assumptions about which I have private doubts, although I confess I lack the competence to evaluate them critically. These assumptions are: (1) that the time has come for the imposition of a new regime to govern development of minerals of the deep sea floor; (2) that the community of nations desires to provide the developing world with a fund for its use whose source is independent of the controls implicit in existing multinational sources of development assistance; and (3) that the community of nations has decided that the burden of this development financing should fall upon the users of minerals extracted from the deep sea floor.

With it understood that these assumptions are accepted only for purposes of discussion I offer the following thoughts as to how the Commission Report might be improved.

As I mentioned earlier an oil and gas prospector needs tenure before proceeding to invest in drilling but does not need tenure in order to do geophysical exploratory work that does not require emplacement of permanent structures on the ocean floor. Accordingly, those seeking to explore for oil and gas by geophysical techniques should be free to do so on a nonexclusive basis. Similarly there is no reason to assure tenure to those who would explore surficial deposits since such work has been and can be done on a nonexclusive basis without assurances of tenure.³²

With regard to the hard rock minerals in the bedrock of the ocean floor so little is known that it would be inappropriate now to devise a system for earning tenure to those deposits by proof of discovery. The decision as to the appropriate system for such deposits should be delayed until there is reason to believe that they have economic potential.

A second major flaw of the Commission's proposal is that it provides no means of selecting among competing applicants. The principal consequences are that the system is unworkable, is not conducive to obtaining fair value for the resources alienated, and is subject to discrimination and suspicions of discrimination. A competitive bidding system would provide a means for selecting among competing applicants and would overcome the difficulties inherent in the Commission's system. The Authority could be empowered to offer exploitation rights for areas under terms of competitive bidding whenever it had reason to believe that there was a substantial interest in the area. Presumably those who had been exploring would express their interests to the Authority.

³² I do not suggest that exploration should be free from any controls. Non-exclusive exploration permits may be utilized to avoid harm to aquatic life, submarine cables and pipelines, navigation, and so forth. Controls of this kind are exercised on the continental shelf through nonexclusive exploration permits issued pursuant to Section 11 of the Outer Continental Shelf Lands Act, 67 Stat. 462, 469; 43 U.S.C. 1340 (1964).

Bidding might be on the basis of percentage of net income; percentage of the value of production; dollars (or cents) per unit of output, e.g., per ton of ore, per barrel of oil, annual rental rates, or cash bonus. The method or methods might be specified in the agreement establishing the Authority, or left to the Authority's discretion. The winning bid would speak for itself as the judgment of the market on the value of the tract.³³ The bidding process would automatically take account of evident differences in mineral quantity and quality, the size of tracts offered, and other terms of tenure. None could justifiably allege discrimination. Most important, rights would be available to all responsible bidders, whether or not government-owned. Nations would have no territorial jurisdiction in the lands which they or their nationals occupied although they would have personal jurisdiction over their own nationals in order to regulate, tax, and protect them.

In conclusion, it is my belief that the Commission Report represents a turn in the wrong direction. It would create a whole new sphere in which international friction could develop. It would impose self-contradictory and unremunerative regulation on an area which, without any help from the Commission, will present one of the most challenging, difficult and unusual resource management problems ever confronted by man.

³³ This would not be the case if there were collusive bidding. No system can be made collusion-proof, but the Authority could be protected to some extent by permitting it to reject collusive bids, and to exact penalties and to recover damages for collusion, out of bonds posted by bidders as a qualification for bidding. If thought necessary, the Authority's decisions as to whether collusion had occurred and as to the question of damages could be subject to appellate or trial de novo review in an agreed-upon forum, which might be a standing tribunal created exclusively for the purpose, or ad hoc tribunals such as are used for commercial arbitration.

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Panel: Regimes of the Deep-Seabed

Langeraar

SOME THOUGHTS ON AN INTERNATIONAL REGIME AND ADMINISTRATING AGENCY
FOR THE SEABED AND OCEAN FLOOR
BEYOND THE LIMITS OF NATIONAL JURISDICTION*

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Introduction

The system proposed here is only a first approximation of what might be achieved in the near future with regard to the administration of the seabed and the ocean floor beyond the limits of present national jurisdiction and the establishment of a provisional international regime for that area. This system is, of course, far from ideal, even if we were able to define an ideal system in this case. It only tries to avoid a number of pitfalls that were already found to exist.

It is my opinion that this suggested system might be tried out in practice and provisionally in an area of the seabed and the ocean floor that undoubtedly lies outside the limits of present national jurisdiction. The advantage of this approach lies in the fact that it would not be necessary to wait until a future United Nations Law of the Sea Conference has succeeded in determining the outer limit of national jurisdiction over the seabed and the ocean floor.

The area proposed is the least interesting to companies searching for oil and natural gas, as the continental slope and rise are - for the time being - excluded from the area for which the provisional regime is valid. Apart from the fact that this would perhaps only be a temporary limitation, there are other mineral resources that require attention and receive attention already today. Also, there are regions in the deep-sea where it might be worthwhile to look for oil and gas.

A watertight legal structure has not been devised; this should be done by experts in this field. The following suggestions are made only with the intention of promoting discussion of this matter.

Proposal

Considerable interest exists in the problems of exploration and exploitation for peaceful purposes of the resources on the seabed and the ocean floor and in the subsoil thereof beyond the limits of national jurisdiction, in

*EDITOR'S NOTE: This paper was prepared by Admiral Langeraar since he was unable to attend the Monday afternoon session and participate in the discussion on the deep-seabed regimes.

conjunction with the wish expressed in several quarters that such exploitation be for the benefit of all mankind with particular emphasis on the needs of the developing nations. The political interest in the subject is shown by the United Nations General Assembly Resolutions,¹ as well as by the agenda of the Eighteen Nation Disarmament Committee, whereas a number of governmental and non-governmental organizations have given much thought to it already. Proof of this heightened interest is evidenced in the numerous recent publications on the subject.²

It seems that a consensus of opinion is forming with regard to the observation that there exists an area of the seabed and ocean floor which lie beyond the limits of present national jurisdiction and which should remain outside such limits. On the concept of res nullius, res communis or otherwise for this area opinions have not crystallized yet. One of the major problems will be presented by the delimitation of this area.

As regards the legal consequences of accepting the concept of such an area beyond the limits of national jurisdiction the view has been expressed that nations and nationals should conduct their activities in that area in accordance with the principles of international law and of the Charter of the United Nations. It has also been suggested that a careful study be made of existing national law with regard to the continental shelves in order to see whether a common denominator might be found that would be applicable to the deep-sea as well. Suggestions were also made to have a moratorium or freezing of national claims over the seabed beyond national jurisdiction, which limits, however, are not firmly established. In this connection the Antarctic Treaty and the Treaty on Outer Space sometimes were mentioned.

A number of suggestions have been made for a set of more or less rigid rules or principles to be laid down in connection with proposals for some form of internationalization of the ocean floor beyond the limits of national

¹ Resolutions 2340 (XXII) and 2467 (XXIII).

² See, Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), the final Report of the Commission on Marine Sciences, Engineering and Resources; 19th Report of the Commission to Study the Organization of Peace; the United Nations and the Bed of the Sea (Dobbs Ferry: Oceana Publications, 1969); The Ocean Regime (Center Occasional Paper, Vol. 1, No. 5 [Santa Barbara, California: Center for the Study of Democratic Institutions, October, 1968]); SIPRI: Towards a Better Use of the Oceans - A Study and Prognosis (Stockholm, Sweden: The International Institute for Peace and Conflict Research, 1968); Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, 1969); A. L. Danzig, A Proposed Treaty Governing the Exploration and Use of the Ocean Bed (Pamphlet Series No. 10, World Peace Through Law Center [Geneva, 1968]); and numerous other publications.

jurisdiction. Views expressed so far show a wide range between wishes for a very loose and for a rather rigid set of rules or principles, to be applied by a newly-created international organization under the authority of the United Nations, by the United Nations itself, or by some existing organization of the United Nations family. Notwithstanding the tremendous difficulties that must be overcome and the very complex problems that will have to be solved, some general conclusions can be made:

- (1) There is an area of the ocean floor beyond the limits of present national jurisdiction (these limits will have to be more accurately defined).
- (2) This area should remain outside the limits of present national jurisdiction (the status of this area should be defined, res nullius, res communis or otherwise should be decided).
- (3) From the above, it follows that some form of jurisdiction must be established and exercised (by the United Nations, on behalf of the United Nations, or by some similar agency) to safeguard the interests of all nations, including the land-locked.
- (4) International jurisdiction should be governed by a set of rules or principles of a legal and technical nature, designed to guarantee the orderly exploration and exploitation of the resources and to safeguard the interests of all other users of the free sea.

The Ad-Hoc Committee to Study the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction reported to the 23rd General Assembly in much the same vein. It made, with regards to an internationally agreed-upon set of arrangements, the following recommendations:

- (1) Such arrangements should be feasible and acceptable to the international community.
- (2) Such arrangements should enhance efficient and equitable means to ensure orderly exploration, evaluation, exploitation and conservation of the resources in accordance with the rules of the international law of the sea and the protection of the rights of all States.
- (3) The arrangements should include means to prevent, or reduce to acceptable limits, damage to living resources and to the environment as a whole and interference with other legitimate activities.

(4) They should contain means to assure the practice of appropriate conservation and safety measures that will avoid resource waste and ensure safe working conditions.

(5) Such arrangements should include means to prevent, or at least to mitigate to acceptable limits, economic and social dislocations that may arise from exploitation of seabed resources.

(6) Provision of social overhead-type services, such as aids to navigation, maps and charts, weather information, rescue capability and other services required to encourage and support exploration and development should also be subject of such arrangements.

(7) Finally, the Economic and Technical Working Group of the Ad-Hoc Committee stressed the need for an internationally agreed boundary between the area over which coastal States exercise jurisdiction and the one in which humanity as a whole has a stake.

It is clear that if the world had to wait until all the moot points were agreed upon internationally, technological progress would - in the meantime - reach a level where national occupation of part of the area under consideration might become a dangerous possibility indeed. Therefore, instead of suggesting something that might easily be debated and contested for several years, it seems more logical and profitable to suggest and establish something that might be agreeable to a great number of States within a comparatively short time.

At this moment, it could be agreed to let vast stretches of ocean floor lie forever beyond the limits of any national jurisdiction; e.g., those areas of ocean floor lying at least 200 nautical miles beyond the 200-meter isobath, whether this depth-contour runs along a continent or island, or surrounds banks or shoals which are at a distance of less than 200 nautical miles from the continent or an island. A cursory inspection of the world's charts shows that at least 300 blocks of five degrees of latitude and five degrees of longitude lie between 50° North and 50° South Latitudes. In other words, 300 blocks of 90,000 square nautical miles, a total of 27,000,000 square nautical miles or about 92,500,000 square kilometers, are outside national jurisdiction according to the standard set above.

It may be worthwhile to consider drawing up, and agreeing by Convention on, a set of provisional rules of a legal and technical nature that may be declared applicable to the areas of the ocean floor defined above. Emphasis should be given in that case to the tentative nature of these rules and their provisional application in these areas, with the object of finding out how they would shape up in actual practice and what the teething troubles would be. The experience thus gained might result at a later date in a new and improved Convention the essentials of which would have been tried and amended in situ and found to be sound.

At the same time an Ad Hoc Administrative Agency would have to be created to exercise the supervision over these areas of the ocean floor, under the jurisdiction of the General Assembly, and to apply and ensure the observance of this set of provisional rules of a legal and technical nature. This international agency might be called the "International Ocean Floor Administration" (IOFA) and its authority would be derived from a relevant Resolution of the General Assembly. Implementation of this Resolution should be subject to review by the General Assembly.

The set of provisional rules of a legal and technical nature should have the following general outlines:

- (1) As the nature of operating concerns on the seabed is diversified (e.g., private industry, government bodies, joint concerns, and so forth) and as such would present a very complex picture to IOFA, this International Ocean Floor Administration should have to deal with governments of States only.
- (2) At least three, and possibly four, different stages should be envisaged regarding the exploration, evaluation, exploitation and conservation of resources - i.e., an exploration license, an exploration permit and an exploitation lease, that might be divided again into an exploitation license and an exploitation permit. The transition from one stage into the following should proceed, as much as possible, according to mathematical rules not requiring decisions of a qualitative nature of IOFA. Where necessary such decision should be made by a body outside IOFA.
- (3) Every State being a member of the United Nations or of an organization within (and without?) the United Nations family, should have the right to acquire a permit or a license. A built-in safety device should prevent the developed nations from bringing disproportionately large areas of the ocean floor under their control. In the exploration stage the same area can be explored by as many States as are interested.
- (4) In general, the license and permit system should be such that States are encouraged not to hoard areas without exploring or exploiting them. One solution is to require the State to surrender a proportion of the lease area at intervals of time so that it is encouraged to concentrate its attention on the richest zones. Another is to have a rental system with annual increments in the rent so that it becomes progressively expensive to hold on to marginal areas. It is also possible to conceive of a system containing both incentives.
- (5) The fees to be paid for an exploration license should be very light, to cover administration costs, and the area concerned should be very large. Progressively, as more information

is gained, the areas under licenses or permits will become smaller and the fees higher. It seems worthwhile to suggest that IOFA collect the fees due, but that, e.g., the World Bank will handle the money so collected, according to general rules laid down by the General Assembly.

(6) No exploitation license or permit can be acquired over an area over which no exploration license or permit was held. During the first stage of exploitation, under the exploitation license, a limited degree of exclusivity should already be introduced. An exploitation permit will be granted only to one State exclusively and for one resource only, or a combination of resources requiring similar extraction processes. One area, therefore, may be subject to several exclusive exploitation permits for different resources.

(7) Validity of and possibilities under exploration licenses and permits should be such as to encourage transition from the exploratory into the exploitation stage. Exploitation licenses and permits should remain valid long enough and against low enough fees to encourage private enterprise or government bodies to make the necessary investments.

(8) The term of years for which an exploration permit remains valid should be fixed, taking into account the resource to be exploited, the distance from the shore and the size of the area. Exploitation permits may be transferred from one State to another under provisions to be determined among themselves, but clearly stating that the new owner takes over all responsibilities and restrictions the former owner was subject to. Notification of IOFA of such transfer is mandatory.

(9) IOFA shall have the right and duty to establish rules to which States - before being granted a license or permit - should have to adhere, so as to prevent or reduce damage to living resources, the environment or social structures, to prevent pollution or waste, or to provide services such as navigation aids, weather information, safety and rescue devices, and so forth. Supervision over the observance of these rules should be vested in a body outside IOFA.

(10) Transition from the exploratory stage into the exploitation stage shall only be possible after the State in question has provided IOFA with the scientific results and exploration data of the areas for which an exploration permit was held. Exploration results should also be handed over by any State deciding to discontinue its exploratory or exploitation activities. These scientific results and exploration data shall be kept secret and

should only be made public after a specified period of time, e.g., one year after the date of reception by IOFA.

(11) At regular times IOFA should be required to disseminate information on a world-wide scale on licenses and permits registered, as well as on the relevant areas, the States concerned and the resources in question.

As was said earlier, the items above should be considered as a provisional set of rules, applicable only to the areas of the ocean floor lying at least 200 nautical miles from the nearest 200-meter isobath so as to see whether the system would work at all and where it should be amended. It might be easier to reach agreement hereon than on the accurate delineation of the seabed and ocean floor beyond the limits of national jurisdiction. It should be made quite clear, however, that the area of the ocean floor outside the one defined above and also beyond the limits of present national jurisdiction, the area "in dispute," should remain in dispute and as such might well be frozen as regards national claims and internationally agreed upon as not being subject to occupation or national appropriation until such time when agreement is reached on the extent of national jurisdiction over the seabed and the ocean floor.

It is considered worthwhile to discuss further the set of provisional rules outlined above and to describe some of the advantages and dangers thereof.

ad (1) The advantage of IOFA having only to deal with governments of States is twofold. It simplifies matters for the administration and it does not require substantial changes in national law with regard to the rules governing the interrelation between a government and its national private or government enterprise in mining matters. It means that a government will obtain the rights under the license or permit, but will remain responsible towards IOFA for the orderly manner in which operators, to whom the government has subleased, proceed. This does mean that national law must be applicable to nationals working on the high seas and that national legislation is in line with the rules IOFA establishes on prevention of waste, pollution, and so forth.

ad (2) With a view to the hostile and adverse marine environment it seems necessary to have - for the time being - four steps until actual exploitation, two in the exploratory stage and two in the exploitation stage. This does not hurry governments and their private enterprise and other bodies unduly and allows for more time to let information on who is doing what, where and when, sink in.

ad (3) All States, including the landlocked, should have equal possibilities to register with IOFA for a license or permit according to the provisions to be laid down by IOFA. Whether States

not being a member of the United Nations or of an organization with the UN family should have such rights also should be given careful attention. "For the benefit of all mankind" seems to point in the direction of ALL States. That every State interested can acquire an exploration license or permit for a certain area has the advantage that a maximum amount of information is gained about the area, while the competition in exploration stimulates earlier transition to the exploitation stage.

ad (4) This article is self-evident and it seems profitable to start with a system that is a combination of a decreasing area in time, together with annual increments in rent over the remaining area in such a way that the total amount due increases with time.

ad (5) Again for the purpose of a simpler administration within IOFA, a system of royalties - to be paid to IOFA - in the exploitation stage should NOT be considered. Governments have to pay fees for every stage of the cycle, including the exploitation permit, which fees gradually increase. Now governments envisage to be reimbursed by the operator to whom they sublease should remain a question of national law. Fees, therefore, should be moderate and should never exceed the amounts that governments may claim from their subcontractors according to established practice or under their national law. It must remain profitable for governments to register claims with IOFA. It seems wise, furthermore, not to burden IOFA with any authority over the money so collected.

ad (6) Exploration licenses and permits can be obtained by any State interested and are a prerequisite to move into the stage of exploitation. By this rule a gradual decrease of the area under consideration will take place. Only in the exploitation stage the concept of exclusive rights, for one resource or group of related resources, comes into being. The limited degree of exclusivity under the exploitation license, by which, e.g., not more than three States can obtain such license for the same resource and the same area, opens the possibility for introducing a modified adjacency principle in case more than three States apply for such license.

ad (7) This article is self-evident. As far as possible the whole system should be conceived in such a way that a minimum of qualitative decisions will be required to be made by IOFA. Transition from one stage into the next should follow naturally from the work carried out by the State concerned and the results thereof.

ad (8) It is clear that the dredging of tin ore in a certain area requires a different time span than the exploitation of oil and natural gas may take. It is also clear that an extraction method requiring to skim large areas of ocean floor requires much larger areas than is needed for the extraction of oil and natural gas. The possibility of transfer of exploitation permits from one State to another (under certain conditions) may introduce competitive bidding and may tempt States to try and obtain more permits than they actually intend to use. The system of rules and fees should be such as to curb this desire and to keep this phenomenon within acceptable limits. The possibility is created, however, for States entering into actual exploitation after the exploration has been done by others. This may seem to contradict (6) but the objective of (6) is to ensure adequate research and exploration of the area before exploitation is started and, therefore, the transfer of exploitation permits does not seem to be out of order. Developing nations may profit most of all from such transfer.

ad (9) This article is self-evident. The bodies outside IOFA that should have responsibility for supervision over the observance of said rules may well be the relevant specialized agencies of the United Nations.

ad (10) This article aims at the collection of scientific information on the seabed and the ocean floor and making this information available to mankind instead of letting it remain the exclusive property of the State or company concerned. This should be done, however, in such a way that the interests of the exploiting State are not jeopardized to any material extent. The specified period of time might, therefore, perhaps be two years instead of one.

ad (11) It is a foregone conclusion that in a system set up for the benefit of all mankind, the widest possible dissemination of information on the progress within the system is a necessity. This will also prevent, to a certain extent, the development of disputes.

It is quite clear that the system outlined above omits much detail that will be of great importance. Much more will have to be decided upon if such a system were to be brought to life at all. This whole paper serves as nothing more than a beginning of the discussion of the whole subject.

The essentials of the system described are that attention is focused - for the time being - on areas of the ocean floor of which it can be expected that agreement is possible that they do not belong to the area under present national jurisdiction. The General Assembly should have jurisdiction

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over these offlying areas and should have an international body for the administration and supervision. This body should have to do with the governments of States only and not with the various forms of private or State enterprise.

The author wishes to declare that this paper has been written in a personal capacity only. It does not necessarily reflect any viewpoints of the government of the Kingdom of the Netherlands. It is not inspired by any views that might be held in the Intergovernmental Oceanographic Commission.

DISCUSSION

Griffin: Several principal points seem to have emerged by way of background. The oil industry started from the shore outward with a natural progression of essentially land technology. The oil industry sees some geophysical evidence of oil in the deep ocean basins but apparently does not anticipate any commercial exploitation of it for the unforeseeable future. Conversely, the hard mineral industry apparently, when it gets going, will make its first leap so to speak into ocean mining in the deep-ocean basin rather than the close shore. The technological capability will apparently exist by the middle 1970's, but whether there will be any commercial production of minerals from the nodules will then depend upon economic factors and legal institutional factors. And, of course, those are what we are here to talk about, namely, the deep-ocean regime. It is also becoming clear, the more discussion of this we have, that the attitude of individual nations in formulating their positions as to their net beneficial interests as to a wide legal shelf versus a narrow legal shelf is going to be in part influenced by the terms and conditions of the deep-ocean regime beyond the legal continental shelf. So, when we are discussing the deep-ocean regime we are necessarily having in the back of our minds as well as in the forefront of our discussion, the question of where should the outer limit of national jurisdiction be.

We will begin, however, from the point of view of the subject matter of our panel, namely, what the lawyers call the deep-ocean regime, meaning what are the legal terms and conditions, the legal institutions, the rules that should be evolved toward regulating and promoting the exploration and exploitation of the mineral resources of the deep-seabed beyond national jurisdiction.

Goldie: I would like to make two points, one of them relatively minor. We have been hearing a lot about expanding jurisdictions. I would like to propose that we use a shorthand phrase, possibly Roe's Law. (Richard Roe was a fictitious casual ejector in a famous legal fiction, the Action of Ejectment. By Roe's many trespasses one jurisdiction [that of the Court of King's Bench] was expanded at the expense of others [the Courts of Common Pleas and Exchequer] greatly to swell the revenues of the first Court's judges.) I would formulate Roe's Law as follows: (1) Jurisdiction tends to expand to occupy the subject-matter allocated for its exercise; (2) Subject-matter in (1) above tends to expand until confronted by an equal and opposite subject-matter exercised by a countervailing jurisdiction. Now, thinking in terms of Roe's Law of this expansion of jurisdiction problem, my thought has always been that rather than rely on allocation procedures to be conducted by bureaucracies, whether State or international, I suggest that there are alternative allocation procedures, particularly negotiations in conferences. In this connection I have drawn analogies in various studies and have published from the administrative conferences of the International Telecommunications Union. Here we have regional and, of course, universal administrative conferences whereby States negotiate and trade-off amongst themselves what they want in the way of allocations, in the one case radio frequencies and in this case rights to explore or exploit, as the case may be, specific minerals.

Furthermore, when we discuss continental shelf or deep-ocean jurisdictions of international agencies or States, we are talking about the control of specific activities over specific resources or entities. This should be particularly borne in mind in discussions of the exploitability test as "expanding boundaries." If you come to analyze what is often said in detail, you see that most of the discussion is not really very accurate about exploitability. Only too often speakers and writers leave one with the impression that a capability of exploiting oil and gas will give a State jurisdiction beyond 200 meters over a sedentary fishery to an equal distance out. Can the exploitability of manganese nodules give a State a right to claim under the exploitability test jurisdiction or control or sovereign rights over sulphur deposits? The exploitability test's "rubber boundary" (so-called, but is it a rubber boundary?), is only for a specific kind of activity, for exploring for or exploiting oil and/or gas but not sedentary fisheries.

Now I would like to place three thoughts before you: a light one, a shorthand phrase - Roe's Law - first; secondly, the specific quality of what the exploitability test is about, because the very word exploitability does not mean anything but that something is exploitable whatever it may be, something can be turned into an economic commodity from a natural resource; and, thirdly, I would like to put before you the alternative means of allocation procedure, namely, the procedure of negotiation in conferences, either regional or universal, rather than the procedure of turning up at a window and suffering from the dangers that Professor Sohn pointed to this morning, the alternatives of dummifying, using friends' names and flags of convenience countries' names to get a multitude of concessions or, alternatively, of picking the eyes out of vast ocean areas, analogous to practices well known in the early days of the West of this country and in most pioneering countries.

Rao: I would like to address one question to Mr. Gaskell and two questions to Mr. Browning.

First, Mr. Gaskell argues that fixing the outer limits of the legal shelf at the point where the continental margin gets separated from the deep-oceans would be the most logical thing to do. He also pointed out that identifying the geological features of the continents and the deep-ocean is a matter that can be settled by an international group of marine geologists and implied that an agreement on the exact location of the continental margin could be easily arrived at.

I have carefully followed a few sources, reasonably authoritative in the field of marine geology. My limited exposure convinced me that there are no neat, cut and dried ways of identifying the different variations the ocean floor experiences before it finally merges into deep-oceans. Therefore, would it not be too simplistic to suggest that an agreement could be easily reached in distinguishing a trench from a valley, a valley from a slope, a rise from a mount, or a guyot and so forth. Further, in view of the wide physical disparities that occur on the ocean floor, even if an agreement is reached, how would it be any less arbitrary than many other ways of fixing the outer limits?

Second, Mr. Browning referred to the International Registry System recommended by the Marine Commission as a purely voluntary mechanism and hoped that many States would subscribe to it. However, neither he nor the Commission seemed to worry about the way to get most States to accept the voluntary Registry System. In the absence of a specific mention of the various services or incentives to be offered by the System, is it not a little over-optimistic to assume that the Registry Authority would embrace a wide membership? Pursuing the same question a little further, how would the International Registry Authority plan to guarantee non-interference by others in the activities of its member States?

Gaskell: In general, one can see from a chart where the bottom of the slope exists, but there are places where there is confusion and one could either do as they have suggested in this National Petroleum Council Report - take the continents and oceans as two different geological regimes and then spell it out in all parts by drawing a line and then saying this is the natural boundary that is to be the basis of legal argument. Alternatively, one could distinguish between continents and oceans by doing seismic observations and measuring the thickness of the earth's crust. I think the sensible thing is to have a panel (that is, if you ever did want to set up this regime) and decide on the boundaries of this deep-ocean area (whether it has deep trenches in it or whether it has mountain ranges in it, it is still the deep-ocean area) as opposed to the other third of the earth's surface which is the continental rocks.

Griffin: Mr. Browning, do you remember the two questions?

Browning: The first question is what incentive the States would have to join this International Registry Authority that has been proposed. The second question was what would deter non-member States from engaging in activities that would interfere with the activities carried on under the international regime. I think that both of those questions probably could be lumped together and answered as one.

Generally speaking, the States which are members of the International Authority first of all would not permit activities under their flag or under their auspices unless they were pursuant to the international regime itself and, secondly, about the only thing that you could do regarding non-member States is, in the event of a dispute between a non-member State and between some activity carried on under the international regime, that the activities of the non-member State insofar as they are inconsistent with the international regime would not be sustained in any dispute. Now if the dispute would be adjudicated within the international regime itself I would imagine that the answer would be quite evident that the international regime would probably hold for itself; that is, hold for the operation being conducted pursuant to the regime. If for some reason the dispute were to be settled outside the international regime, I think we would be into the general area of just when do treaties become customary international law and binding on non-parties. You might end up before the International Court of Justice or someone else and it is a very difficult question

to answer in that respect as far as non-members go; maybe if all countries of the world are members except a few, and activities have been carried on a number of years under the regime, perhaps by then it would be "customary" international law and bind everybody, but if it were in preliminary stages and only thirty or forty members were involved, perhaps not, perhaps it would not bind the non-members. It is a problem.

Zeni: I would like to follow up a little bit on Professor Goldie's objection to generalities. I think we are making another serious error and that has to do, for example, with what Mr. Miron said - we don't know enough about the ocean environment and, therefore, we use the ocean as a program focus for other purposes. Mr. Flipse made the point that you only find minerals in specific geographic areas. I think that is also true of petroleum, so why then do we want to insist on regimes and limits at the expense of other aspects of national security to safeguard pinpoint locations. For example, I think there are 700 million square miles of ocean space which is subtended by 200 meters or less. If you went to 2,000 meters this area is more than doubled. On the basis of these remarks, my question is why we want to exclude options and so much ocean space in order to safeguard some specific locations?

My other question has to do with what I think is a fallacious argument on the part of Professor Brown and Dr. Gaskell, and that has to do with the natural extension of the continental land mass into the oceans because if we look south from Canada the U.S. is a natural extension of Canada; and, also, what happens to Mr. Flipse's minerals which are in water depths of 12,000 to 15,000 feet. How do they come under the natural extension of the land mass?

Gaskell: From your statement I gather that the question is was I talking about the continental shelves and their slopes and the whole continental land mass? I was; but the manganese deposits that Mr. Flipse was talking about are in the other regime, the true ocean regime. It is you that are confusing the two issues, not me.

Now, your first question dealt with the fact that you find the minerals, and perhaps even oil, in specific geographic locations. Well, of course, if we knew where we were going to find oil we would be much richer than we are. History has shown in the last twenty years that we have found oil in the whole of the North African area, for example, which nobody wanted to know much about before. We have plenty of old retired geologists in the oil business who said they would drink all the oil in Kuwait or Bahrein or Saudi Arabia. The more we look for oil the more we find that oil is found in most sedimentary areas of the world. So all these offshore shelf areas - not all of them, but a great many of them - are potentially oil-bearing areas.

Christy: I have a little different response to Captain Zeni's question. As I understood what Mr. Flipse was saying, it is not that the nodules are found so much in specific location - they are found universally - but that they have different values in different locations. This is the important element and it

relates to the question that I would like to ask about the costs of resource evaluation. Mr. Flipse mentioned that by videotape they could cover a fairly sizable area of the Blake Plateau. Through this technique, it may be that the costs of evaluating the different resource sites on the seabed may be quite low. If the cost is very low in evaluating this information then there is a question as to whether or not there is a need for an exploration as well as an exploitation right. It may suggest the possibility that some sort of international agency might be the one that could undertake the exploration and survey of the seabed. And it might suggest that the agency could be in a position then to disseminate the information as widely as possible so that all members of the world community might be able to have access to this. This is simply speculative and I think it depends, in part, on how much it costs to acquire this kind of information.

Flipse: Well, I tremble at your suggestion, Dr. Christy, as I have in the past. However, to answer directly: over the past several years we have run a service whereby if a nodule and its location are sent to us, we will assay it and supply the information on it. Under this arrangement we have done 30,000 assays (we have the proper spectrometric machinery and decent standards), and the result is a data bank that gives us - like the bookie - hot tips on where to look. The actual business of looking is not inexpensive. The ships' cost range between \$2,000 and \$3,000 a day, as well as the costs of the people that we do not charge directly to this exploration trip; and so what we do, of course, is to optimize the available data, go for the materials of highest assay of metals that have marketability, and dispatch the ship on a trip of three weeks. This is not inexpensive. I concur, 100 per cent, that we are not interested in asking anyone's permission where or if we can explore the deep-sea floor. We have been exploring now for five years and never asked anyone for a permit and do not intend to. We meet other nations exploring and in the bars of Honolulu and Tahiti we find out that they do not have permits either. To the question of whether a government agency should explore, we respond, "Heavens, no." This is proprietary activity and it is the incentive that gives you the opportunity to be first with the most, which is the theory that American industry has followed in terms of this type of development over the years.

Blake: I guess my question is addressed to Mr. Flipse. Being an oil man rather than a mining man myself, I don't feel that I am wedded to the Locatable Minerals Law of 1872. I am not sure whether Mr. Flipse is or not, since I don't know whether he is an oil man or minerals man by background. This raises the question of allocation of exploitation rights; let's leave aside the question of exploration permits and so on. Let us assume that Mr. Flipse and other enterprises have discovered areas where they think that they would like to exploit, and then these have to be allocated in some way. The Commission suggested a "first come, first registered" sort of allocation which has not been successfully used in the oil industry, where we have used a market mechanism. There are many different market mechanisms for these allocations. I don't pretend to say which one is best; that is not the important question. I would like to know Mr. Flipse's opinion as to the desirability of some form of market allocation as opposed to a "first come, first registered" allocation.

Flipse: We believe that it will be necessary to have some degree of exclusivity to establish our claim since beyond the exploration that we mentioned there has to be a detailed survey, a statistical assay of the deposit and so forth involving a considerably greater investment, probably closer to the oil companies' costs of exploration. This suggests that we do want to have a right to recover the minerals in that area for the several reasons, including the attraction of capital investment, the tax benefits and the depletion benefits. I don't think that our group, or any other group, has had the temerity to suggest what this regime should be.

Blake: I am sorry. I guess I did not make my question clear. It is not a question of whether or not there should be exclusive tenure but how the tenure should be awarded. Should it be awarded by an auction mechanism? Should it be awarded by a mining claim mechanism, or what?

Flipse: We believe that, at least in the initial stages, it will be awarded by negotiation between the government with the responsibility and the company that is going to do the exploration. We don't consider it a real risk that there will be large numbers out there ready to register claims if there is a requirement that there be production of those claims. I would suggest that five ocean mining rigs of the present size contemplated would meet the needs of the free world for the metals that are involved - this suggests that there won't be a hundred or a thousand such rigs.

Blake: You are suggesting, then, that the fears of some of our earlier speakers of today that there would be many simultaneous claims as soon as the agency opened its doors is not a valid fear.

Flipse: That is our conviction and I hope I am not wrong.

Miron: Mr. Flipse, if I may ask you to amplify on that slightly, I think you were suggesting, were you not, that you don't believe there would be many simultaneous meritorious claims filed, that is, by those who earned the right. But you are not suggesting by a crystal ball claim that no one will file pieces of paper with the Commission. Am I correct?

Flipse: Quite correct.

Friedheim: If your assumption is correct that only five rigs would be needed to supply the needs of the free world, I can envision quite a hornet's nest at the United Nations when this fact sinks in, because what they have been arguing about and debating is precisely this, that you can - in effect - by using the "free" minerals of the oceans basically wipe out the mining industries of the less-developed countries that depend upon exports to the developed countries. That is going to be quite a mess.

Flipse: I would just like to contend that these minerals are not free! By the time you get them to the processing plant they will have a severe cost handicap

in competing with the current pricing of competitive ores. I think this is one of the unfortunate things in the United Nations thinking - this feeling that the nodules are down there and, therefore, they are up here. There is a whole lot of investment and technology between their in situ and their final product value.

Question: There is an implication going around here that the minerals on the ocean floor bear a special obligation to the mineral economies of developing countries. Those are just seabed minerals; they have no soul. They will be just like the same kind of minerals that come out of dry land sources all over the world. If you have a commodities glut problem (and I, personally, have an article of faith that you never have a commodity glut problem), solve it as a commodity glut problem like you would for coffee or for copper or some other commodity. Don't try to make the ocean floor, the most expensive place to get the material from, bear the heavy burden of supporting the less-developed countries.

Flipse: Amen! And I would like to add an additional point and that is in terms of the competition of these metals in the free world market; some of us who are looking at the marine resource and its processing realize that perhaps the marine resource will have a better final form. Let us just, in a short instance, note that the basic oxygen furnace requires a high purity manganese product; and because of the nature of the marine resource ore it will have to be processed to yield a high purity manganese product. Therefore, it is in direct line with the needs of the basic oxygen furnace business. The dislocation of markets as a social phenomenon is not one I am addressing. I believe this will be a very natural supply and demand problem.

Schaefer: I want to pursue the question of exclusive claims. This problem will, of course, arise whether you are working under the Law of the Flag, where you are going to need some reasonable protection by your sovereign in a certain area, or whether you have an international regime. What is the size claim one is talking about in the case of manganese nodules, where these occur - assuming this for the purpose of the argument - in a rather large continuous pavement in an area of say 200 miles on a side? I believe that some calculations that Frank LaQue has made indicated that an area of something like forty by forty miles contains all the copper one needs to supply a very large share of the world market for some time. What is the dimension of the exclusive claim - or the unit claim - that will be granted, "first come, first served," or that is reasonable for a sovereign to protect for his subject? What is the dimension of the claim you have in mind?

Flipse: Our present calculations indicate for a reasonable pay-out of the capital investment and subsequent profit that a 1,000 square mile area is a minimum claim. Approximately half of the material on the sea floor in that 1,000 square miles would be recovered.

Schaefer: If this be so, then it may be that we are too worried about the matter of interference, because 1,000 square miles is something on the order of 30 miles on a side.

Flipse: Yes, that is so.

Schaefer: Well, from the information we have so far, it looks as if there are vast areas on which the nodules are of rather homogeneous distribution and value. If you have a claim at least 30 miles on a side there isn't any particular reason for somebody else to interfere with you, when there is another 30-mile area right next door. So, it may very well be that claim jumping is not a vital problem.

Flipse: We concur. We do not think claim jumping will be a vital problem. We think that the price of the mineral in the market place versus the cost of getting it there will be the vital problem.

Hull: I have two questions. The first is directed to Mr. Flipse. He has not mentioned nickel and I am wondering if that enters into his calculations at all and also how the production of nickel from the type of deposit he is talking about would affect that market. The other question is that all this discussion seems to be about jurisdictional claims of miners versus miners and mining claim jumpers versus mining claim jumpers, I am wondering what happens if the mining activity comes in conflict with the fishery or some other activity. I have read the Commission Report but I must say I don't recall really what it had to say about that, which would have to be in the international regime.

Also, I have a third question. As an exercise, I went through a National Geographic world map which had bathymetric contours on it and came up with about seventy-five sea mounts which came within 100 fathoms of the ocean surface, which were well beyond anybody's continental shelf, and I am just curious if anybody on the panel can tell me if these are going to be considered deep-sea bottom or they are going to create a separate regime all by themselves.

Flipse: We may be getting into too much detail, but I will answer your last question first. We have looked at forty-two of the sea mounts and although I refuse to disclose our findings, I will say that we have now changed our search area to the deep-sea floor rather than the sea mounts.

The second point I would like to raise is that the nickel content of the manganese nodules is, of course, highly desirable and I would guess that the first mining venture will be based on looking for nodules of highest nickel and copper values. Those are two minerals in which you have no marketing problem whatsoever. Wherever you find these, you are going to find a large amount of cobalt and probably you will also have more high purity manganese than you can market at current market prices. Therefore, I would suggest the first few mining rigs will be supplying relatively insignificant quantities of copper and nickel. The output of each rig is perhaps five per cent of the free world's nickel needs and perhaps one or two per cent of the copper needs, but an appreciable percentage of the cobalt needs, and indubitably causing a severe relocation of the high purity manganese price.

Miron: I will respond to the question concerning the accommodation of mining to non-mining uses. The first part of the question was, what did the Report say about it? The Commission Report says very little, but it does say that each nation registering a claim must agree to enact domestic legislation and to assure that "the business entity on whose behalf the claim is registered complies with the conditions imposed by the International Registry Authority and reasonably accommodates other uses of the subsea area covered by the registered claim in the superjacent and surface waters and the air above them along the lines specified in the Convention on the Continental Shelf." Now, I think I have answered your question that there is something in the Report on it; please don't ask me to tell you what that is supposed to mean.

Griffin: It is the same old problem that particular nations of the world have faced with regard to reconciliation of multiple conflicting uses of the major international river basins. Some uses are incompatible with other uses in a given area, at least for the time being. Each one of these situations is more or less an ad hoc situation and probably will be tackled as an ad hoc situation as it arises. One example of this has already taken place in the Gulf of Mexico, where the sea captains finally got tired of dodging around the 5,000 or so rigs out there and the oil companies and their insurance companies got tired of arguing over who was liable for the rigs that were toppled by vessels and so the two industries got together and went to the Corps of Engineers and said, in effect: "Look, you have the function of licensing obstructions in navigable waters of the United States, now let us get together here and decide on some navigation fairways through these oil fields where no permits for oil structures will be permitted; and then we will find, hopefully, that the merchant marine captains will start using these fairways rather than insisting on their historic freedom of the seas to follow the maxim that the shortest distance between two points is a straight line." This system was worked out on an ad hoc basis and is working fairly well. So, I think each one of these multiple conflicting use situations will be treated as a particular problem unique to its time and place when it arises.

Browning: I generally agree. I think if we have as few of these really deep-ocean mineral operations as Mr. Flipse and some of the others have indicated, there really may be few examples of such conflicting uses and any time one would arise it would probably be such a specific problem that it would best be settled on an ad hoc basis.

One further comment on the sea mount question. Under the Commission recommendations if the sea mounts are not within the continental shelf or the intermediate zone they would obviously be in the regime of the deeper ocean areas. Now there are some people who would contend that they ought to be part of the regime of the continental shelf of nearby coastal States, but you have the very difficult problem of those that are out in the middle of some ocean somewhere, just what do you do with them. Some have suggested that there be a special regime for sea mounts.

Hull: I think some of them come within five meters of the surface.

Browning: That is correct. It does sound a little bit odd to have such sea mounts as a part of the regime of the international deep-ocean but I don't really know if there would be any good reason to have a special regime for sea mounts. Maybe somebody could formulate such a position and it would be something worth pursuing.

Gorove: I would like to follow this up just a little bit further. It seems to me that a great deal has been said here in relation to jurisdiction regarding minerals and mineral exploitation. What about the other jurisdictional aspects of human activities - criminal jurisdictional, military activities, contracts, torts, and so forth? Under whose jurisdiction would these fall in relation to seabed activities?

Griffin: Well, I think they would follow the general principles of international conflict of laws.

Gorove: Will the International Authority have anything to do with any of these?

Griffin: This depends on future international conferences. The question here should be, do we want to recommend or suggest - would it be defensible - that detailed rules of this sort be written into this sort of an international convention?

Gorove: To what extent would other nations retain jurisdiction over these activities?

Griffin: I think the flag-State doctrine applies to the mining rigs that Mr. Flipse is talking about, for instance, and with the flag-State doctrine goes its role for jurisdiction and international choice of law principles.

Browning: Yes, this flag-State approach is generally adopted in the Commission recommendations. Of course, around the world now on the continental shelves that are generally recognized under national jurisdiction, the coastal nation's civil laws - that is, criminal, labor, contract, torts, things like that - apply; under the Commission recommendations such laws would also apply in the international area. They would be the laws of the applicant State. For example, if the United States would apply for some claim out in the middle of the Pacific Ocean, activities carried on pursuant to that application would be subject to the civil laws of the United States.

Question: What if a crime occurs?

Browning: Under the flag nation approach jurisdiction would continue to rest with the United States. You get into complications regarding what you are talking about. Are you talking about a fixed platform or a ship or swimming around in the water or what?

Gorove: Let us assume that the crime occurs on the deep-seabed and is committed by different nations or involves different companies of different nations?

Basiuk: I think that this gentleman asked a very important question, but it cannot be satisfactorily answered at this point. We do not seem to know exactly what we are dealing with. After all, as we look into the future some twenty or thirty years from now and as we can see various nationalities working side by side in the deep areas of the ocean, we do not know how to deal with many aspects of the problems that may arise. We may be able to solve some criminal law problems, but how do you deal with the protective aspect of the law, including the national defense problem? How do you protect your own nationals? The case may well be that we are moving in the direction of an eventual dissolution of the nation-State system. This, in part, may be taking place right now through the medium of the so-called multinational corporations which are mainly subsidiaries of U.S. companies operating abroad and manned primarily by foreign nationals. The State Department is currently considering the possibility of re-orienting the focus of its economic activity in the direction of the multinational corporation, as distinguished from its present concern with foreign trade and tariffs. The reason for that is simple. The value of output (sales) from U.S. subsidiaries abroad and from the U.S. share in foreign-owned companies has been estimated at over \$200 billion annually. It is growing at a rate of about 10 per cent. In contrast, the value of U.S. exports amounts to only about \$34 billion annually. The rising importance of the multinational corporation has implications for future ocean activity as well, and both of these phenomena - the multinational corporation and the exploitation of ocean resources - suggest major potential change in the future world order.

Browning: Just to make a brief comment in more direct reply to the criminal question. Of course, what could be done would probably be the most simple thing to do. For example, assuming you have a claim that some country applies for in the deep-ocean area, you might just say that within this particular geographic area the civil and criminal laws of the applicable State will apply on an extra-territorial principle. Otherwise, you would have such a hodgepodge of possible applicable laws you might get completely bogged down in it. At some future time there might be developed an international criminal code or an international code of ocean exploration or something like that; but I think such a development is pretty far in the future.

Friedheim: With respect to the point made by Professor Basiuk on the growth of the multinational corporation, don't you find it ironic that in an age of the growth of the multinational corporation so many of the proposals for the deep-seabed emphasize turning large portions of it into national territory, that is, using the traditional State concept of territoriality in an age of the growth of the multinational corporation. Is this consistent?

Griffin: We are in an age of transition certainly.

Basiuk: I think there is a difference in terms of impact between the present and future operations of multinational corporations. The present multinational corporation does operate within territorial jurisdiction of a particular State, whatever that State may be - France, Germany, or what have you. But once we move beyond the continental shelf, the situation will be somewhat different. Unless the coastal nations decide to parcel out all of the seabed among themselves (which does not seem to be the present trend), the basic concept of the present nation-State system - that of national territoriality - will not apply to most of the seabed. Thus, the setting for policy and national policies themselves will have to undergo change, with quite a few imponderables in store. Let me suggest one example, that of the protection of U.S. citizens in the deep-ocean areas; here is something for the Navy to ponder about. Once we move in our exploitation beyond the continental shelf, are we really strengthening the economic backbone of the United States or are we creating hostages in the ocean which such States as China and others can take advantage of? Do we have an ABM system that can protect these U.S. citizens in the middle of the ocean? Do we need one? Perhaps we do not; perhaps the traditional concepts of protection will not be applicable at all, but these are only some of the problems that we have to start thinking about.

Johnson: I wanted to direct this question to Professor Basiuk. He raised a very interesting suggestion here for the establishment of a planning body for marine policy either in the State Department, or the Office of Science and Technology in the Executive Office of the President, or at some other high level. Now, the question here is, how does this relate to the proposal in the Commission's Report which had to do with the Marine Advisory Board? What is the relationship between these planning bodies? Also, could you suggest some of the things that this planning body would engage in? I think your suggestion that there be a body planning marine policy is a commendable one.

Basiuk: I assume you are referring to the Commission's proposal to establish a National Advisory Committee for the Oceans. This Committee is patterned on the old National Advisory Committee on Aeronautics (NACA) and it would have only broad responsibilities of assessment and general direction of the national marine effort. I am not opposed to the establishment of such a body which would lean on the entire marine community in advising the head of the NOAA and would report to the President and the Congress on the progress in achieving the objectives of the national ocean program; I think we need this Committee. However, we need more than that in international marine affairs; we need an institution which would combine the attributes of a "think tank" and a planning body capable of providing specific operational guidance for our marine activity in the international arena. Let me clarify one point: my reservations to the Commission's Report apply not so much to what it did propose - I agree with many of its recommendations - but to what it did not propose. In some respects, we have to go further than the Report did.

Question: Could you please tell us where your processing plant would be located, Mr. Flipse?

Flipse: Well, as I said last week, it wouldn't be in Santa Barbara.

Question: Would it be at sea?

Flipse: The very nature of the deposits and the very nature of the international metal market suggests that the first question should be what would be the flag of this operation and, second, what deposit and what specific sector of the market would you be working for; therefore, you would be looking at a deposit hopefully with a minimum transportation cost involved. So I have no idea where the first operation will be but I am sure you will minimize the distance between the mine and the processing plant. It has to have power, it has to have water, it has to have a place where people can live, and so forth. I have no idea where it will be. I cannot answer that question.

Nanda: The clarification that I need is a very brief and short one. Mr. Flipse has alluded to the United Nations being naive in suggesting or in thinking that at the present time there are treasures beneath the sea that are available for the digging; but suppose his assumption is incorrect and suppose the assumption that there will be competing, contending, and conflicting claims in the next five years becomes a reality, does Mr. Flipse completely preclude any international organization or does he envisage that in the years ahead there might be a need for some kind of regulation and control in community interests in the deep-ocean?

Flipse: I am sorry if I have offended any of the people from the United Nations. My contention is that if we use the popular numbers of \$100 to \$200 million as the cost of such a mining venture, and if it pays 20 per cent net after taxes, what we are looking at - with five or six or even ten of these rigs - is a small fraction of the annual expectation that was promulgated by the Malta representative at the discussions in the United Nations. And, this does not except the opportunities of income from oil and so on. All I tried to point out was that if we maintain the status quo or if we are expecting the \$7 billion in a matter of so many years, I am afraid that the whole industry will have to fall back to the projections of the year 2000, and I just can't wait that long, personally!

RECOMMENDATIONS ON THE LIMITS OF THE
CONTINENTAL SHELF AND RELATED MATTERS:
A COMMENTARY

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I. Introduction

In presenting the commentary which follows I am conscious that the perspective of the Commission has been an American one. However, in practice the national origin of the Report or of the commentator counts for less than some might suppose. In the first place, American thinking and writing on the law of the sea have recently shown an admirable sensitivity to the interests of other States and the interactions which take place in the practice of States. In this area of activity any unilateral action has a multilateral aspect and an image from one source may produce not merely reflections but distortions from other governments. The American lawyer is only too aware of the delicate relation between national advantage and foreign development of an imitative nature, against the background of the Truman Proclamations of 1945. Secondly, the relations of States in the use of the oceans are based upon certain harmonies often obscured by the welter of special and technical issues. Thus, no State wants a return to the era of closed seas and the Soviet Union has been quite conservative on the main issue of freedom of the seas in spite of its support for a twelve-mile territorial sea. It is fascinating to observe the working out of techniques of accommodating competing interests. The Truman Proclamation on the continental shelf was the product of special interests within the United States yet in the years since a great variety of governments have come to accept the general principles embodied in the original proclamation. Thirdly, especially since the two Law of the Sea Conferences at Geneva there has been general awareness of the needs to appreciate the subtleties of policymaking in the field of marine resources and to avoid shortsighted initiatives.

The family of issues concerning the continental shelf and its outer limit are among the central problems of the law of the sea. In practical terms the resources of the deep-ocean floor are not likely to be exploitable for some time and some of the known resources are difficult to evaluate: for example, the well-known manganese nodules may present serious extraction problems. In contrast there is much experience relating to the resources of the continental shelf and the occurrence of petroleum and gas in the upper shelf and shelf slope. The shelf and its resources will bulk large in the next decades: petroleum in and fishing on and over the shelf are the real issues. Yet it cannot be possible to focus solely on the shelf since legal and political developments have created a situation in which claims are made to large areas of seabed beyond, or apart from, the geological shelf and couched in terms of legal concepts alleged to be derivatives of the Truman Proclamation. The very fact that the legal concept

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cannot be a neat reflection of the variable geological feature creates uncertainties. As in the case of outer space, so-called boundary issues are intimately related to problems as to what may go on beyond the boundary.

On the overall policy or strategy I believe I share the assumptions of the Commission. The Commission is thus in favor of providing for properly regulated exploitation of certain resources whilst preserving the freedom of the seas. The general object is to prevent encroachment on a basis of sovereignty, which involves exclusive and monopoly claims, whilst deterring unilateral break-aways by making a carefully defined regime involving tailored concessions to the interest of coastal States in contiguous seabed areas.

In particular it is now realistic to assume that there is a substantial consensus among States on the need to avoid a "free-for-all" on the seabed. If the seabed is to be the object of an international regime in some form then the issue of the outer limit of the continental shelf remains prominent. This would not be so if the seabed beyond the shelf were to be regarded as open to appropriation to sovereignty by effective occupation on the part of individual States. The International Panel and the Commission Report accept the need to eliminate conflict in this new area of activity and quote the words of President Johnson in July, 1966:

Under no circumstances must we ever allow the prospect of 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 to hold the lands under the high seas. We must ensure that the deep seas and the ocean bottoms are, and remain, the legacy of all human beings.¹

It is also relevant in this connection to refer to the draft resolution introduced by the U.S. representative in the Legal Working Group of the Ad Hoc Committee of the United Nations General Assembly² and to the Resolution of the United Nations General Assembly, adopted on December 21, 1968, which establishes a Committee on the Peaceful³ Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction.³

¹ Remarks made at the commissioning of the new research ship, OCEANOGRAPHER, July 13, 1966, 2 Weekly Compilations of Presidential Documents, pp. 930-31 (1966).

² Marine Resources and Legal-Political Arrangements for Their Development (Washington: U.S. Government Printing Office, 1969), p. VIII-30.

³ UN Monthly Chronicle, January, 1969, p. 58.

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The discussion which follows is based upon geological concepts which have been defined as follows:⁴

Continental Shelf, Shelf Edge and Borderland - The zone around the continent, extending from the low water line to the depth at which there is a marked increase of slope to a greater depth. Where this increase occurs, the term "shelf edge" is appropriate. Conventionally, the edge is taken at 100 fathoms (or 200 meters), but instances are known where the increase of slope occurs at more than 200 or less than 65 fathoms. When the zone below the low water line is highly irregular, and includes depths well in excess of those typical of continental shelves, the term "continental borderland" is appropriate.

Continental Slope - The declivity from the outer edge of the continental shelf or continental borderland into greater depths.

Borderland Slope - The declivity which marks the inner margin of the continental borderland.

Continental Terrace - The zone around the continents, extending from low water line to the base of the continental slope.

Island Shelf - The zone around an island or island group, extending from the low water line to the depths at which there is a marked increase of slope to greater depths. Conventionally, its edge is taken at 100 fathoms (or 200 meters).

Island Slope - The declivity from the outer edge of an island shelf into great depths.

II. The Present Outer Limit of the Continental Shelf as a Legal Concept

Chapter 4 of the Commission Report deals with the development of petroleum, natural gas and other marine minerals and for the present purpose its most important part is the section entitled, "An International Legal-Political Framework for Exploring and Exploiting the Mineral Resources Underlying the High Seas."⁵ The Commission sets out the objectives which should be achieved by a satisfactory international framework. These objectives center on three

⁴ Terminology and definitions approved by the International Committee on the Nomenclature of Ocean Bottom Features, ILC Yearbook, 1956, Vol. I, p. 131. These definitions were adopted by the International Committee of Scientific Experts at Monaco in 1952. The document was circulated to members of the ILC by the Chairman, Mr. F. V. Garcia-Amador.

⁵ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 141.

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main points: (1) stability and orderliness as conditions for development and major investment; (2) equal opportunities for all nations in mineral exploration and exploitation; and (3) the minimizing of the creation of vested interests which will inhibit necessary changes in the framework. The Commission "concludes that the existing international framework does not provide the necessary means to achieve the objectives."⁶ The Report proceeds to emphasize the uncertainties with which the general principles of international law relating to the area beyond the shelf abound and points to the need for a stable regime as a background to development. The Report states:

The principal uncertainty derives from the [Continental Shelf] Convention's definition of the continental shelf, which extends the shelf "to the seabed and the subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas..."⁷

The Report then briefly examines suggested interpretations of the definition and proposes its own redefinition. I shall return subsequently to the redefinition recommended by the Commission but there is an important question of tactics and presentation raised by the Commission's approach.

It is clear from the Report that the Commission favors a "narrow" shelf with precise outer limits and the Report gives no support to broad-based claims to shelf. However, by emphasizing the uncertainties attending the definition in Article 1 of the Convention, without committing itself to any particular view of the existing legal position on the outer limit, the Report of the Commission runs certain risks by leaving the impression that the present position is more open-ended than is in fact the case. There are those who are too ready to rely on the facile logic that uncertainties are to be resolved in favor of an ambulatory limit based on exploitability. Since it may be some time before a new Convention is adopted and comes into force and since in any case there may be no further international conference on the law of the sea for a decade, it is important not to be too careless of the existing law, whilst admitting the inadequacies of the present regime.

The relevant Panel Report makes the position clearer.⁸ On the view that the exploitability criterion is paramount in construing the Convention,

⁶ Id., p. 143.

⁷ Id.

⁸ Marine Resources and Legal-Political Arrangements for Their Development (Washington: U.S. Government Printing Office, 1969), pp. VIII-15/20 [hereinafter cited as Panel Report].

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the Panel Report comments firmly as follows:

As a practical matter, adoption of this position would induce any prudent entrepreneur to seek the permission of some one or more coastal States - assuming he could identify them - in order to proceed with exploration for mineral resources anywhere in the oceans even before the technological capability to exploit these mineral resources was demonstrated. For as soon as such capability was shown, the resources of the area of the ocean bottom in question would belong to some coastal State or States.

Apart from the question of the desirability of such an outcomethis interpretation of the Continental Shelf Convention is the most difficult to sustain. The panel agrees with Professor Henkin that no government "would dare propose" it and "if one did, the other nations would reject it." [Henkin, Law for the Sea's Mineral Resources, ISHA Monograph No. 1 (New York: Columbia University Press, 1968), p. 19.] This interpretation reads the definition of the continental shelf as if the adjacency criterion were not there. It ignores the fact that the Convention, after all, sought to define the continental shelf and resorted to the exploitability test to effect some limited extension of sovereign rights [Henkin, p. 18]. There was no intention to curtail so drastically the proclamation in Article 2 of the Convention on the High Seas that "no State may validly purport to subject any part of [the high seas] to its sovereignty."

This interpretation has not been urged upon the panel by any international lawyer or industry group with whom it has discussed the question. We are led to think that it is generally discredited in this country and elsewhere.⁹

I would endorse these views and would like to underline them to a certain extent by referring to various further considerations:

(1) Very few writers regard the exploitability criterion as an uncontrolled ambulatory limit.¹⁰ Writers who regard the exploitability test with

⁹ Id., p. VIII-17.

¹⁰ F. T. Christy, 1 Natural Resources Lawyer, 2 (1968), pp. 70-72; E. D. Brown, Report on the Legal Regime of Deep Sea Mining, British Branch, ILA, pp. 27-28; L. Henkin, Law for the Sea's Mineral Resources, pp. 18-19; A. Dean, "The Law of the Sea Conference, 1958-1960, and Its Aftermath," The Law of the Sea: Offshore Boundaries and Zones, ed. L. Alexander (Columbus: Ohio State University Press, 1967), pp. 247-48; B. Harlow, ibid., "Freedom of Navigation," pp. 183-84. See also the cogent points made by Captain John R. Brock, U.S. Navy, Director, International Law Division, Office of the Judge Advocate General of the Navy, The JAG Journal, Vol. XXII, No. 2 (Sept.-Nov. 1967), p. 39.

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some sympathy nevertheless point out that it is qualified by a requirement of adjacency and do not accept the possibility of a "free-for-all" beyond the 200 meter isobath.¹¹

In the North Sea Continental Shelf Cases,¹² individual judges expressed views on the exploitability criterion. Judge Fouad Ammoun¹³ refers to the criterion as a fictitious extension of the continental shelf. The Judge Ad Hoc for Denmark and the Netherlands, Max Sørensen,¹⁴ stated that the legal concept cannot extend far beyond the geological concept. Cp. Judge Koretsky¹⁵ spoke on the appurtenance of the continental shelf to land territory. The principle of natural prolongation of the land domain is accepted by the majority judgment,¹⁶ by Judge Bustamante,¹⁷ and by Judge Fouad Ammoun.¹⁸ The shelf concept is related to contiguity and, or, adjacency by Judge Morelli.¹⁹ The extreme literal view of exploitability has been taken by some writers.²⁰

¹¹ Bowett, The Law of the Sea, 1967, p. 34; McDougal and Burke, The Public Order of the Oceans, 1962, p. 687; Burke, "Law and the New Technologies," The Law of the Sea: Offshore Boundaries and Zones, ed. L. Alexander, 1967, p. 172; Burke SIPRI Proceedings, 1968, pp. 25, 27-28, 31-33, 36.

¹² ICJ Reports, op. cit., pp. 28-32, 46-47, 50-51, 53-54.

¹³ Sep. Op., at p. 111.

¹⁴ Diss. Op., pp. 248-49.

¹⁵ Diss. Op., pp. 158-59.

¹⁶ pp. 28-32, 46-47, 50-51, 53-54.

¹⁷ Sep. Op., p. 58

¹⁸ Sep. Op., pp. 115-17.

¹⁹ Diss. Op., pp. 201-2.

²⁰ Olivier de Ferron, Le droit international de la mer, II, 1960, p. 199; Shigeru Oda, cited in Panel Report, VIII-17, n. 53, and in 1 National Resources Lawyer, 2 (1968), pp. 103-13; and Seymour S. Bernfeld, International Lawyer, Vol. 1, pp. 67-76 (but see also the same writer, Institution of Mining and Metallurgy (London), Transactions/Section A., Vol. 78, 1969, A 10).

(2) The place given to the exploitability criterion at Geneva is commonly traced back to the resolution of the Inter-American Specialized Conference at Ciudad Trujillo in March, 1956.²¹ However, the International Law Commission treated exploitability in its own way and in 1953 had lost enthusiasm for an undiluted exploitability test originally adopted in 1951.²² It is, of course, true that in 1956 the International Law Commission produced a draft article which combined the 200-meter limit and exploitability and the commentary states:

...the Commission therefore in no way holds that the existence of a continental shelf in the geographical sense as generally understood, is essential for the exercise of the rights of the coastal State as defined in these articles. Thus if, as is the case in the Persian Gulf, the submarine areas never reach the depth of 200 meters, that fact is irrelevant for the purposes of the present article. Again, exploitation of a submarine area at a depth exceeding 200 meters is not contrary to the present rules, merely because the area is not a continental shelf in the geological sense.²³

However, the draft article produced and discussion in the International Law Commission in 1956 make it very clear that adjacency and contiguity were overall requirements. Mr. Garcia-Amador, leading exponent of exploitability, "pointed out that the words 'adjacent to the coastal State' in his proposal placed a very clear limitation on the submarine areas covered by the article. The adjacent areas ended at the point where the slope down to the ocean bed began, which was not more than 25 miles from the coast."²⁴ Moreover, the obvious but important point is that the International Law Commission did not revert to the straightforward exploitability test of the 1951 draft and the 200-meter limit was now included in a context in which such a limit could only be meaningful if extended claims were exceptional and conditioned in some way by adjacency.

(3) The legal definition though departing from the geological concept continues to bear a close relation to it. The modifications in the post-1953 drafts were intended to extend the definition to areas not geologically

²¹ ILC Yearbook, 1956, Vol. I, p. 131.

²² ILC Yearbook, 1951, Vol. II, p. 141; ILC Yearbook, 1953, Vol. II, p. 212.

²³ ILC Yearbook, 1956, Vol. II, pp. 296-97.

²⁴ ILC Yearbook, 1956, Vol. I, p. 135, para. 95; see, also, ibid., pp. 131-32, and cp. Panel Report, p. VIII-18.

classifiable as shelf, such as the Persian Gulf; and at the Geneva Conference there was a further amendment to apply the definition "to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands."²⁵ It should be pointed out that the International Law Commission in the commentary to its draft article on the freedom of the high seas stated that it had "not made specific mention of the freedom to explore or exploit the subsoil of the high seas. It considered that apart from the case of the exploitation or exploration of the soil or subsoil of a continental shelf....such exploitation had not yet assumed sufficient practical importance to justify special regulations."²⁶ The evidence is thus that post-1953 changes were intended to include certain further types of area but not to set the whole matter at large.

(4) Although at the Geneva Conference Article 1 of the Continental Shelf Convention was adopted by the Fourth Committee by fifty-one votes to nine with ten abstentions, the voting provides no guide to the evaluation by governments of the exploitability criterion.²⁷ The travaux préparatoires indicate a great variety of opinions among those States who voted for the text as well as among the abstentions. In general, States tolerated a compromise: it does not follow that they considered that exploitability was the all-pervading test in the article as adopted.²⁸ A formula devoted solely to exploitability proposed by the Republic of Korea was rejected by forty-two votes to thirteen, with thirteen abstentions.²⁹

(5) Subsequent practice both by States becoming parties to the Convention and by others militates against the view that exploitability is a rampant criterion. At the time of accession France made the following declaration: "In the view of the Government of the French Republic, the expression 'adjacent' areas implies a notion of geophysical, geological and geographical dependence which ipso facto rules out an unlimited extension of the continental shelf." In general, the legislation of both parties and non-parties since the Convention came into force in 1964 gives little or no support to the view that exploitability is the conclusive test. The Report of the British Branch of ILA concludes

²⁵ See also, ILC Yearbook, 1956, Vol. II, p. 297, para. 10 of comment on Art. 67.

²⁶ Id., p. 278.

²⁷ See E. D. Brown, Report on the Legal Regime of Deep Sea Mining, op.cit., pp. 11-16.

²⁸ See further Weissberg, International and Comparative Law Quarterly, Vol. 18 (1969), pp. 64-78.

²⁹ Id., p. 67, and see also the statements of the representatives of the Dominican Republic and El Salvador, p. 9, para. 3 and p. 33, para. 12, respectively.

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in this connection that:

- (1) there is little difference between the legislation of parties and non-parties to the Geneva Convention,
- (2) the legislation of...few States follows the formula of the Geneva Convention, and
- (3) neither the legislation itself (even when adopting the Geneva formula), nor its operation in practice, provides any real pointers to the proper interpretation of Article 1 of the Geneva Convention.³⁰

This conclusion at least gives no comfort to partisans of exploitability and in any case probably over-emphasizes the diversity of the legislation. The legislation in fact indicates general adherence to the concepts of geological continuity and contiguity so prominent in the original Truman Proclamation.

III. United States Leasing Policies

Since in the oceans and other areas of activity American initiatives have obvious significance - witness the repercussions of the Truman Proclamation - it is necessary to consider carefully whether the United States Department of the Interior has, even by accident, pre-empted some of the legal outcomes by its policies in the recent past. The Commission Report does not deal with this question explicitly. However, by general implication, it seems to take the position that no pre-emption has taken place. The Report of the International Panel confirms this impression and reveals a commendable sensitivity to the need to avoid faits accomplis. The Panel comments as follows:

...unless a new framework is devised, some venturesome governments and private entrepreneurs will act in accordance with one or the other of the undesirable alternatives possible under the uncertain status quo and in time create faits accomplis that would be difficult to change....These consequences might be avoided if a wait-and-see policy were accompanied by a moratorium on exploration and exploitation beyond the 200-meter isobath, an alternative proposed by some United Nations diplomats.

But it is already United States policy to lease submarine areas for mineral resources exploration and exploitation at greater and greater depths. According to its Solicitor, the Department of the Interior has not decided on a line beyond which it will not

³⁰ Brown, op.cit., pp. 18-25.

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lease, nor has it decided to lease as far out as anyone might suggest. "Each case," he stated, "will be considered individually, with consultation with the State and Justice Departments where appropriate."³¹

The Panel goes on to state the need for a firm U.S. policy. It is clear that the U.S. government has a wait-and-see policy and that its leasing policies are not yet accompanied by the necessary opinio juris which would justify other States in relying on U.S. practice as a justification for initiatives not clearly covered by the definition of the Continental Shelf Convention. However, a risk is being taken and some foreign lawyers are prepared to attach international law significance to U.S. leasing policies. Moreover, the chances of confusion in this respect are increased when the Solicitor of the Department of the Interior relies not only on the Outer Continental Shelf Lands Act but also on the Geneva Convention to justify leasing "as far seaward as technological ability can cope with the water depth."³² In order to have even a safe wait-and-see policy without prejudice to the future position, the Department of State should take a clear stand, at the least in the form of a "without prejudice" statement. The Commission recommends that future leasing policy should be expressed to be without prejudice to the new framework to be agreed upon.³³

The Panel Report states that fourteen States other than the United States have issued permits for activity beyond the 200-meter isobath; that Australia has issued an exploration permit for an area 200 miles from its coast; and that Honduras and Nicaragua have licensed exploration in an area 225 miles from their coasts.³⁴ It must be remarked that this practice cannot be evaluated without more background material. In the analogous sphere of acquisition of

³¹ Panel Report, pp. VIII-24/25.

³² Memo. of May 5, 1961, quoted in Schoenberger, Law of Federal Oil and Gas Leases (1964), pp. 303, 305; and in Grunawalt, Military Law Review (Oct. 1966), Vol. 34, p. 101 at p. 127.

³³ Commission Report, p. 156. For surveys of U.S. leasing practice see Panel Report, VIII-24; Stone, International and Comparative Law Quarterly, Vol. 17 (1968), p. 103. See further Weissberg, op.cit., Vol. 18 (1969), at pp. 78-83, for evidence that U.S. officials do not believe that the ocean floor can be apportioned; and see also the Panel Report, VIII-30/31, on U.S. positions in UN debates.

³⁴ Panel Report, VIII-25, n. 90.

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territorial sovereignty it is generally accepted that administrative activity is not necessarily conclusive of questions of right.³⁵ A government may issue licenses without this involving an exclusive claims as against other States (cp. recent Japanese policy).

IV. Definition of the Continental Shelf: Proposals for Change

The Commission recommends that the seaward limit should be fixed at the 200-meter isobath, or 50 nautical miles from the baseline for measuring the breadth of the territorial sea, whichever alternative gives it the greater area for purposes of the Continental Shelf Convention.³⁶

To the present commentator, this seems an eminently moderate and practical solution and would eliminate all but minor uncertainties from the delimitation regime of the shelf. The Panel Report justifies the solution as follows:

By providing the 200 meter/50 mile alternative, the inequity of a definition in terms of depth alone will be avoided for those coastal States which either are not on a geological continental shelf, as in the Persian Gulf, or which have coasts that drop almost immediately to great depths, as is the case off the west coast of South America. While the logic of attempting to remove this "inequity" has been doubted, the coastal States in question feel the inequity strongly and their claims in this respect cannot be ignored.³⁷

The Panel Report provides a cogent critique of the alternative proposals for change including the view offered by the National Petroleum Council.³⁸ My own view is that the NPC proposal is on balance less acceptable than the solution provided by the Commission. However, apart from its tendency to give a vested interest in resources not yet exploitable, the NPC proposal represents a reasonable attempt at definition which bears a close relation to the essence of the present Article 1 of the Geneva Convention.³⁸ It is true that, to provide

³⁵ Case Concerning Sovereignty over Certain Frontier Land, ICJ Reports, 1959, p. 209 at pp. 228-29; Argentine-Chile Frontier Case, 1966, Report of the Court of Arbitration, London, 1966, pp. 75-76; cp. Minquiers and Ecrêhos case, ICJ Reports, 1953, p. 47 at pp. 65-70.

³⁶ Commission Report, p. 145; Panel Report, VIII-33/34.

³⁷ Panel Report, VIII-34.

³⁸ See also Jennings, Recueil des Cours (Hague Academy), Vol. 121, at pp. 394-398.

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comfort for all types of State, one ends up with a very notional definition of the shelf and it can then be said that a single breadth criterion would suffice.³⁹ The Panel Report is almost certainly correct when it remarks that such a proposal has, in practice, no chance of general acceptance.⁴⁰ In general the Panel desires, correctly, to avoid providing legal excuses for exclusive claims to the superjacent waters and air space.

In particular respects the solutions offered by the Commission and its International Panel are less successful.

(1) The Commission and the Panel appear to restrict their delimitation regime to the mineral resources of the shelf, leaving biological resources on one side. It is not clear why there is this emphasis. However, the actual text of the recommendations of the Commission contains no such restriction and the matter may be merely a question of emphasis and presentation.

(2) The Commission recommends that:

If the same Continental Shelf, as redefined, is claimed by two or more nations whose coasts are opposite each other, or by two or more adjacent nations, the boundaries should be determined by applying the "median-line" principles set forth in Article 6 of the Convention.⁴¹

In a general way this solution is the best available and, it is submitted, probably represents general international law in spite of the reserved attitude of the majority of the International Court on this issue of status in the North Sea Continental Shelf Cases.⁴² However, the majority and other judgments in those cases provide material which strongly suggests that the formula in Article 6 of the Geneva Convention stands in need of improvement. Thus it could be made clear that the solution applies to all permutations of coastal alignment since the opposite/adjacent alternative is not exclusive and is not too clear as a distinction in any case.⁴³ Furthermore, the dissenting

³⁹ Henkin, op.cit., p. 43, n. 129.

⁴⁰ Panel Report, VIII-34, n. 111.

⁴¹ Commission Report, p. 145.

⁴² ICJ Reports, 1969, p. 3.

⁴³ Judge Morelli, Diss. Op., ICJ Reports, 1969, p. 203; Ad Hoc Judge Sørensen, Diss. Op., ibid., pp. 249-52.

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judgments in the North Sea Cases reveal that Article 6 is of small value as a source of clear principles because of its reference to "special circumstances." This proviso has no definite normative content at all or, alternatively, is too uncertain in ambit to have practical value unless there is more definition.

(3) As the Panel Report points out:

Any redefinition of the Continental Shelf must also give special consideration to the problems presented by islands. We have not been able to solve these problems to our satisfaction and, therefore, make no recommendations in this respect.⁴⁴

It is not immediately apparent why the general redefinition proposed by the Commission does not apply to islands. Islands on the continental margins have no effect on the depth limit. In the case of the breadth limit there is no serious reason for modifying the reference to the baseline of the territorial sea. The case of isolated oceanic islands like Kerguelen Island in the South Indian Ocean creates difficulty, and ocean-going archipelagoes like the Philippines and Indonesia create more serious problems. In the first place, isolated and quite tiny islands may attract a disproportionate legal continental shelf. However, this is no more inequitable than the extent of shelf a well-placed coastal State may claim in some situations. Secondly, so far as the breadth limit is concerned reference to the baseline of the territorial sea in the case of archipelagoes involves a matter of controversy concerning the use of straight baselines by the Philippines and Indonesia.

V. Application of Recommended Criteria

The Commission recommends also that "with the use of the best available bathymetric surveys, the recommended definition should be translated into geographical co-ordinates for each coastal nation and not be subject to change because of subsequent alterations in the coastline or revelations of more detailed surveys."⁴⁵ The Panel Report points out that changes in sea-level, eroding shorelines and complex bottom topography can make it difficult to apply the recommended 200 meter/50 nautical mile criteria.⁴⁶ This seems a useful recommendation.

Rather difficult to accept, and omitted from the Commission Report, is the following suggestion in the Panel Report:

⁴⁴ Panel Report, VIII-34.

⁴⁵ Commission Report, p. 145.

⁴⁶ Panel Report, VIII-34.

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In parts of the world...the 200 meter isobath traces a circuitous position. To simplify definition of the Continental Shelf, it would be desirable to adopt a system analogous to the straight baseline system used to measure the breadth of the territorial sea.⁴⁷

This proposal is not intrinsically unsound but runs the sort of risk for which the International Panel criticized the open-ended aspect of the proposal of the National Petroleum Council.⁴⁸ Moreover, if the straight baseline system is adopted in this connection it will be rather difficult to oppose its application to the "coastlines" of archipelagoes. A compromise would be to close off submarine bays by a closing line of agreed length.

The Commission does not provide for the situation in which the geological shelf is divided up by troughs, like the Norwegian Trough, deeper than 200 meters, and the coastal State wishes to employ the depth criterion for the outer limit.⁴⁹ It would be useful if a new definition were to give explicit guidance on this type of problem. No reference is made to the Norwegian Trough in the delimitation agreement between the United Kingdom and Norway.⁵⁰ There are also deep depressions in the Adriatic and Red Seas.⁵¹

VI. Definition of Resources of the Shelf. Sedentary Fisheries

The Reports of the International Panel and the Commission devote little attention to the issue of defining the resources of the continental shelf although, since they make no recommendation on this question in proposing changes in the Geneva Convention, there is a strong implication that the existing definition is acceptable. However, the issues of resources and delimitation are to a significant extent related and it is perhaps unfortunate that the Reports

⁴⁷ Panel Report, VIII-34.

⁴⁸ Id., VIII-22.

⁴⁹ ILC Yearbook, 1956, Vol. II, p. 297, para. 8 of comment on Article 67.

⁵⁰ Signed March 10, 1965, H.M.S.O., Cmnd. 2626; and see Young, American Journal, Vol. 59 (1965), p. 505 at p. 511.

⁵¹ See Judge Ammoun, Sep. Op., op.cit., p. 109; Italo-Yugoslav Agreement on Delimitation of the Continental Shelf, signed January 8, 1968; International Legal Material, Vol. VII, p. 547; Soviet Decree on the Continental Shelf, 1968, R.G.D.I.P., Vol. 73, p. 611.

concentrate too much on issues affecting mineral resources. Since the overall recommendations represent a serious attempt to provide a regime acceptable to others - and therefore likely to be stable - as well as to the United States, it is curious to find the fishery aspects of the shelf appearing in a rather negative way. It is clear that a vital concern of the Panel⁵² and Commission⁵³ was to avoid promoting a too-wide U.S. claim for purposes of local mineral resources development either in extent of area or strength of exclusive jurisdiction at the expense of U.S. access off foreign coasts to other resources of the shelf in the superjacent waters. The unfavorable repercussions of the Truman Proclamation in the fisheries sphere were apparently in the minds of the International Panel.

The obsession with mineral resources is by no means a characteristic of the United States and some developing States, including Indonesia, have a prominent interest in this aspect of shelf exploitation. However, the Latin American group may be unwilling to favor the 200 meter isobath/50 nautical mile breadth alternatives if it is felt that this formula favors the coastal State with minerals in a shallow shelf whilst inadequately compensating States like Peru which are left with a 50-mile zone of very deep ocean bed, perhaps useless for mineral development and providing no legal protection against extra-regional fishing of non-sedentary species. However, the requirements of substantial equity may have to be obtained by legal and political means external to the regime of the continental shelf.

Whilst the Commission could hardly explore all facets of the complex problems relating to shelf resources, it is a fact that the definition of sedentary species in Article 2(4) of the Geneva Convention has been a source of serious problems and some disputes.⁵⁴ Nevertheless, the Report leaves this area of problems untouched⁵⁵ in spite of the fact that the distinction between sedentary and other species is a serious cause of instability in the regime.⁵⁶

VII. Competing Uses of the Continental Shelf

The Commission Report deals with the problems of competing uses of

⁵² Panel Report, VIII-22/23.

⁵³ Commission Report, pp. 143-45.

⁵⁴ See Azzam, International and Comparative Law Quarterly, Vol. 13 (1964), p. 1453; Goldie, American Journal, Vol. 63 (1969), p. 86.

⁵⁵ But cp. Commission Report, pp. 104-5.

⁵⁶ See further Young, American Journal, Vol. 55 (1961), p. 359; Bowett, The Law of the Sea, pp. 35-37; Oda, International Control of Sea Resources, 1963, p. 193; Garcia-Amador, The Exploitation and Conservation of the Resources of the Sea, 2d ed., 1959, pp. 127-28.

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the shelf⁵⁷ and it is obvious that, if the perspectives of the Report are accurate, the problems will become more acute. Thus, there are references to aquaculture,⁵⁸ to laboratories on the shelf, and undersea power resources, including submerged nuclear plants,⁵⁹ and to a large stable ocean platform.⁶⁰ In particular, the offshore oil industry may produce several thousand offshore platforms, as in the Gulf of Mexico. The Report provides practical proposals for coastal management but makes no reference in this respect to the relevant provisions of the Geneva Convention.⁶¹ At present these provisions probably suffice but if we look ahead, as the Report attempts to do, it may be that the existing regime is only viable because technology cannot yet fully take up the freedom to exploit and use the seas: one can envisage factories on stilts, sea-cities, more sea mining and the restructuring of ocean currents. Private enterprise may create permanent installations.⁶²

VIII. Scientific Research

Intelligent and orderly development of the legal regime is dependent on the speedy growth of knowledge of the seabed and its resources. The Commission places emphasis throughout its Report on the need to improve research capabilities,⁶³ including conduct of geological surveys and mapping of bottom topography.⁶⁴ The Report notes that freedom to conduct scientific investigations in the high seas, recognized by general principles of international law, is limited by the exclusive fisheries zone and by the requirements of the Convention on the Continental Shelf. The Commission refers to the ambiguities in the Convention in this respect⁶⁵ and recommends⁶⁶ that the United States take the initiative in proposing a new convention embodying certain essential

⁵⁷ Commission Report, pp. 54-56.

⁵⁸ Id., pp. 54, 115-18.

⁵⁹ Id., pp. 10-11, 161-64, 167.

⁶⁰ Id., p. 38.

⁶¹ Id., pp. 56ff.

⁶² See Johnson, International Law Quarterly, Vol. 4 (1951), p. 203, on problems created by artificial islands; and cp. Henkin, Law for the Sea's Mineral Resources, p. 30.

⁶³ See, for example, Commission Report, pp. 139-41.

⁶⁴ Id., pp. 210-11.

⁶⁵ Id., pp. 201-4.

⁶⁶ Id., p. 203.

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provisions.⁶⁷ The first of these is as follows:

Scientific research in the territorial waters or on and concerning the continental shelf of a coastal nation may be conducted without its prior consent, provided that it is notified of the objectives and methods of the research and the period or periods of time during which it will be conducted, in sufficient time to enable the coastal nation to decide whether it wishes to participate or be represented in all or part of the research; and provided that the investigators agree to publish the results of the research.⁶⁸

In addition, the International Panel Report contains some further suggestions, which in summary are as follows:

The United States should declare that it will consent to the conduct of any proposed foreign scientific investigation certified by IOC as meeting the requirements for coastal State approval specified in Article 5(8) of the Convention on the Continental Shelf.

It should give the broadest possible interpretation to the terms "qualified institution" and "purely scientific research," for purposes of Article 5(8) of the Convention on the Continental Shelf.

It should state that it is prepared to grant applications by foreign scientists for permission to conduct broad categories of research without requiring them to make repeated requests for consent to engage in individual projects falling within an approved category.

It should interpret the Convention on the Continental Shelf as requiring the prior consent of the coastal State only for research involving physical contact with the Continental Shelf.⁶⁹

⁶⁷ Panel Report, VIII-8, 74-77.

⁶⁸ Panel Report, VIII-8.

⁶⁹ Id., VIII-8, 75/76. Various sources have shown a concern for improving opportunities for legal access to the shelf for research purposes: see, Schaefer, "The Changing Law of the Sea - Effects on Freedom of Scientific Investigation," The Law of the Sea: The Future of the Sea's Resources, ed. L. Alexander (1968), McDougal and Burke, The Public Order of the Oceans, pp. 701-3, 713-16, 721-24; SIPRI Proceedings, 1968, "Recommendations of the Symposium," p. 10, para. 5(f); ILC Yearbook, 1956, Vol. II, p. 298, para. 10.

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The number of States with the capacity for oceanographic research in terms of funds and trained personnel is very limited and, therefore, international cooperation is vital for the experts to have necessary access to areas adjacent to coasts. At the same time, coastal States of various types are very sensitive to possible threats to their military security and suspect research which often has many applications. Efforts to improve freedom of scientific investigation deserve sympathy and encouragement. However, it may be that the provisions of the Continental Shelf Convention will remain for a long time the only acceptable regime for the coastal States. Apart from the security aspect, exploration and exploitation tend to go together once priority has been allocated to the coastal State in the matter of natural resources. Even if the role of the consent of the coastal State is not to be qualified as suggested by the Report of the Commission, it would nevertheless be valuable to have a clarification of the words "any research concerning the continental shelf and undertaken there" in Article 5(8) of the Convention on the Continental Shelf.

IX. Submarine Areas Beyond the Shelf as Redefined: Proposals for the Future Regime

The Commission Report presents a set of detailed provisions for the establishment of an International Authority to register national claims beyond the redefined continental shelf.⁷⁰ My brief does not strictly include the submarine areas beyond the shelf but the two zones interact in the spheres of policy and restructuring the legal framework, and the general proposals of the Commission in this respect concern the intermediate zone proposal which is discussed below.

The broad policy basis from which I proceed in this field is the necessity to satisfy the immediate and contiguous concerns of coastal States whilst preventing undue encroachment on the basic reservoir of high seas and common resources. These considerations apply to the territorial sea, the contiguous zones and the continental shelf. The consequent needs are (1) to reduce legal excuses for encroachment arising from uncertain or badly formulated principles; (2) to promote regimes for common exploitation and use which reduce the role of exclusive claims and the pushing out of maritime State frontiers; (3) to maintain the freedom of the seas not merely negatively by a "narrow seas" policy but constructively by creating a workable regime for the common area of high seas and ocean bed. It can always be said that the concept of freedom of the seas favors those with the technology to benefit from it, although the proposals from the Commission and from other sources are concerned to divert at least a part of the proceeds of exploitation to a common fund for generally beneficial purposes. However, even if the advanced States do have the advantage, this would only be increased in a "free-for-all" regime since, given such a regime, they would work for a position based on exclusive claims maintained by the power to occupy and protect rather than actual use. Claims would be staked out on a provisional and

⁷⁰ Commission Report, pp. 147-51; Panel Report, VIII-5/6, 35/42.

gambling basis. In the long run the weaker nations would lose heavily from policies of closed seas which would result from opening the ocean bed to exclusive claims. The overall formula must be to protect special concerns of coastal States without supporting substantial and irrevocable encroachments on areas of common use. Planned common development must occur and pre-emptive activity must be prevented or discouraged.

In principle the Commission Report follows this policy line by its proposals on the redefinition of the shelf and on the creation of a regime for registration of claims. Whilst approving the general approach on registration, two comments should be made. First, the proposal is unnecessarily confined to mineral resources, though in practical terms this probably does not matter for the deep-sea. Secondly, the proposal assumes that such a system would be exclusive in effect: if, however, States are cautious in accepting such a scheme, a less ambitious scheme might be suggested as an alternative. Attention may be given to the recommendations agreed upon at the SIPRI Symposium in Stockholm, 1968, as follows:

- II 1. Without prejudice to the application of the rules of general international law governing the exploitation and exploration of the seabed of the high seas beyond the limits of the continental shelf, there should be introduced a system of registration of claims to quiet possession ad interim for purposes of exploitation and exploration of the resources of the seabed.
2. The object of the system of registration would be to eliminate uncertainty as to the priority of use of a particular area and consequently to reduce the possibility of breaches of public order. Subsidiary objects would include the reduction of tension caused by unpublicized activity, especially in the vicinity of coastal states, and the reduction and elimination of hazards to other users of the oceans.
3. The existence of a registration would not be a condition of the legality of seabed activity: the legal status of unregistered activity would still depend on existing rules. The only legal significance of a registration would lie in the creation of a presumption that parties to the registration system had knowledge of the existence and priority of quiet possession ad interim and of the limits of the claim. In case of an issue of international responsibility arising or a complaint of a threat to the peace or a breach of the peace in a United Nations organ, the registration would have a significant evidential role.
4. Registration would be required only if exploitation or exploration necessitated the creation of fixed installations or the temporary reservation of a certain area of the seabed for the undertaking of an economic extractive process or the making of scientific investigation in reasonable conditions.

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5. An application for registration would comply with conditions laid down by the international registration authority. Such conditions would deal inter alia with the creation, where appropriate, of safety zones, the establishment, where necessary, of warnings to shipping, including submarines, and to other seabed vehicles, and the observance of a reasonable standard of precision in delimiting the area to which the claim to quiet possession ad interim applied.

6. Applications for registration of claims would be made on behalf of persons of private law and public corporations with distinct legal personality by their governments.⁷¹

X. Creation of an Intermediate Zone

The Commission Report on this question reads, in part, as follows:

The uncertainties surrounding the present definition of the continental shelf may have raised the expectations of some coastal nations to the point where they may refuse to accept the Commission's recommended redefinition of the shelf without the preferential rights of access to the mineral resources of a reasonable subsea area lying beyond the shelf. It is also recognized that, in the language of the Truman Proclamation of 1945, "self-protection" may compel "the coastal nation to keep close watch over activities off its shores which are of the nature necessary for the utilization of" the mineral resources lying reasonably beyond the shelf.

At the same time, however, the Commission remains of the view that the mineral resources of the deep seas cannot, in fairness or law, be said to belong to the coastal nations so that all other nations should be entirely excluded from the benefits of their exploitation.

These considerations lead the Commission to recommend that intermediate zones should be created encompassing the bed and subsoil of the deep seas, but only to the 2,500-meter isobath, or 100 nautical miles from the baseline for measuring the breadth of each coastal nation's territorial sea, whichever alternative gives the coastal nation the greater area for the purposes for which intermediate zones are created.

Only the coastal nation or its licensees, which may or may not be its nationals, should be authorized to explore or exploit the mineral resources of the intermediate zone. In other respects

⁷¹ Towards a Better Use of the Oceans: A Study and Prognosis (Stockholm: International Institute for Peace and Conflict Research [SIPRI], 1968), pp. 12-13.

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exploration and exploitation in the intermediate zone should be governed by the framework recommended...for the areas of the deep seas beyond the intermediate zone.⁷²

Further on, the Report emphasizes that a nation which registers a claim in the intermediate zone will not thereby acquire the "sovereign rights" of a coastal nation over its continental shelf.⁷³ (It should be pointed out perhaps that the "sovereign rights" are in any case only "for the purpose of exploring [the shelf] and exploiting its natural resources.")

Professor Henkin has also proposed the creation of a "buffer zone" of fixed breadth from the shore from which foreign mining would be excluded.⁷⁴ This type of proposal deserves respect and careful consideration, insofar as in a difficult situation any compromise may prove to be politically the most acceptable. Professor Henkin comments that his proposal would be more acceptable because it would be "less of a 'grab' by coastal States" and at the same time would give proponents of a wide shelf most of what they seek.

In my view this particular type of compromise is a source of considerable danger to the stability of any legal regime of which it might become a part. In brief it is the sort of compromise which substantially involves selling the password. The intermediate zone is nothing more than an extension of the continental shelf regime since the net difference between "sovereign rights" for the purpose of exploring and exploiting resources and an exclusive power to register claims in the intermediate zone beyond the redefined shelf is insignificant. The coastal State receives a monopoly. After all the high seas character of the superjacent waters of the shelf area is also comparable to the status of the waters of the additional zone proposed. Furthermore, the extension of power in respect only of mineral resources may appear arbitrary to coastal States with other interests. The present shelf regime is not tied to mineral resources. The new proposal may produce similar distortion effects to those of the Truman Proclamation, which had a mineral base but produced ramifications in relation to living resources. Thus, I am not convinced that the present type of proposal would satisfy proponents of a wider shelf. It might provoke, without satisfying, such States. Furthermore, the "broader" and "deeper" criteria go far toward removing the legal concepts from the basically sound rationale of contiguity plus geological extension on which the Truman Proclamation and a high proportion of its imitators have relied.

⁷² Commission Report, pp. 151-53; and see, also, Panel Report, VIII-5, 34/35.

⁷³ Commission Report, p. 152.

⁷⁴ Henkin, op. cit., pp. 46-48.

On zones claimed by "opposite" or "adjacent" States,⁷⁵ I refer to my comments made on page 144. If one were to add the possibilities of problems parallel to those discussed in relation to the shelf (see pages 146-47) even greater imperial pretensions may be justified by an intermediate zone.⁷⁶

With reference to the content of the last two paragraphs, though it may be said that sedentary species of marine life are probably unimportant at the greater depths involved in the intermediate zone, the ultimate point is the tendency of some States to use new claims with a specialized base to support some other special interest, for example, fisheries in superjacent waters. The proposal for an intermediate zone seems to pose a serious threat to the general policy in favor of a narrow shelf with precise outer limits.⁷⁷

XI. Preferential Rights and Local Considerations

The all-pervading normative problem in the law of the sea is to create workable general rules which at the same time give some leeway to the special circumstances of particular areas. The general law, including the Continental Shelf Convention, provides certain opportunities for the creation of special cases and exceptional rights, namely, historic waters, historic rights to sedentary fisheries, the special circumstances proviso in Article 6 of the Continental Shelf Convention, the employment of equitable principles (as by the Court in the North Sea Continental Shelf Cases⁷⁸), and the creation of regional and local custom. The geological and topographical variations of nature may sometimes be taken as an excuse or basis for special regimes founded in fact upon economic considerations. Local and special rights pose problems, of course, but may be less of a general threat than the temptation to tamper with the general rules in order to cope with special concerns. The Commission Report seems either to ignore the issue of localized and exceptional regimes (leave aside the issues concerning the Convention on the Conservation of Living Resources), and to rely wholly on formulating general rules for highly abstracted general problems. Occasionally even general proposals may appear to contain a preferential element: thus the intermediate zone proposal favors coastal States with extensive shelves containing known reserves of mineral resources. Similarly, the Latin American doctrine of an epicontinental platform relates to

⁷⁵ Commission Report, p. 151.

⁷⁶ On the effects of islands see Griffin, Proceedings of the Third Annual Conference of the Law of the Sea Institute (The Law of the Sea: International Rules and Organization for the Sea, 1969), at p. 19.

⁷⁷ Commission Report, pp. 145-46.

⁷⁸ ICJ Reports, 1969, p. 3 at pp. 46-54.

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local and regional interests in fisheries.⁷⁹ Of course, the desire for special treatment may express itself in the form of non-ratification or non-accession to multilateral conventions, or the making of reservations when ratifying or acceding. It may be that agreement on preferential fishing rights in exceptional circumstances would ease some of the problems caused by extensive claims to shelf. In any case the significance of special situations has been accepted in principle by the International Law Commission in 1956.⁸⁰

XII. Regional Problems. Quasi-Closed Seas

The issue of preferential rights may take on a regional aspect as appears from the Latin American claims deriving from the resolution of the Inter-American Council of Jurists in January, 1956, and the Specialized Inter-American Conference on the Resources of the Sea at Ciudad Trujillo in 1956. However, regional problems may assume quite another aspect. At the SIPRI Symposium at Stockholm in 1968 the following recommendation was made:

The problems of smaller seas must be taken into consideration. All the rules established for the oceans cannot be automatically applied to these areas without disadvantage.⁸¹

In the case of an area like the Baltic Sea, the entire enclosed sea has continental shelf status and, if a certain view be taken of the regime for military installations on the shelf, then one ends with a demilitarized sea. Should the coastal States in such an enclosed sea make a regional agreement creating a special regime contrasting with the general law on the status of the shelf, the question would arise whether extra-regional powers are bound by the modified regime. A comparable issue is the status for third States of the regime of the Antarctic Treaty; and, incidentally, the Antarctic continental shelf should not be left out of account.

XIII. Moratorium and other Interim Prophylactic Measures

The Commission makes some important proposals to conserve the legal position in order to avoid pre-emptive activities prejudicing the creation of a satisfactory regime for the submarine areas beyond the limits of national jurisdiction.

⁷⁹ Judge Ammoun, Sep. Op., op.cit., pp. 107-14, relates to local and regional interest in fisheries. On the regional and local claims, based on exceptional circumstances, which may occur, see Oribe, Proceedings of the Third Annual Conference of the Law of the Sea Institute, op.cit., especially at pp. 70-71; and Andersen, ibid., pp. 72-78.

⁸⁰ ILC Yearbook, 1956, Vol. II, pp. 287-88. See, also, the Resolution, adopted by the first Geneva Conference, on Special Situations Relating to Coastal Fisheries.

⁸¹ SIPRI, op.cit., p. 11.

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The Commission supports the principles which the United States has proposed for adoption by the UN General Assembly.⁸² These principles are set out in the Panel Report⁸³ and were presented in a draft resolution on June 28, 1968, to the Legal Working Group of the UN General Assembly's Ad Hoc Committee. The first and third principles are as follows:

1. No State may claim or exercise sovereignty or sovereign rights over any part of the deep ocean floor. There shall be no discrimination in the availability of the deep ocean floor for exploration and use by all States and their nationals in accordance with international law.

3. Taking into account the Geneva Convention of 1958 on the Continental Shelf, there shall be established, as soon as practicable, an internationally agreed precise boundary for the deep ocean floor - the seabed and subsoil beyond that over which coastal States may exercise sovereign rights for the purpose of exploration and exploitation of its natural resources.

Exploitation of the natural resources of the ocean floor that occurs prior to establishment of the boundary shall be understood not to prejudice its location, regardless of whether the coastal State considers the exploitation to have occurred on its "continental shelf."⁸⁴

These principles as a whole are similar in certain essentials to the two sets of proposals which were reported in the Report of the UN Ad Hoc Committee to the General Assembly.⁸⁵ The drafting of principles is now a part of the mandate given to the newly created Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction. The principles supported by the Commission concerning the shelf boundary are valuable and my only comment, beyond saying that, is to suggest that the intermediate zone proposal (see pages 152-54) runs counter to these principles in substance.

As a corollary to its other proposals and the principles quoted above, the Commission also recommends "that the United States propose the principle that no nation, in the interim, should claim or exercise sovereignty or sovereign rights over any part of the seabed or subsoil beyond the 200-meter

⁸² Commission Report, p. 155.

⁸³ Panel Report, VIII-30/31.

⁸⁴ "Draft Resolution Containing Statement of Principles Concerning the Deep Ocean Floor," U.S. Mission to the United Nations, Press Release, June 28, 1968. As quoted in Panel Report, VIII-30.

⁸⁵ Conclusion printed in American Journal, Vol. 63 (1969), p. 131.

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isobath."⁸⁶ Such a proposal would obtain support from many quarters and it is clear that prophylactic measures should be decisive and clear in prescription: such a moratorium would have more practical value in avoiding pre-emptive activity than the adoption of abstract principles. The Stockholm Symposium in 1968 also recommended the establishment of a moratorium "on claims of exclusive rights regarding the ocean floor, as well as an extension of the shelf limits."⁸⁷

XIV. Settlement of Disputes

The Commission Report proposes that an International Registry Authority initially should settle disputes arising under the recommended framework.⁸⁸ The Commission does not otherwise advert to dispute settlement. However, the International Panel in addition recommended that the United States ratify the Optional Protocol Concerning the Compulsory Settlement of Disputes adopted at the 1958 Geneva Conference.⁸⁹ It is not my business to raise either the general issues surrounding compulsory settlement of disputes or the more domestic aspects of the matter. Nevertheless, it is precisely in the case of the type of provision that one finds in the Continental Shelf Convention, and would no doubt find in an amended version, that compulsory settlement of disputes has particular value. Difficulties caused by "overdrafting" could be reduced if there were more recourse to judicial and arbitral institutions.⁹⁰ A case in point is the single geological structure lying across a delimitation or underlying more than one claim on the deep ocean floor.⁹¹ This type of situation calls more for machinery of dispute settlement than vague, or complicated, rules of attribution.

XV. Conclusion

On the basis that the role of the conclusion is that of emphasis rather than summary, selected points will be made:

1. There is an urgent need to avoid a "free-for-all" in claims to the deep-seabed and superjacent waters.

⁸⁶ Commission Report, p. 156; Panel Report, VIII-31.

⁸⁷ SIPRI Proceedings, op.cit., p. 10.

⁸⁸ Commission Report, pp. 150-51.

⁸⁹ Panel Report, VIII-43.

⁹⁰ Bowett, The Law of the Sea, pp. 38-40.

⁹¹ See U.K.-Netherlands Agreement, signed October 6, 1965, U.K. Treaty Series, Cmd. 3254 and see generally Onorato, International and Comparative Law Quarterly, Vol. 17 (1968), p. 85.

2. There is a necessity for choice among solutions, none of which can ever be entirely satisfactory from all points of view. Too often an almost neurotic wavering is disguised as caution.
3. More attention should be given to programs with a minimum content or which take up special aspects: different regimes could serve different purposes.
4. There is much substance in the point that the law cannot be expected to compensate States for natural inequalities in respect of resources. The difficulty, however, is that the law has accepted this type of responsibility to some extent in practice. The evidence for this is to be found in the drafting history of Article 1 and the content of Article 6 of the Continental Shelf Convention. Moreover, there is a need to promote consensus and stability by making some concessions in order to produce generally acceptable proposals.
5. How can a regime for the shelf be developed which satisfies all types of claim? Perhaps a shelf regime as such - as a legal parcel - cannot achieve that result. It is inherently difficult to take care of Latin American interests in fisheries of the superjacent waters by distorting the continental shelf concept and regime. Indeed, to satisfy that particular need fully one would have to condone a 200-mile wide territorial sea or exclusive fishery limit. To distort the shelf concept too much by building out claims on a purely artificial basis is to encourage a return to an era of closed seas. The means of satisfying special claims to fisheries is by appropriate legal developments aside from the continental shelf regime. In terms of political negotiation and bargaining the various aspects would no doubt interact, but that is another matter.
6. More interest should be devoted to regional regimes (cp. Antarctica) and the legal problems which arise for non-regional States in relation to such regimes.

LIMITS OF NATIONAL JURISDICTION
OVER NATURAL RESOURCES
OF THE OCEAN BOTTOM

Hollis D. Hedberg
Professor, Department of Geology
Princeton University

Mr. Ian Brownlie has presented an interesting and scholarly critique of certain aspects of the Marine Science Commission Report, Our Nation and the Sea.¹ I have had the privilege of reading beforehand his manuscript and have been asked to comment on it and also have been offered opportunity to give my own ideas on the recommendations of the Commission.

One can only agree heartily with Mr. Brownlie's initial prediction that the outer limit of the legal continental shelf, that is, the outer limit of national jurisdiction over bottom resources, is "among the central problems of the law of the sea."² One must also agree with his caution that in practical terms the resources of the deep-ocean floor are not likely to be exploited for some time, and that, therefore, for the next decades "petroleum in and fishing on and over the shelf are the real issues";³ but that we cannot focus solely on the shelf because "as in the case of outer space so-called boundary issues are intimately related to problems as to what may go on beyond the boundary."⁴ As he says, "it is now realistic to assume that there is a strong consensus among States on the need to avoid a 'free-for-all' on the 'seabed' and "if the seabed is to be the object of an international regime in some form then the issue of the outer limit of the continental shelf remains prominent."⁵

I would also agree with Mr. Brownlie's view that, in spite of obvious uncertainties, existing law is not as open-ended as is often suggested, and that "it is important not to be too careless of the existing law, whilst admitting

¹ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969). Ian Brownlie, "Recommendations on the Limits of the Continental Shelf and Related Matters: A Commentary," The Law of the Sea: National Policy Recommendations (Kingston, Rhode Island: University of Rhode Island, 1970), pp. 133-58.

² Brownlie, ibid., p. 133.

³ Ibid.

⁴ Ibid., p. 134.

⁵ Ibid.

the inadequacies of the present regime."⁶ Thus he summarily dismisses the view that the exploitability criterion constitutes an uncontrolled limit, and points out that it is generally recognized as being conditioned by the concept of adjacency. He cites the North Sea Continental Shelf Cases in which the principle of natural prolongation of the land domain was accepted by majority judgment of the International Court of Justice and also finds that national legislation, subsequent to the coming into force of the Geneva Convention, "indicates general adherence to the concepts of geological continuity and contiguity."⁷ (I note, however, that he also quotes Mr. García-Amador from the ILC Yearbook, 1956, as defining "adjacent" for purposes of the Ciudad Trujillo Conference as "not more than 25 miles from the coast," and I am sure he will be interested to know that I understand from Mr. Luke Finlay that in a recent personal communication from Mr. García-Amador the latter says that he was misquoted in the Yearbook.*)

In view of Mr. Brownlie's moderate approach, which appears to be in close accord with the views of the National Petroleum Council group with which I have been associated, it is somewhat startling to find Mr. Brownlie suddenly agreeing⁸ with the recommendation of the Marine Science Commission that the seaward limit of the continental shelf be fixed at the 200-meter isobath or 50 nautical miles from the baseline for measuring the breadth of the territorial sea - a procedure distinctly at variance with the "existing law" of the Geneva Convention on the Continental Shelf and one which could be adopted only by abandoning or revising the present Convention, already approved by thirty-nine nations.

Moreover, Mr. Brownlie then goes on to cite the Commission's criticisms of views expressed in the Interim Report of the National Petroleum Council⁹ and adds his own opinion "that the NPC proposal is on balance less acceptable than the solution provided by the Commission,"¹⁰ although he grants that "the NPC proposal represents a reasonable attempt at definition which bears a close relation to the essence of the present Article 1 of the Geneva Convention."¹¹

⁶ Ibid., p. 136.

⁷ Ibid., p. 141.

⁸ Ibid., p. 143.

⁹ Petroleum Resources Under the Ocean Floor - An Interim Report, July 9, 1968 (Washington: National Petroleum Council, 1969).

¹⁰ Brownlie, op.cit., p. 143.

¹¹ Ibid.

* EDITOR'S NOTE: The letter referred to may be found on p. 170.

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I can only believe that Mr. Brownlie has perhaps had no opportunity to study the report of the National Petroleum Council,¹² which may not have been available at the time the draft of his paper was prepared; that his conclusions are based only on the interpretation by the Commission of the NPC Interim Report of July, 1968; that he may not realize that the NPC recommendations are in keeping with "existing law" as expressed by the Geneva Convention whereas the Commission's recommendations would require a revision of the Geneva Convention; and that he may not realize that the NPC recommendations would make the limits coincide with a "natural prolongation" of the land domains under the sea, whereas the Commission's limits are purely arbitrary.

For my part, I do not find the recommendations of the Commission Report dealing with the outer limits of national jurisdiction over bottom resources very satisfactory. I have discussed these in more detail elsewhere¹³ but might summarize a few of my objections to this part of the Commission Report here briefly as follows:

- (1) It would take away from the coastal State mineral resources which have already been given to it by the Geneva Convention.
- (2) It would require a hazardous and otherwise unnecessary reopening and revision of the Geneva Convention on the Continental Shelf.
- (3) It would deprive the coastal State of the security of full control over the exploitation of mineral and other resources adjacent to its own coasts.
- (4) It would set up boundaries based on purely arbitrary depth and distance figures lacking any underlying basis in the physical geography of the earth's surface.
- (5) It would set up boundaries in conflict with the already existing national claims of many countries and in conflict with offshore lease agreements already made by many countries. (For example, it would cut Norway out of its only petroleum production which is separated from the Norwegian coast by water depths of more than 200 meters and a distance of more than 50 nautical miles.)

¹² Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, 1969).

¹³ "Who Should Have Jurisdiction Over Offshore Mineral Resources?", Oil and Gas Journal, May 26, 1969, pp. 28-32.

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(6) The proposed device of the "intermediate zone" would lose to the coastal nations possible revenues from large areas with potential bottom resources already recognized as theirs under the Geneva Convention, and would greatly complicate the whole matter of offshore marine development.

(7) Finally, one boundary on the sea bottom is bad enough. The "intermediate zone" idea of the Commission would not only require two boundaries, but also would require both of these to be based on such unstable and difficultly determinable features as bathymetric contours and distances from shore.

Now, since I have criticized the Marine Science Commission recommendations, let me take just a few minutes to outline my own views on the outer limit of coastal State jurisdiction over marine bottom resources, which are essentially those of the National Petroleum Council position, but which do not accord with the recommendations of the Commission.

In the first place, I have a feeling that in seeking a solution to the boundary problem many people have lost sight of the forest for the trees, and instead of giving due thought to what should naturally constitute the extent of a coastal State's jurisdiction, have confused the situation by innumerable proposals of arbitrary water-depth boundaries, or arbitrary distance-from-shore boundaries, or various combinations of the two, varying with the political or economic orientation of the proposer. (And here I have little sympathy with the thought, which I have sometimes heard expressed, that the boundary should be based, not on any natural lines, but only on considerations of current political expediency. There is no political boundary which is not strengthened and made more enduring by being also a natural boundary. It may be, as Mr. Brownlie has said,¹⁴ that the legal concept cannot be a neat reflection of the geological feature, but I think we can come a lot closer to this than has commonly been done, and this to the strong advantage of the legal concept.)

I would strongly urge that in deciding on the outer limit of coastal nation jurisdiction we follow a very simple, natural, logical, time-honored principle - a principle dictated by no other considerations than its natural appropriateness, its simplicity, its fairness to all countries, and its practicality - a principle which is not only in keeping with the Geneva Convention on the Continental Shelf but would also, I believe, be very acceptable to the great majority of nations.

The surface of the earth consists, on the one hand, of topographically high areas - we might call them blocks - rising out of what are, on the other

¹⁴ Brownlie, op.cit., p. 133.

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hand, topographically low areas - the much vaster water-covered areas of the great ocean basins. The blocks, or highs, include our continents and also the numerous islands and banks rising up from the ocean floor. All of the relatively high-standing blocks - continents, islands, banks - broaden downwards to the ocean floor and thus have more or less gently outward and downward sloping edges somewhat like those of inverted saucers or cups. They are, at most, only partially emergent above the level of the sea and the ocean waters commonly lap up against their marginal slopes and even cover in part their upper surfaces. However, it is on the land areas formed by the emergent portions of these blocks that people live, and it is the surfaces of the blocks, emergent or partially submerged, that our civilization has traditionally divided up into national political or jurisdictional units. The floors of the surrounding deep ocean-covered basins, like the waters of the high seas, and the totally submerged blocks, are, on the other hand, generally recognized as international. The dividing lines between blocks and basins are thus roughly the natural dividing lines between national and international domains.

As I have said, the blocks are of many different sizes, shapes, and origins. Thus, there are the huge continental and major-island blocks, which owe their high stand to isostatic adjustment between the lighter rocks of the continental crust and the heavier rocks of the oceanic crust; and then there are the innumerable smaller oceanic islands and the submarine banks which owe their height above the ocean floor in large part to volcanic build-up, reef growth, or other constructional processes. In both cases, however, whether the elevation of the block is due to isostatic rise or constructional build-up, there is usually a fairly distinct continental slope, or insular slope, or bank slope, forming the outer edges of the block feature; and it is the foot of this slope - the outer extremity of the block - which it seems to me marks the limit "of the natural prolongation of a nation's land territory into and under the sea,"¹⁵ and thus the natural outer limit of national jurisdiction.

This natural boundary, the base of the block - continent, island, or bank, as the case may be - should be the guide to the jurisdictional boundary - not the shore line, or the edge of the shelf, or some purely arbitrary distance from shore, or some purely arbitrary water-depth contour, or some equally arbitrary and artificial combination of depth and distance. Incidentally, the edge of the continental shelf, in spite of the publicity it has received, is no more the edge of the continent than the flat central part of an inverted saucer is the edge of the saucer, besides which, as a boundary concept, it has been irremediably confused by endless repetition of the false assumption that it coincides world-wide with the 200-meter depth contour. It was undoubtedly in part in recognition of this situation that the framers of the Geneva Convention developed the concept of a legal continental shelf, distinct from and more extensive than the geological continental shelf.

¹⁵ As described by the International Court of Justice in its ruling of February 20, 1969.

With the principle accepted that the base of the continental slope, insular slope, or slope at the edge of submarine banks, should be the general guide to the limits of coastal State jurisdiction over ocean bottom resources, I believe it should then be left to a competent and qualified international technical commission to decide on the proper width of a standard zone, say 300 km or some such figure, extending outward from the approximate position of the base of the slope, within which the precise boundary should be fixed. This precise boundary should consist of straight lines, within this zone, connecting points fixed by specific coordinates of latitude and longitude. (And here I am pleased to see that the principle of drawing the precise boundaries on latitude and longitude fixes, which I advocated at last year's Law of the Sea Conference,¹⁶ has subsequently been adopted by the Marine Science Commission and is also approved by Mr. Brownlie.¹⁷)

The actual drawing of the precise boundary could well be left to each nation or group of nations concerned, subject only to review by the international commission to see that it fell at all points within the standard prescribed zone. The reason for using such a zone, extending out from the approximate base of the slope, rather than trying to use the base of the slope itself for a precise boundary, would be to allow for the frequent lack of a very sharp base to the slope, to allow for the common overlap of the true base of the continental block by sedimentary aprons such as the continental rises, and because of the practical desirability of having a simple boundary consisting of a minimum number of straight line segments. (See Figure 1 on page 165.)

Since there is no better test than that of practical application, we might briefly consider how the general boundary principle just outlined might be applied to certain specific types of cases:

Case 1. Continental coastal States fronting on a continental margin, e.g., U.S., Chile, Portugal. Outer boundary to be drawn to lie within the standard prescribed zone extending outward from the base of the continental slope. Lateral boundaries to be settled by treaties between countries concerned, or on equidistance principle.

¹⁶ The Law of the Sea: International Rules and Organization for the Sea (Kingston, Rhode Island: University of Rhode Island, 1969), pp. 201-2. See, also, H. D. Hedberg, "Some Matters of Concern to the Petroleum Industry with Respect to Public Policy on Mineral Resources of the World Ocean," Mineral Resources of the World Ocean, ed. E. Keiffer, Occasional Publication No. 4 (Kingston: Graduate School of Oceanography, University of Rhode Island, 1969), pp. 88-95.

¹⁷ Brownlie, op.cit., p. 145.

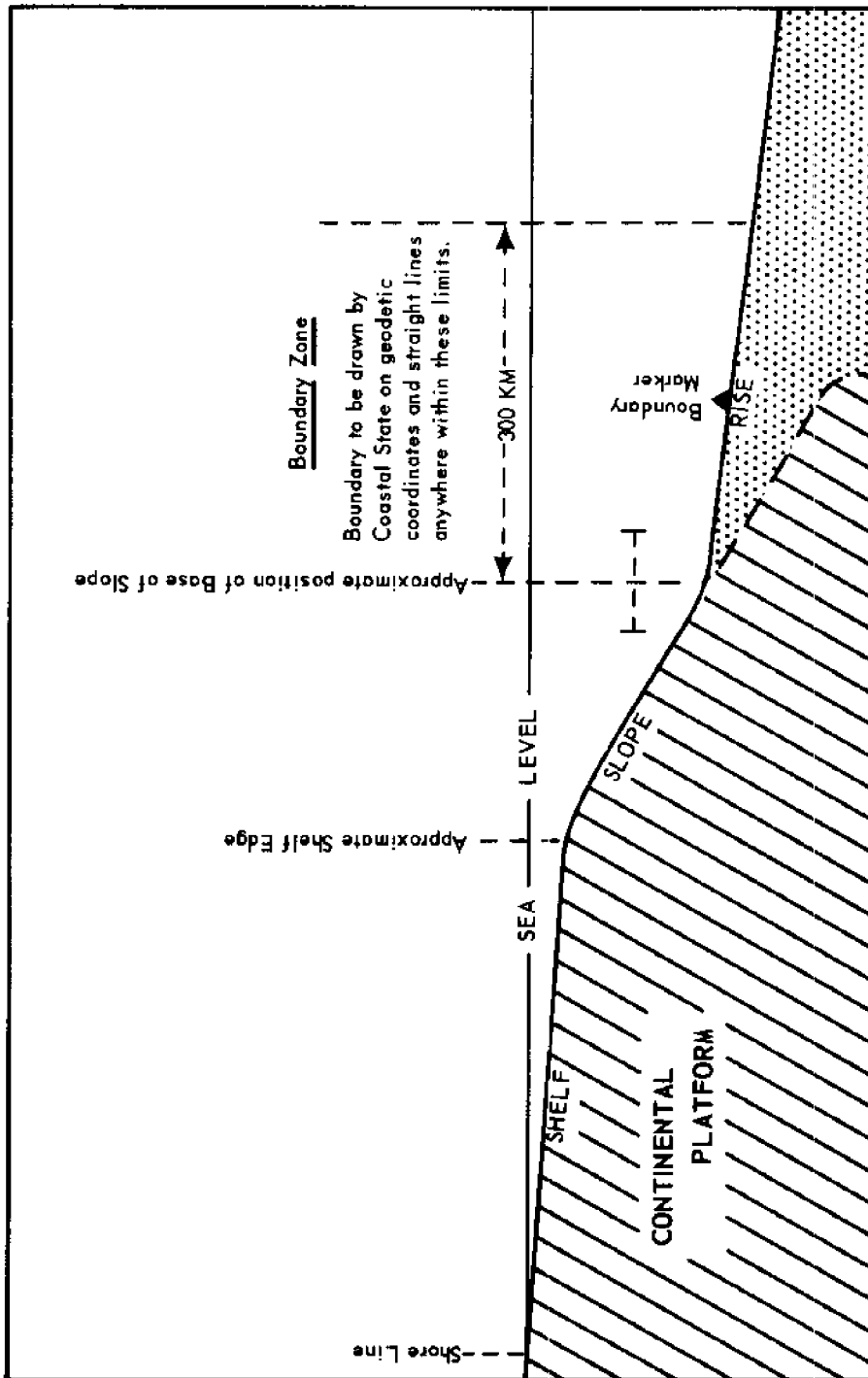


Fig. 1

Diagrammatic representation of relation between submerged edge of continent, base of continental slope, and 300 - KM boundary zone. Exact boundary might be placed, at discretion of coastal nation, anywhere within boundary zone (at ▲ for example). This allows for (1) uncertainty in location of base of slope, (2) for overlap of base of slope by rise, and (3) for a simple boundary of straight line segments connecting points fixed by geodetic coordinates, - and still gives a boundary closely related to the most natural limits for coastal state jurisdiction.

-HDH

- Case 2. Island States, e.g., U.K., Malta, Japan, Madagascar, Dominican Republic. Outer boundary to be drawn to lie within standard prescribed zone extending outward from base of continental or insular slope, or, where the platform is shared with other nations or their dependencies, to be settled by treaties between nations concerned, or on equidistance or median line principle.
- Case 3. Archipelagic States or portions of States, such as, Indonesia, Philippines, Arctic islands of Canada. Outer boundary of each individual island to be drawn to lie within standard prescribed zone extending outward from base of insular slope or base of continental slope. Individual islands of a State, situated on the same platform, would have a composite jurisdictional domain. Ocean bottoms of basins between individual islands, but outside of standard prescribed zones, would be considered to be outside of national jurisdictional limits.
- Case 4. Island dependencies isolated in the deep oceans, such as, Clipperton Island, Kerguelen Islands, Bermuda, Azores. Outer boundary to be drawn to lie within standard prescribed zone extending outward from base of insular slopes of individual islands or from base of slope of bank on which groups of islands are situated.
- Case 5. Island dependencies situated on continental or other platforms occupied in part also by other States or their dependencies, such as, St. Pierre and Miquelon, Swan Island. Outer boundaries to be determined by treaty between nations concerned. International commission should be encouraged to recommend a guiding formula for such cases taking into consideration relative size, or coastline extent, of areas concerned.
- Case 6. Enclosed or semi-enclosed seas extending to abyssal depths, such as, Black Sea, Gulf of Mexico, Bering Sea. Outer jurisdictional boundaries of bordering nations to be drawn to lie within standard prescribed zone extending outward from base of continental or insular slopes. Lateral or central-overlap boundaries to be settled by treaties between the nations concerned or on equidistance or median line principle.
- Case 7. Enclosed or semi-enclosed "shelf seas," such as, North Sea, Persian Gulf. Boundaries to be settled by treaties between nations concerned or on equidistance or median line principle.

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Incidentally, the U.S. Geological Survey has already completed a draft of a map showing, world-wide, the trace of the continental and insular slopes.

In review, some of the advantages which I see in the block and basin philosophy and in the plan I have outlined for fixing the extent of national jurisdiction over marine bottom resources are:

- (1) It sets up boundaries in keeping with a sound and natural underlying and guiding concept, in contrast to the purely arbitrary and artificial character of most other plans which have been proposed.
- (2) It is in keeping with the Geneva Convention on the Continental Shelf and its criteria of exploitability and adjacency and its provision for a legal continental shelf extending to water depths beyond 200 meters. No revision or reopening of the Continental Shelf Convention would be needed - only implementation in detail.
- (3) It is in keeping with the philosophy behind the recent (1969) pronouncement of the International Court of Justice in the North Sea Continental Shelf Cases that the coastal nation's jurisdiction over bottom resources should extend by virtue of its sovereignty over land, and as an extension of it, to those submerged areas which constitute a natural prolongation of its land territory into and under the sea.
- (4) It is in keeping with the findings and recommendations of the National Petroleum Council in its recent report, Petroleum Resources Under the Ocean Floor.
- (5) It is readily compatible with all existent national claims. The extremes of these claims, represented by certain Latin American countries, could be accommodated, if it was generally felt desirable to do so, by a not unreasonable width agreed on for the standard prescribed zone lying seaward of the base of the slope.
- (6) It does not conflict, as does the Commission Report, with leasing agreements already made by the U.S. and many other countries, or, for example, with the only claim which Norway has to petroleum production.
- (7) It satisfactorily takes care of "the problem of islands" and in doing so still stays within the tenets of the Geneva Convention. The Commission Report admits that its formula leaves islands still a problem.

(8) It provides for the only practical sort of a precise submarine boundary - one based on fixed points of latitude and longitude, controlled in a broad way by natural features but not subject to the intricacies in detail of the trace of such features nor to the vagaries inherent in boundaries drawn on bathymetric contours or specified distances from shore.

(9) It allows each nation, or group of nations, to draw its own boundaries in detail, providing only that they lie within the standard agreed-on guidelines, rather than having these imposed on it by some outside agency.

(10) It is simple in concept and does not have the complexities, for example, of the intermediate zone concept of the Marine Science Commission proposal.

(11) Finally, it gives to each nation jurisdiction over the submarine bottom resources over which it is the entity most appropriately situated to exercise control, yet leaves open to all nations the vast bulk of the submarine areas of the deep oceans, constituting some 80 per cent of the total ocean-covered area of the world.

Although a few nations might find some one of each of the many arbitrary-boundary plans which have been suggested acceptable for special reasons, I know of none of these which have been proposed which I think would have any chance of acceptance by a majority of all nations. Certainly, few coastal nations are going to agree now to going back to something less than they feel has already been given them by the Geneva Convention.

On the other hand, the plan proposed here should, I believe, be acceptable to all nations - certainly to all coastal nations. I would strongly urge the U.S. and other coastal nations to promptly go on record as supporting the extent of national sovereign rights over bottom resources out to the outer edge of the submerged continent in accordance with the guidelines herein set forth.

I will mention only briefly a few other points in Mr. Brownlie's commentary. I note that he objects to too much emphasis in the Commission Report on minerals and not enough on fish.¹⁸ I also note that he is rather non-committal about the practicability of the Commission's strong recommendation on research freedom.¹⁹ Certainly any jurisdictional arrangements made over the ocean beds should be as compatible as possible with freedom for legitimate research activities. With regard to registration systems for exploitation projects under the high seas he seems to favor the recommendations of the SIPRI

¹⁸ Ibid., p. 147

¹⁹ Ibid., pp. 148-50.

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symposium²⁰ as an alternative to the Commission's recommendations and, as he says, "a less ambitious scheme."²¹

Finally, I note that while Mr. Brownlie views the Commission's intermediate zone with considerable reserve,²² his objections to it seem to stem, surprisingly to me, largely because, in his opinion, "the intermediate zone is nothing more than an extension of the continental shelf regime since the net difference between 'sovereign rights' for the purpose of exploring and exploiting resources, and an exclusive power to register claims in the intermediate zone beyond the redefined shelf, is insignificant." Quite the contrary, it seems to me that the Commission's intermediate zone is, instead, an encroachment of the international domain on to the continent and into what should properly be the coastal nation's exclusive jurisdictional field. While it is said that in this intermediate zone the coastal nation only shall have the right to register claims, the fact remains that in all other respects, such as the power to grant leases, the making of lease terms, fixing of fees, arrangements for inspection, and so on, the zone is under international jurisdiction. Moreover, for production in this zone, royalties, taking the place of the rents and royalties normally accruing to the coastal State, would be paid to the International Registry Authority, and, on expiration of the registered period, the acreage would become internationalized. I have no sympathy with the idea of the proposed intermediate zone which seems to me to call for a completely unwarranted relinquishment by the coastal State of rights which properly belong to it, not to mention here the numerous operational difficulties which it would involve.

I would surmise that Mr. Brownlie rather supports the Commission's idea of a moratorium on all offshore activities beyond 200-meters water depth until the "new international framework" has been put into effect, or at least he favors a statement by the U.S. and other countries that all such activities will be subject "without prejudice" to the new framework when it is put into effect.²³ I would strongly deplore such a policy which appears to be based on an unwarranted assumption that there is presently a cloud on the title of any national rights beyond 200-meter water depth. Certainly U.S. enterprise would not be encouraged to risk the huge sums involved in deep offshore ventures with the knowledge that the U.S. government would be willing to cancel its obligations and commitments over such acreage in favor of any new international arrangements which might come along. And certainly subscription by the U.S. government to such a policy could only result in a serious halting or retardation of offshore activities, a delay which would be in the interests neither of the U.S. people nor the people of the world.

²⁰ Towards a Better Use of the Oceans: A Study and Prognosis (Stockholm: International Institute for Peace and Conflict Research [SIPRI], 1968).

²¹ Brownlie, op.cit., p. 151.

²² Ibid., pp. 152-54.

²³ Ibid., p. 142.

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EDITOR'S NOTE: Because of the several references to it during the conference, the letter from Mr. Garcia-Amador to Mr. Luke Finlay is reproduced below.

C O P Y

Organization of American States
PAN AMERICAN UNION
Washington 6, D.C., U.S.A.

March 12, 1969

Mr. Luke W. Finlay, Manager
Government Relations Department
Standard Oil Company
30 Rockefeller Plaza
New York, N.Y., 10020

Dear Mr. Finlay:

I take pleasure in referring to your letter of February 24 concerning the doubts caused by the cited paragraph from the Summary Record of the International Law Commission (p. 135 of the ILC Yearbook, 1956, Vol. I).

In the first place, I must admit that as this paragraph stands it makes me appear as saying that the submarine areas never have an extension greater than 25 miles. This is clearly a case of an error of interpretation on the part of the précis-writer and of my own negligence in failing to review the draft summary record and make the correction.

However, this is simply an error since I could never have made a statement that presupposed an extremely restrictive position at the very time when I had taken the initiative to propose the broadest, most flexible formula yet known, i.e., the formula approved by the Inter-American Specialized Conference which had been held in the capital of the Dominican Republic scarcely two months prior to the ILC session.

I can only reiterate my statement, made when proposing the use of the expression "submarine areas", to the effect of requesting "the Commission to take a decision on the right of States to exploit the natural resources of the sea-bed in adjacent waters to whatever depth was practicable" (p. 136). It seems that it was with this unrestrictive, flexible criteria, most favorable to the coastal state's special interest in the exploitation of the resources of its adjacent submarine areas, that both the ILC and later the first Geneva Conference on the Law of the Sea approved the definition that appears in Article 1 of the Continental Shelf Convention of 1958.

Sincerely yours,

S/F. V. Garcia-Amador
F. V. García-Amador
Director,
Department of Legal Affairs

Tuesday, June 24, 1969

Papers: The Continental Shelf

Henkin

Louis Henkin
Professor of Law
Columbia University
New York, New York

It has turned out that I was not the man to invite to comment on Professor Brownlie's paper: he and I are in large agreement and we both generally approve the Report of the Commission. I should, however, like to drop some footnotes to what he said. Professor Hedberg has given me room for more substantial comment as well.

I.

If there are differences between Professor Brownlie and me they are principally in mood and emphasis. Professor Brownlie is more optimistic: e.g., "there has been general awareness of the needs...to avoid shortsighted initiatives." In my view the awareness is something less than general. If the Commission's Report indeed reflects such awareness, the Commission itself was in effect accusing others - for example, the National Petroleum Council - of urging "shortsighted initiatives."

Or, Professor Brownlie says, "...it is now realistic to assume that there is a substantial consensus among States on the need to avoid a 'free for all' on the seabed." Again, I fear there is not even a weak consensus, and we may yet see precisely such a "free for all." Of course, like any "free for all" it would in fact become a "free for some," a "grab" by some coastal States with well-endowed coastal areas and by the technically advanced States in the seas beyond.

I would differ with Professor Brownlie also in where we see danger. Rightly, he urges, "it is important not to be careless of the existing law." But for him the careless ones are those who would claim that under the 1958 Convention the entire bed of the sea belongs to one coastal State or another as soon as it is exploitable. In the United States, at least, Professor Brownlie is pushing at an open door for that "international lake" notion he decries has few serious proponents. I should have liked to see Professor Brownlie consider whether more serious proposals, for example, those of the NPC criticized in the Commission's Report but lauded today by Professor Hedberg, are sufficiently careful of existing law. Professor Brownlie does state his view that "the NPC proposal is on balance less acceptable than the solution forwarded by the Commission." In view of the sharp differences between them, as perceived by both the Commission and Professor Hedberg, one may wonder whether so mild a statement of preference reflects the good manners of a visitor and the understatement of a Briton.

Preferences apart, I should welcome Professor Brownlie's opinion on the legal underpinnings of the NPC position. As I understand it, the NPC claims

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that: (1) Although the Convention applies only to areas "adjacent to the coast" that includes not only areas near in distance to the coast but also all those that are contiguous, "attached," to the coastal land, no matter how far out from shore. (2) Although the Convention purports to define "continental shelf," and in terms applies only to the shelf as so defined, it covers not only the geological continental shelf, but the continental slope, indeed the whole submerged land mass out to the deep ocean basin. (3) Although the Convention gives the coastal State rights to adjacent seabed beyond the 200-meter isobath "where the depth of the superjacent waters admits of the exploitation of the natural resources," the coastal State has vested rights in such adjacent seabed even though it is not yet exploitable and may not be for many years.

The Commission rejected this legal position, in my view correctly. I find nothing to support it in the language, the history, or anything else relevant to interpreting the Convention. The legislative history garnered by the NPC Report, and mentioned today by Professor Hedberg, is selective: in fact, the full history is overwhelmingly against the NPC position. It shows that "contiguity" alone, the fact that seabed was a continuation of the continental land mass, did not make it "adjacent" within the meaning of the Convention. It shows that, as Professor Brownlie said, the legal definition of continental shelf "though departing from the geological concept continues to bear a close relation to it." It shows that beyond the 200-meter isobath seabed even if "adjacent" to the coast is not continental shelf until it becomes exploitable. It shows too that the exploitability clause contemplated some additions to the areas covered by the 200-meter isobath, but hardly more than tripling its size and giving the coastal States one-quarter of all the seabed. Neither the Report nor Professor Hedberg mentions even the few items culled by Professor Brownlie, e.g., the flat assurance to the International Law Commission by Dr. Garcia-Amador, when he proposed the exploitability clause, that "the words, 'adjacent to the coast' in his proposal placed a very clear limitation on the submarine areas covered by the article. The adjacent areas ended at the point where the slope down to the ocean bed began, which was not more than 25 miles from the coast." (And Dr. Garcia-Amador said that about a draft which was not limited in terms to the "continental shelf.")

Today Professor Hedberg invoked also the recent opinion of the International Court of Justice in the North Sea Cases, again selectively. I do not understand what support he gains from the language he cites: it is true that one reason given in support of the doctrine of the continental shelf, from the Truman Proclamation to the promulgation of the Convention, is that the shelf was a "natural" continuation of the land of the coastal State. But although the "natural continuation" has always been there, before 1945 the coastal State had no greater rights there than did other States, and since 1945, knowing full well that the submerged continental land mass continued "naturally" far beyond, it was decided to give the coastal States only so much of that "continuation" as was "adjacent" to the coast and did not go far beyond the geological shelf. More important, Professor Hedberg did not mention the clear statement in the Court's opinion in a not unrelated context, that by "no stretch of imagination

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can a point on the continental shelf situated say a hundred miles, or even much less, from a given coast, be regarded as 'adjacent' to it."

One incidental point. Professor Hedberg mentioned a letter by Dr. García-Amador, in response to one from Mr. Luke W. Finlay, Manager, Government Relations Department, Standard Oil Company (New Jersey), in which he writes that the statement attributed to him in the record (quoted above) is clearly an error of interpretation on the part of the précis writer.* I regret that Dr. García-Amador wrote that letter and that Dr. Hedberg has now published it. Others may well ask whether Dr. García-Amador's recollection thirteen years later is more reliable than the record made at the time, which no doubt Dr. García-Amador had an opportunity to see then and for thirteen years since and which has been repeatedly cited. More important, Dr. García's recollection of what he said is immaterial, because what he actually said is immaterial. A few people, the members of the ILC, actually heard him; even they must have relied in their later deliberations on what is in the record. Surely, it is the record that was read by governments studying and commenting on the ILC Report and its draft convention. It is the record that was before the nations at Geneva when they adopted the Convention, before governments adhering to the Convention later, before all who have used and invoked the Convention since. In a word it is the record that is effectively the "legislative history." In the United States one who came thirteen years later to change something recorded as his statement in legislative history would be laughed out of court. I think he would fare no better in an international tribunal.

As an interpretation of the present Convention the NPC position is legally baseless and the United States could not in conscience adopt it. The NPC proposals - like those of the Commission - would require amendment of the Convention. The question then becomes one of national policy for international negotiation.

II.

I would supplement Professor Brownlie's perceptive paper by making explicit several elements of context and background. One is the relation between the extent of the continental shelf and the regime governing the deep seabed. In the controversies that surround both, two different attitudes are evident. Some would decide first how wide the shelf, principally because that is the area believed to be particularly rich in minerals and likely to become exploitable soon. If a very wide shelf were adopted the oil companies, for example, would probably care far less about the kind of regime that prevailed in the seas beyond. Others might consider this attitude one of Professor Brownlie's "shortsighted initiatives." They would urge that the nations should agree on the regime for the deep seabed beyond national jurisdiction; then it will be

* EDITOR'S NOTE: The text of this letter may be found on p. 170.

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possible to decide how much difference it makes whether the continental shelf is narrow or wide, whether additional areas should be given over to exclusive coastal State jurisdiction or to the agreed deep-sea regime.

This difference of perspective, I believe, is related to what seem to me the real issues in the controversy between "narrow-shelf" and "wide-shelf" proponents. Obviously, those who favor a wide shelf wish to see larger areas under the exclusive control of coastal States. Many coastal States might prefer such control and the revenue it promises, although even they, even taking account that interest alone, must ask whether they might not fare better under a system of narrow shelves and a bigger "common pot." (For a particular coastal State, of course, the balance would depend on how much wealth lies off its shores and what it would get from the common pot.) But if, as under the Commission's proposals, nations that can command technology and financing would also be free to dig beyond the legal shelf, subject only to a system of international registration, is a wide shelf really more advantageous to the United States and to American enterprise? A wide shelf would mean also that more royalties would go to the coastal government, rather than to some international fund for some international purpose. Again, whatever the interests of the U.S. government, does it really matter to a private American company to whom its payments go? (Under most proposals, in fact, a company would pay royalties to its own government, the government being responsible for some payment to the International Fund. The question of payment, moreover, does not inevitably depend on whether an area is continental shelf or deep sea. There have been suggestions that if coastal States are given exclusive control of large areas of seabed they should pay some "tithe" to an international fund; one suggestion would create "revenue lines," so that the size of the payment would vary with distance from shore.)

In all, I would have thought that the Commission's proposals, with variations, would give American enterprise the best of all worlds. With narrow shelves they could explore and exploit anywhere beyond these shelves without regard to the coastal State. Whether off American coasts or elsewhere, they would probably deal only with the United States government (which in turn would deal with any international authority), subject only to rules which the United States would help create. If companies dealt with a foreign government, the International Registry Authority would afford them some protection against abuse. In favoring instead wide shelves around the world the oil companies must prefer to deal with national governments (independent of any international regime and machinery), courting the proven and virtually inevitable dangers of expropriation, crippling taxation, repeated renegotiations, extortion, and confiscation by unstable governments subject to political upheaval.

I must conclude that the obvious "advantages" in a wide shelf do not tell the whole story. My impression is that in opposing a system like that proposed by the Commission, where beyond a narrow shelf there is a basically free enterprise plus international registration, the "wide-shelfers" are resisting not the actual proposal but what they fear might happen, and are

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preferring known dangers to unfamiliar uncertainties. They fear the principle of international authority, the possibility of subsequent international legislation and interference, going beyond mere registration systems. They are unfamiliar with international organization and international bureaucracy and fear what it might become some future day. And they fear the pressures of international politics on their own government. (You will gather that I do not share these fears and concerns or give them important weight, and have difficulty seeing why the oil companies perceive their interests as they do.)

The "narrow-shelfers" - for whom I speak with greater confidence - prefer to limit the exclusive rights of coastal States, to leave more of the seabed in the "public domain" and allow more scope for international regulation. (Some indeed seek a more "intensive" international regime for the seabed beyond national jurisdiction than the Commission proposes, but that is a subject for another time: they would probably support the Commission's proposals - a narrow shelf plus a minimal international role [registration] in the seabed beyond the shelf - at least faute de mieux.) They wish to see a narrower rather than a wider area in which the coastal State is sovereign master of the resources, can regulate navigation and effectively stifle scientific research. They wish to see more rather than less seabed subject to international authority and regulation (however minimal) and to a "tithe" for some international purpose. For them, exploitation beyond the narrow shelf by those with technology and capital (whether on the basis of "first come" or some other principle) rather than by the coastal States seems more consistent with the "public" character of the seas.

Again, I think, the real reasons of the "narrow-shelfers" are not merely the obvious ones. The principal reason, I believe, is fear of what I have come to call "Craven's Law," because it was suggested to me by something written by John Craven. Those who oppose a wide shelf are persuaded that wherever a State enjoys exclusive rights for some purposes, it tends to acquire exclusive rights for other, perhaps all purposes, jeopardizing national and international interests in the "freedom of the seas."

There are two different notions contributing to this "law." First, the State that has jurisdiction for some purposes soon feels the need to extend it. In part, the tendency comes from the need to deal with conflicting uses: the 1958 Convention itself recognized some rights in the coastal State to regulate navigation and scientific research, and Professor Hedberg has told us that the latter at least has in fact suffered. The coastal State tends also to extend its jurisdiction to safeguard what it has or because it seems reasonable to do so and there is no reason not to do so. Writers have suggested that on the continental shelf the coastal State may erect defense installations and take other defensive measures, at least to defend its mining operations, perhaps also for general national defense. From different motives the United States has extended the jurisdiction of its laws to the continental shelf as to its territorial sea.

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A very different notion sees this law as a law of international politics, and I think that was implied in an important point made by Professor Brownlie. He criticizes preoccupation with mineral rights to the exclusion of other rights. There is, indeed, a tendency to overlook that the Continental Shelf Convention applies to sedentary fishes as well as to minerals. But his real point is, I believe, that one cannot deal with the regime of the continental shelf without considering other interests and other regimes. Nations that seek special mineral rights in wider areas will be reminded that other nations, coastal or otherwise, seek special fishing rights. Of course, the law and the history of the different regimes are different; no matter. Nations seeking the agreement of others to enhance their mineral rights may find that the price is their agreement in turn to other claims by other nations.

This is the other aspect of the "law" I have invoked. For there is no compelling reason why a coastal State should have exclusive jurisdiction in the seabed for some purposes (minerals, crabs) but not for others (say, to exclude the submarine tracking devices of other States); indeed, there is no compelling reason why a coastal State should have exclusive rights in seabed but not in the superjacent waters or its air space. Especially as new and varied uses of the sea develop and proliferate, and as the continental shelf expands with "exploitability" bringing even greater wealth to a few fortunate coastal States, the regime of the continental shelf may become an unacceptable anomaly. It will be difficult to persuade coastal States less blessed in minerals but rich in something else that they may not enjoy similar exclusive rights to fish, or other resources or uses in the same area. And if other States tell them that the doctrine of the continental shelf is and must remain limited, they will proceed to claim the same area as territorial sea. Is this not the lesson taught by the Latin American countries which, after the Truman Proclamations on the Continental Shelf and on Coastal Fisheries, claimed a 200-mile territorial sea, principally in order to gain exclusive fishing rights?

The "narrow-shelfers," then, fear that the continental shelf will tend to become territorial sea denying to others most of the freedoms of the sea. Some of them may ask even whether the United States did not make a mistake in developing the doctrine of the shelf, sacrificing its traditional interests in free seas for a mess of mineral rights. Surely, they say, it should not compound that mistake by pushing for a wider shelf, and eventually a wider territorial sea, further sacrificing its various interests that are favored by "freedom of the seas" - including freedom of navigation and military deployment in the sea and its air space in areas adjacent to the coasts of other nations. In the past, at least, other nations too - although most nations are coastal nations - have seen their interest in supporting the freedom of the sea; that freedom would inevitably be diminished by a wider continental shelf.

III.

The difference between the "narrow-shelfers" and the "wide-shelfers" might influence also their views on the intermediate zone. Professor Brownlie,

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Professor Hedberg and I all differ with the Commission's proposal for such an intermediate zone, but from different perspectives. Professors Brownlie and Hedberg object to the zone in principle, Professor Hedberg because he thinks the area in question should be continental shelf, Professor Brownlie because he thinks it should not be continental shelf and he considers an intermediate zone virtually indistinguishable from shelf. I think that in principle a zone has promise, but I have questions about the Commission's particular proposal.

To those, like Professor Hedberg and the NPC, who favor complete coastal State jurisdiction over a wide shelf and resist international authority even beyond, an intermediate zone is not enough. While a company would deal with the coastal State, as on the shelf, the zone is deep sea and "in principle" and potentially is subject to international regulation. But to those of us who favor a narrow shelf because we fear coastal State encroachment on the sea more than we fear potential international regulation, the zone, I believe, might be a useful device. For if there is to be a narrow shelf, there is nonetheless something to be said for a zone beyond the continental shelf in which the coastal State has one special right - the right to exclude others, or a right of "first refusal." Especially in areas where its legal shelf ends some short distance from its shores, a State may have a legitimate concern that elaborate, permanent installations (like those required by sea mining) belonging to a foreign power might mask hostile designs. Neither the United States nor Russia would like the other to have such installations, say, twenty miles from its shores, and in our world one cannot wholly blame them. An intermediate zone, then, would serve as a buffer against hostile proximity, without incurring the dangers of a wide shelf. But to be candid, an intermediate zone is in large part a compromise designed to make a narrow shelf more acceptable.

Professor Brownlie, who also favors a narrow shelf, has basically three objections to the intermediate zone. First, he thinks it will not satisfy those who desire a wide shelf, and, indeed, Professor Hedberg appears as evidence; I am hopeful that it might yet provide an acceptable compromise, or at least divide the opposition in complicated international negotiations in which most participants are themselves torn by conflicting interests. In the United States such a zone may yet prove a desirable or necessary accommodation among various national interests in developing a national policy.

Professor Brownlie also objects that such a zone is unstable. I am not sure why that should necessarily be; its stability would probably depend on the character of the deep-sea regime to which it is attached. In any event, if it is necessary as a compromise to avoid a wide shelf, the worst that could happen if it should prove unstable is that it will convert to continental shelf and the wide shelf will have prevailed.

Professor Brownlie's third objection is that the difference between the intermediate zone and the continental shelf is insignificant. That seems somewhat inconsistent with the argument that proponents of a wide shelf will not accept the intermediate zone, for if the intermediate zone is virtually

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continental shelf why not accept it? In any event, the argument may apply to the particular intermediate zone proposed by the Commission, part of a regime for the deep seabed which contemplates free enterprise cum registration. Professor Brownlie might admit that if an intermediate zone were attached to a stricter international regime, e.g., an international system of licensing and other regulation, the difference between zone and shelf would be substantial. But even as regards the Commission's proposal, I note that Professor Hedberg, for one, thinks there is a difference, for he objects to the zone because it is not continental shelf. In fact, unlike the shelf, the intermediate zone would provide revenue for international purposes; it would be part of the international domain with implications and promises of international authority rather than the exclusive national domain of coastal States; its conversion to territorial sea would be pro tanto less likely. If Professor Brownlie believes that those differences are not significant, one may ask whether, under the Commission's proposal, there is significant difference for the technologically advanced countries between continental shelf and deep seabed. Even without any intermediate zone, the United States, for example, would largely be able to exploit (and register) beyond its shelf as within it. (Perhaps without a special zone, also, it is not too likely that foreign States would readily beat us in a race to establish mining operations on our continental margin.)

My own objections to the Commission's zone are principally that it is too wide and that its proposed dimensions are unrelated to its purpose. If the purpose of the zone is security against hostile intrusions, the extent of the zone has nothing to do with depth of waters; it ought to be strictly in terms of distance from shore, and it need not extend as much as 100 miles from shore. (In some places the 2,500-meter isobath that is proposed might extend the zone even much farther.) Of course, if one sees the intermediate zone as a compromise, the terms of the compromise need have no intrinsic logic or rational relation to other considerations; no doubt the Commission was not unaware that its proposal looked enough like the NPC proposal - its intermediate zone being congruent with the farther reaches of the NPC's shelf - as perhaps to mute the NPC's opposition. But while I believe there is a difference between intermediate zone and continental shelf, even the zone is not without its risks, particularly when it is tied to a minimal international regime beyond. For the zone, as for the shelf, I believe, the narrower the better, that is, the less the danger to other national and common interests depending on the freedom of the seas.

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Orlin: This question is directed to Professor Hedberg. I submit that we cannot mark the boundary with any greater accuracy than by using distances from shore; defining the boundary in terms of latitude and longitude does not help the situation a great deal. I also submit that permitting the coastal State the right to establish the boundary anywhere within a distance "X" from the continental slope will only mean that each State will establish this line at that distance "X."

Another question is, where would you establish the line at the bottom of the slope and how would you account for the detritus and sedimentary material that has accumulated at this level?

Lastly, the Geological Survey map depicting the bottom of the continental slopes is at an extremely small scale and the line width covers a distance of some 5 kilometers. Certainly, this is not accurate enough for a boundary line.

Hedberg: With respect to the matter of using latitude and longitude for defining control points for national jurisdictional boundaries at sea, I know of nothing else as satisfactory, even though, as you pointed out at last year's conference, there are still problems involved. Definition of a boundary in terms of latitude and longitude provides a boundary which is fixed in concept even though, due to operational techniques, there will always be some margin of error in application. Shorelines change; depths change; distances from shorelines vary, both with shoreline changes and because of differences in the manner of determining baselines; but a point defined by latitude and longitude is, in theory at least, an unchanging stable point. And, with new developments, such as satellite methods and inertial methods, a greatly increased degree of accuracy in determination is becoming practicable.

Now, as to defining the base of the slope, I would always emphasize the gradual nature of the change in gradient and the fact that the base of the slope is not definable exactly enough to serve, in itself, as a political boundary. It is, however, the best natural guide to a boundary which we have. For the very reason that it is not itself a precise boundary, I have suggested that it be used only as a general guide to a broad zone within which the exact boundary should be drawn. This zone should extend no more than a prescribed distance "X" seaward from the base of the slope and the exact boundary should be drawn in the form of straight lines between coordinates of latitude and longitude anywhere within this zone. As long as it was within this general zone and could be accepted by a qualified international commission as being within this zone, I would be glad to leave it to each nation to draw its own boundary as it chose.

The matter of the accumulation of detritus at the base of the slope and the matter of the width of a line depicting the base of the slope on the

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Geological Survey map, mentioned by Dr. Orlin, do not seem to me to be pertinent problems.

Sullivan: Does that answer your question, Dr. Orlin?

Orlin: I would like to make a brief additional comment on latitude and longitude. If you use an astronomic position for your latitude and longitude and rely in positions at sea on sexton observations, I agree with you wholeheartedly your accuracies are going to be pretty poor. But if you rely on a geodetic position you are dependent upon the geodetic spheroid or the ellipsoid that you use and most countries use different ones today. Whose are you going to adopt? You have got the same problems in latitude and longitude that you have in anything else.

Question: I have a question for Professor Henkin as it relates to Craven's Law, which he believes the Marine Science Commission tried to avoid invoking. As I read the Commission's Report, however, it provides in the international zone as well as in the intermediate zone - indeed it requires in the international zone - that the nation which receives the claim must agree to enact domestic legislation to assure, among other things, that its civil and criminal laws are applied to protect exploration and exploitation activities under its registered claims. It will also be able to apply any other of its domestic laws, which are not inconsistent with the recommended framework, to exploration and exploitation activities within the area of its registered claim. In reality do not such provisions represent an encouragement of national jurisdiction in all its splendor on the ocean floor, the deep-ocean floor?

Henkin: I suppose we should distinguish between two different issues. If we are going to have extensive operations at sea, some law has to apply, and there is no existing legal system that would regulate those actions and relations. There has never developed a general law that applies to all actions at sea in the way that national law applies within a State's territory. Nations were content to have national laws apply to sea: they apply to vessels; they can be applied to acts of nationals. I see no objection to the United States saying that in regard to its nationals or its installations and operations, it will apply American law rather than wait for a comprehensive international legal system, which may never develop. That is quite different, I think, from what we have done on our continental shelf where apparently all our laws apply as they do on our soil and in our territorial waters. That could become a step towards making it territorial sea.

I have spoken of Craven's Law as a tendency, and I think the tendency is there. All one has to do is look at the west coast of Latin America where nations claimed an extravagant territorial sea because it seemed the only way to assure fishing rights. In general, as uses increase, as conflicts between uses increase, more regulation by the coastal State will be inevitable. With the best of good will and self-restraint, I think, the nation that operates on its continental shelf will find itself operating as though it were "at home."

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It will be different when States begin mining operations in the deep-sea: there is some danger that should be resisted even there, but those national operations would create at most isolated, sovereign "islands," not an extension of the coast which is easy to attach to it and to one's territorial sea and claim as one's own. Of course, there would be less danger that mining rights in the deep-sea would expand to include other rights if there were a stronger international regime with greater international regulation, but that is a bigger subject.

Rao: I do not want to raise any question but to put forward a submission in opposition to an argument frequently invoked in this hall and elsewhere.

I feel that in discussing the outer limits of the legal shelf, not often a distinction is made between the exposition of the lex lata as one sees it and the de lege ferenda as one desires it. Such a distinction is vital for an honest approach. However, it is frequently suggested that it is the expectation of the international community that under the terms of Article 1 of the Continental Shelf Convention coastal States could claim the ocean floor up to the continental margin, wherever it falls. In arriving at this conclusion two assumptions are advanced. Firstly, that the geological fact of natural prolongation of coasts into the sea is the only basis for claims to the legal shelf. And, secondly, that the ocean floor up to the continental margin appertains to the coastal States.

As a matter of lex lata, I submit, both the assumptions are incorrect. It may be recalled that originally the Truman Proclamation, which is considered to be the author of the doctrine of the continental shelf, advanced as bases, besides the natural appurtenance theory, at least two other policy reasons. These were: coastal State's security and the economy and efficiency of offshore operations. Further, when the doctrine came to be considered by the International Law Commission, in the final formulation it unequivocally denied the geological appurtenance theory as constituting any basis for honoring claims to the continental shelf. As such it is only reasonable to assume that the allocation of exclusive access rested on grounds of the other two considerations, coastal State's security and the dependence of offshore operations, for economy and efficiency, on the cooperation of the coastal State. Both of these considerations, I suggest, are appropriately signified by the criterion of "adjacency."

Question: Is it possible to turn to some consideration fully divorced from conflicting national interests? Is it possible to suggest that it is impossible to secure the investment necessary for the exploitation of any resources without political stability and, if the issue is one between a broad and a narrow continental shelf, which is the one which will secure investment and exploitation because it promotes political stability?

Sullivan: Professor Hedberg, would you care to comment on the question of political stability as an incentive to investment?

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Hedberg: Well, I feel very strongly that political stability is important and that an investor is going to want to assure himself of political stability if he possibly can before he risks a large amount of capital. I feel that U.S. investors have probably more confidence in the stability of the United States than they do of any other political entity. Perhaps someone else would like to comment on this?

Chapman: I have three related questions for Professor Hedberg. They arise out of the consideration that the next conference of plenipotentiaries on the law of the sea will probably require about forty to forty-five votes to be a blocking third for any proposal. The first question is, if you could give us some estimate - as a geologist - about how many sovereign nations there are in the world who have continental shelves, broadly defined, where there is a reasonable chance for exploitable petroleum resources being discovered in the future or presently. Secondly, do you know of any such country which appears to be willing to have exclusive jurisdiction over such resources off their coasts assumed by an international organ. Thirdly, a related question, do you know of any oil firm whose corporate practice would permit it to drill a production well off the coast of a country on a slope or terrace without having the permission of that country to do so?

Hedberg: Those are very pertinent and very potent questions, Dr. Chapman. As to the first, there are some 100 to 150 countries with coastlines and I would say that certainly a majority of these would have some possibility of petroleum resources in their offshore area. The second question: I do not know of any country that would be willing to turn over the offshore area that it feels belongs properly to it to an international agency; there may be such, but I do not know of any. The third question: I feel quite confident that there is no petroleum company which would go ahead and drill - make the investment necessary to locate and drill a well for production - without having the security of approval of the entity having jurisdiction over this area.

Henkin: May I comment? A very interesting question, Dr. Chapman, but I suggest that there is more than one possible answer. The fact is that we don't know how many of the coastal nations have how much oil in which continental shelves. The nations themselves don't know; nor do they know how a wide continental shelf would affect their overall mineral interests, and various other interests they have. For example, if one takes Craven's Law seriously, the United States has to ask not merely about how much oil we will find on our continental shelf but what others will find on theirs with what consequences for their economy and for international economics and politics generally. And it will have to worry about how close to other people's shores its Navy might be able to go, and about other interests which we don't have to go into today. Contrary to the implications of your questions or of Professor Hedberg's answers, it is far from obvious that all coastal nations will favor a wide coastal shelf. After all, they have not all reached for the widest territorial sea they could claim.

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I should add that even as regards minerals alone much depends on what governs beyond. If a coastal State sees a good pot of gold beyond the continental shelf it may well find it in its interest to take a narrower shelf in exchange for a piece of that pot of gold. The problem is that nations have not yet decided where their interests lie, but I don't think we must assume now that their interests are going to be what your question implies.

So far as what the oil companies are willing to do, my guess would be that they will seek security and stability, as Professor Hedberg, the previous questioner, and Dr. Chapman suggest. But I am not certain that there is more stability in being at the mercy, say, of today's (or tomorrow's) regime in Peru than in being dependent on an international regime, of almost any kind. Stability, moreover, depends on acceptance and legal certainty. Today it might be wise to get the consent of the nearest coastal State, but if it were agreed that they did not need the consent of any State but of some international body the oil companies would find just as much stability in that. I suspect that whatever regime you get, once it is accepted it will be stable, and investment will take place: if there is money to be made, the companies will be ready to make it.

Christy: I have two questions. My first is that it is my understanding that a well has already been drilled in 400 meters of water - non-productive but drilled - and it has been claimed that this has demonstrated exploitability. If this is the case, does this mean that the limits are now down to 400 meters? The other question is one that follows more on the line of what Dr. Chapman is saying. I haven't heard the oil people express this point but I think it is one that they should be considering. The oil companies are dependent to a large extent upon the shore and shore installations. Pipelines tie them to the adjacent coastal State and they use the nearest land for storage, supplies, and labor. Thus, even if there is a narrow shelf and the oil company is operating beyond that in an area governed by an international regime, the company would still be dependent upon and subject to, in large measure, the control of the coastal State.

Sullivan: I would suggest that Mr. Brownlie take the first question and leave the second for Professor Hedberg.

Brownlie: Well, I think the standard answer is simply that exploration is not the same as exploitation. Therefore, in principle, the drilling of a well is a separate question from exploitation.

Christy: It was an exploitation well, a production well.

Brownlie: I see. Well, I think the standard view there would be that that is a sign of exploitability. The trouble with the exploitability test, of course, is that you wonder whether you have to take a national mean among States as to what is exploitable in economic terms. This is one of the difficulties with the exploitability criterion. It isn't a self-sufficient criterion. You have to operate with other factors before you get a satisfactory answer. For example,

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if you had a State petroleum body operating from a socialist State, it might be that its criterion of what was worthwhile to do would be very different from that of Standard Oil. Once you get Standard Oil doing something or a government agency doing something it can then provide that know-how on a license basis to almost any other State in the world.

Hedberg: Let me add just a word to your first question, also. I would certainly consider that this well drilled out in 400 meters - 1,300 feet - demonstrated that this was an exploitable depth for petroleum. I was very much interested yesterday in Mr. Flipse's response to my question, "To what depth do you think that manganese nodules admit of exploitation currently?" If I may quote Mr. Flipse, he said, "At least to 3,000 feet," so exploitability has moved well on out both for manganese and for petroleum.

Now the other question Dr. Christy brought up is, I think, an excellent one. Offshore operations are and will be for a long time tied very closely practically to the coastal State off of whose coast they are being carried on.

Browning: Professor Hedberg, I would like to get just a little bit of clarification on the position that you presented this morning as far as this outer edge of the submerged continent. I believe that generally this may be under 2,000 or 3,000 meters or more of water. I don't think that these areas have been shown yet to be exploitable. Are you saying that the United States now has vested rights to this submerged continent all the way out to its outer edge in spite of the lack of clearly-shown exploitability?

Hedberg: It is my opinion that the phrase "to where the depth of the superjacent waters admits of the exploitation of the natural resources" is no barrier to extending jurisdiction out to the outer edge of the submerged continent. Water depths there, in my opinion, certainly admit of exploitation of things like manganese nodules and, for that matter, of almost any mineral resource. The phrase is indeed subject to different interpretations, but this would be mine.

Browning: The essence of your position is that the United States now, today, has these rights, or all coastal nations have these rights, to the outer edge of the submerged continent?

Hedberg: Yes, I would feel that way.

Goldie: I have an answer to Dr. Chapman, which may come in on the flank somewhat of Professor Hedberg. I can't mention names but I know one area in the Caribbean Sea where Company X would very much like to drill. The problem is that there are three coastal States - and a possible fourth - with historic rights to an area where they would like to drill. I am pretty sure that such a company would rather deal with one international organization than pay four sets of taxes, despite the possibility, maybe, of getting some deductions from Uncle Sam.

Sullivan: Since Mr. Brownlie has come such a long distance to be with us, I think we should give him the opportunity to summarize his remarks and the remarks that have been made following his talk.

Brownlie: I would like to thank Professor Hedberg and Professor Henkin for their many comments. I don't think I can do them justice in the time available. One or two general things can be said in approaching problems of this kind. There is the difficulty in keeping apart, and perhaps one shouldn't try to keep apart, the issues of principle from the issues of practical politics. My own tendency is to favor a narrow shelf doctrine and I feel that even the Commission proposal is really getting away from the geological concept. I agree that any legal definition can't be simply a reproduction of this geological concept but the fifty-mile breadth criterion is clearly getting away, substantially getting away, from the geological concept. Nevertheless, given all the uncertainties and the possibility of increasing uncertainties and difficulties in the future, I am quite willing to regard the 200-meter depth or the fifty-mile breadth criterion as a reasonable overall solution. So that was my attitude to that as a matter of practical politics, not as a matter of the interpretation of Article 1 of the Convention, of course.

In dealing with the NPC proposal I accept fully what Professor Hedberg says that I relied there on what the Panel Report said on the NPC documents. I only just this morning got the NPC document in my hand. My attitude to the NPC proposal again was rather accommodating simply on the basis that if, in fact, we are to avoid a free-for-all in the future then any sort of compromise which appears to be a reasonable compromise is acceptable. However, I felt that the NPC solution, with all deference to Professor Hedberg, is really more open-ended than it appears to be. Because once you get away from the shelf edge, where the shelf edge does exist, and you get to the bottom of the continental slope then, although I am not a geologist, my intuition (my reaction), to this is to feel that there you have got a very uncertain criterion indeed and are you to say that the line is some unseen line below the detritus and loose rubbish of the continental rise? Are you actually to go to the foundations of the thing for your solution or is it just the top of the continental rise? And it seems to me that in various parts of the world this will not be a very defined feature and, therefore, it does have less certainty than perhaps Professor Hedberg considers it would have.

The other main point is that my own prejudices are based on Craven's Law and in a book of mine published in 1966 I pointed out that historically many territorial sea claims in the eighteenth century started out as contiguous zone claims [Principles of Public International Law, pp. 169-70]. Spain, for example, for years - for perhaps 150 years - had a contiguous zone claim; it was never originally a territorial sea claim. It certainly is the case that jurisdictional claims tend to consolidate: you get a multiplication of jurisdictional claims, and they tend to consolidate into something like sovereignty. So this is also one of my prejudices.

The other prejudice was really this: If you allow extension out, on a sovereignty basis or any other basis, it tends - for practical political purposes - to be irrevocable. It is a very difficult problem to get a sort of inward flexibility later on. And so I really am a narrow shelf exponent in terms of general prejudice but I think it narrows the issue - rather, it distorts it - if you say it is simply as an alternative between a narrow shelf and a broad shelf. And I would very much support Professor Henkin's point that probably what people want is stability and there is a lot of experience now with international organizations, especially in Europe where international organizations of the economic sphere are seen to give stability, and it may be different parts of industry in different countries have varying experiences in dealing with international agencies and some may have more faith in them than others. But I think the dichotomy between a narrow shelf and a broad shelf is basically a false one and, especially in the earlier part of my paper, I tried to pick up the point that the Commission does make (a very good point) that a national broad shelf initiative is in fact going to reduce the possibility of free operations off other people's coasts. You have always got to be conscious of what other people are going to do in relation to your reaction.

On specific points, I agree that the remarks Professor Henkin made on the Convention, speaking about the shelf and what it means when it refers to the shelf, are pertinent, and I think it is significant that in the Eighth Session of the International Law Commission the set of geological definitions that I read out to you was tabled. It was a document circulated by Garcia-Amador and it was well in the minds of the Commission as it appears in the Summary Records, and there is a distinction there between the shelf and the slope and the shelf edge, so that it is possible that the legal usage was related quite closely to the geological usage as set out in that set of definitions.

On the exploitability issue, Professor Henkin said I spent a lot of time pushing against an open door. Well, I admit I was very cautious because certainly in the United Kingdom in discussions on these questions there are quite a few people around who say that exploitability is an unrelated test, and this meant that I felt the need to take more care of it than perhaps is the case; but in some discussions there are quite strong exponents of exploitability as an open test. On the relation between fishing rights and mineral rights in these matters, I have not really advocated the claiming of exclusive fishing rights by the coastal States. The way I raised the point was to note that to get a viable continental shelf regime one should not perhaps do too much in the way of accommodating special interests within that regime. If you are to accommodate them at all - and that is a question of policy - then one should do it by creating some change in another part of the law of the sea. I think the drawback of the Geneva Conventions setup is that it is all compartmentalized. In one part you have your continental shelf convention and elsewhere you have your territorial sea and contiguous zone setup, and this obscures the very real relations between the various areas. The Latin Americans would be satisfied, I think, if there was some accommodation on the fisheries in superjacent waters.

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My main point is that you would get a stable continental shelf regime if you could give States some sort of protection for their special interests by some means distinct from the shelf regime but complementary to it in terms of general equity.

Chapman: Professor Henkin raised a question that rather screams for an answer and probably will be given a quick answer. The indication was that sovereign governments are unable to make up their minds or come to decisions on matters of this complexity. I wondered to where we must repair for such decision-making capability - to an international body, faculty of law at a university or where?

Henkin: I did not say they were unable to make decisions; I said that they have not yet been able to make this one, precisely because nations have conflicting interests and the issue is more complicated than some would imply. The fact is that very few governments have determined their positions and all we have been seeing at the United Nations, for example, is treading water and an effort by most nations to assure that they will have a voice in the determination of policy and the making of law. In course, no doubt, governments will be able to make up their minds, with the aid of people like Dr. Chapman.

Dr. Christy's question, if I may add a word, underscores the plenty of ambiguities in the criterion of "exploitability." It is commonly accepted that it does not require that resources be "economically exploitable"; on the other hand, it is probably not enough that some token minerals can be extracted by heroic effort at ruinous cost; perhaps, while exploitation need not be immediately profitable, the Convention requires that substantial minerals be extractable by reasonable efforts. In any event, that a well is exploitable at 400 meters depth in one place does not necessarily mean that all waters at 400 meters are everywhere exploitable. Once defined, exploitability becomes a question of fact, to be determined at each particular place - and depth of water may not be the only relevant criterion, or the conclusive one. Incidentally, one must ask also - perhaps first - is the well in question in an area "adjacent to the coast"? If it is not, exploitability is legally irrelevant, and the area is not continental shelf under the Convention.

Chairman - Richard Young, Van Hornesville, New York

Members of the Panel - Norman V. Breckner, Thomas A. Clingan, Jr., K. O. Emery, L. F. E. Goldie, Roger Denorme

SOME DIMENSIONS OF DEFENSE INTEREST IN THE LEGAL
DELIMITATIONS OF THE CONTINENTAL SHELF

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My remarks are directed toward defense interests in the legal delimitation of the continental shelf. I should like to emphasize that although I speak of defense concerns there the views I express are not necessarily the views of the U.S. Navy or the U.S. government.

This year, for the first time, the delegates to the Eighteen Nation Disarmament Committee (ENDC) in Geneva seriously discussed the question of possible limitations on military activities on the ocean floor. At the beginning of the spring session in March the Soviet Union proposed a comprehensive ban on all military activity on the ocean floor. The United States told the conference that it was prepared to discuss questions concerning the prohibition there of nuclear weapons and other weapons of mass destruction. Then on May 22, 1969, Mr. Adrian Fisher, the United States representative, submitted in behalf of the United States a draft treaty that would prohibit the emplacement of fixed nuclear weapons of mass destruction on the ocean floor. Presumably this subject will have a high priority on the agenda of the summer session of the Disarmament Committee.

I review this recent chronology because I wish to distinguish these issues, which I will not discuss, from the question of defense interests in the definition of the continental shelf. On the question of where to locate the outer edge of the legal shelf, the defense interests that underlie my remarks do not relate to the potential employment on the bottom of nuclear weapons and other weapons of mass destruction, the subject of the United States draft treaty. Nor does my discussion involve the question of the geographical limit beyond which this proposed treaty-ban might apply.

Although the shelf question involves the placement of the boundary of national jurisdiction over certain non-defense activities on the ocean floor, there may indeed be defense implications in a selection between relatively wide and relatively narrow limits of such coastal State jurisdiction. There are a wide variety of potential defense interests in the bottom. Mr. Fisher is quoted in the New York Times of May 15, 1969, as follows: "The existence of submarine forces requires states to take action, in self-defense, such as establishing

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warning systems that use the seabed. The United States is not prepared to enter into a treaty which would throw the propriety of these systems in doubt." In addition to installation of detection devices on the seabed, other potential defense employments of ocean floor locations involve military mining and mine countermeasures; navigation aids; bottom-moored sensors; salvage submersibles and divers including saturated diving; and ranges for research, development, and testing of habitats, diving equipment, vehicles, and ordnance. The Navy engages in extensive scientific research in the oceans, including the bottom. Non-defense seabed activities include the recovery of oil and natural gas, the recovery of minerals and certain living resources, scientific pursuits, dredging and salvage. Recreational submersibles with a bottoming capability and recreational habitats may well appear in the next couple of decades.

There are a number of dimensions of naval interest in the question of locating the outer edge of the legal continental shelf; that is, the question of a relatively wide or relatively narrow legal shelf. Some of these issues are either almost self-evident or have been heard before and I shall be brief in enumerating them. Others deserve a little more development because they are issues that will increase in relevancy as time passes and they have received less examination.

First, naval powers of the world will typically differ both in the quantitative employment of the seabed in a particular mode and in the regions of preferred use. In the future the differences may change but differences are, nevertheless, likely to persist. For a State that makes several different naval employments of the bottom, some uses will be more important than others in performing missions.

Second is a sort of reciprocity feature among claims to continental shelf delimitation. What one State recognizes as another State's continental shelf will depend in part upon the shelf claims and behavior of both States and of other States. With respect to unilateral claims of jurisdiction, particular behavior by the United States in administering seabed resources off United States shores is likely to be emulated, if not surpassed, by others.

Third is the surety of a coastal State's naval access to its own shelf areas relative to shelves of other States. Within seabed areas where a coastal State claims jurisdiction of the resources of the seabed and subsoil, the coastal State may well employ its claim of jurisdiction to impair or attempt to deny naval uses of the seabed by other States. In management of a particular operation, if a manager or State observes in nearby waters other activities that are either profitable or potential nuisances, the urge to control is all-too-often irresistible. A chief concern is the possibility of extreme extensions of jurisdiction to the water and even the air space above the continental shelf.

Fourth is the likely difference in relative naval access to the seabed covered by the concept of freedom of the seas and to the seabed within

another State's shelf delimitation. In seabed areas covered by the concept of freedom of the seas and under the Geneva Convention on the High Seas, a shore State is less likely effectively to impair or deny other States' naval seabed options than in seabed areas within the legal delimitation of the shore State's continental shelf, wherever that limit may fall.

A fifth dimension concerns the nature of military access to the deep-seabed. For the seabed beyond the legal delimitation of the continental shelf there will be rules and practices relating to military access to and employments of the seabed, either within the present law of the sea or some evolution therefrom. In anticipating this evolution, one should conjecture that under any particular set of future deep-seabed institutions, particular naval employments of the seabed might receive different treatment, or at least be subject to attempts to treat them differently. For example, future differences in attempted restrictions on naval options might depend upon the nature of mutual interference between military activity, over which the deep-seabed legal regime does not have jurisdiction, and the commercial or other non-defense activities to which the regime applies.

My three remaining points refer to certain aspects of a congestion that will increase in particular locations if not throughout the seabed.

A sixth dimension of defense interest relates to the nature of existing interactions between various users of the ocean including the bottom. In seabed areas off the United States coast there is still very little physical interference between United States defense and non-defense seabed uses as such, and essentially no competition yet between defense and non-defense claimants for rights to seabed locations. It is clear that in particular offshore locations - for example, in some locations of oil activity - the existing competition for space and time between naval and other users of the ocean largely relate to their uses of the surface and the water column even when activities there support a bottom function or installation.

A seventh issue concerns the implication of a seabed rights-assignment process for the use of the water space and surface. In particular places off the United States coast, if competition for seabed space and time develops between naval and other users of the ocean, then the method of sharing seabed use or of assigning exclusive rights among competing users on the seabed may affect not only the use-patterns and potential interference there but also in the water column up to and including the surface. For most commercial activities, exclusion from a bottom location would effectively exclude from the above water space operations that might support the bottom operation even though these operations are in international waters to which the jurisdiction (national or non-national) over the exploitation of the resources of the seabed and subsoil does not extend. When there are conflicts in claims to use the seabed off United States coasts, the future methods employed for sharing or selecting alternative seabed uses will affect the degree of interference there between the Navy and other bottom users, and will determine whose use of the seabed is

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impaired, compromised, or denied; but these methods will also partially determine who the effective users of the water space shall be and how much insulation various operations in the water space shall get from potential interference or compromise by other operations.

An eighth and last issue concerns the possible relationship between a method for defense and non-defense sharing of seabed space and whether or not there is a national jurisdiction in the bottom off U.S. coasts. Where an ocean area is or may become especially effective for United States naval employments, if profit incentives develop there for activities on the bottom, then the methods, formal or informal, that evolve for sharing or selecting alternative seabed uses may depend upon whether or not the bottom is under national jurisdiction for exploitation of its resources. The United States (or any sovereign State), with jurisdiction over seabed resources in defined areas adjacent to its coasts, may adopt a method of assigning seabed resource rights that avoids an effective bias against its naval uses and even attempts to give effect to a naval claim, against a competing non-defense claim, if the defense benefit seems sufficient in comparison with the value for non-defense uses. A non-national deep-seabed jurisdiction over these resources, if it achieves a role in selecting among claimants when competition truly develops, is less likely deliberately to seek particular rights-assignment methods or rules of thumb with these specific characteristics. It may also be less likely than a national jurisdiction to evolve such procedures or rules in a piecemeal fashion. This might become a significant defense issue in the future.

In summary of this last issue, several points must be emphasized. The question here is what are the terms under which the United States Navy might be at a relative disadvantage if seabed areas off United States shores are not under national jurisdiction for purposes of exploiting resources. In the first place, if there is little or no congestion or interference between naval and other seabed activities there, and if the potential deep-seabed regime does little more than record claims, as contrasted with selecting certain claimants and attempting to exclude other users, then the type of potential relative disadvantage to the Navy described here will be negligible. In the second place, the potential relative disadvantage to the Navy may still be small even if more congestion develops and if the States of the world agree to construct a deep-seabed institutional device that will select from among claimants to particular seabed resources and locations. Many such arrangements, as constructs of sovereign, participating States, could have relatively little effective power to exclude possible naval employments of the bottom in favor of other uses, if these naval employments are not agreed objects of the arrangements. Further, in establishing such a deep-seabed device, if the States want to realize the highest revenues from various seabed locations and uses, they may wish to consider naval bids for particular seabed locations should the U.S. wish to advance such bids for test ranges or other installation-sites. In the third place, the principal condition in which there may be any significant relative disadvantage to the U.S. Navy if the offshore location is not under U.S. jurisdiction for the exploitation of seabed resources, is if congestion between naval and other seabed users

develops and the deep-seabed regime has no method, or an ineffective method, of inducing sharing or of assigning rights between certain naval uses and other seabed users. This is not a potential impairment of Navy options or capability because of exclusion of the Navy but, rather, because of a difficulty in formally constraining or excluding other operators from particular locations under certain congestion conditions. This is essentially the same possibility that may develop in some locations under the present concept of freedom of the seas, which is essentially a doctrine of non-exclusion. In the absence of national jurisdiction over seabed resources, the U.S. Navy and non-defense users, on their own motivation, could still bargain and explore the possibility of mutually desirable accommodation or compensation devices if and when conflicting aspirations develop in a particular location. In international waters off the United States coasts there is a history of ad hoc coordination procedures for reducing hazards and other interference.

THE CONTINENTAL SHELF AND THE PUBLIC INTEREST

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Since the release of the Report of the Commission on Marine Science, Engineering and Resources (COMSER), there has been an acceleration of the already abundant discussion of regimes and delimitation. I do not intend to add to that volume. Instead, I should like to focus some attention on the nature of the users of the continental shelf and in, or on, the superjacent waters, and to consider for a moment the degree to which we may successfully accommodate the various interests to be found.

Use of the shelf and its waters carries with it obvious potential for conflict. Some of it is already present. Since the resolution of conflicts between multiple uses involves the difficult task of assigning values to intangibles such as aesthetics, decisions are often aided by the use of some variation on the concept of "public interest." In other words, that which satisfies the need of the community will also provide the most satisfactory solution for the particular use conflict.

Assuming that this device is a popular one, it must be given (if it is to be a viable concept) some identifiable content. It is my purpose in this discussion to examine areas of decisional and prescriptive law to seek this meaning, and to discuss the extent to which it has been given voice in the reconciliation of ocean multiple use problems.

The Convention on the Continental Shelf provides that a coastal State shall exercise "sovereign rights for the purpose of exploring...[the shelf] and exploiting its natural resources."¹ Aside from this positive expression of the rights of coastal States vis-a-vis those of the remainder of the world community, there is little within the four corners of the Convention to assist in the balancing process. From an examination of the ample history of the Convention, it would appear that the drafters contemplated a duty upon the coastal State to carry out exploitive rights with prudence - that is, with due regard to other

¹ Convention on the Continental Shelf, adopted by the United Nations Conference on the Law of the Sea, April 29, 1958, Art. 2(1). The Convention became effective in 1964. 15 U.S.T. 471, T.I.A.S. No. 5578, UN Doc. A/CONF. 13/L.55 (1958).

uses of the shelf and the superjacent waters.² The history suggests that the rights of a coastal State are relative and not absolute; thus a balancing process indeed exists for the distillation of competing national claims, as well as for those of users of the same national origin.

The problem of accommodating these claims was properly identified by the Marine Science Commission. When addressing the question of allocating resources of the deep-seabeds, it noted the significant opportunities available to promote international peace and order "for in these vast areas of untold riches, few, if any, national interests have been vested."³ Continuing, the Commission expressed the view that any proposed framework for the conduct of mineral exploitation would have to be judged by the extent to which the regime would minimize the creation of such vested interests, since these tend to inhibit changes that may become desirable in the light of future occurrences.⁴

The term "vested interests" appears commonly in the law of property, and its use suggests that there is a basic dichotomy in the law between private expectations and public, or community, accommodations. Hence, property law

² Article 3 of the Convention on the Continental Shelf makes clear that rights granted do not affect the legal status of the superjacent waters as high seas, nor do they affect the status of the air space above those waters. Article 5 provides that exploitation shall not result in "any unjustifiable interference with navigation, fishing or the conservation of the living resources of the sea, nor result in any interference with fundamental oceanographic or other scientific research carried out with the intention of open publication." Further, Article 5, in allowing for fixed structures with safety zones, prohibits their establishment where interference to sea lanes essential to navigation will result. These provisions, read together, create the inference that shelf use is a relative, and not an absolute, right.

The history of the Convention is full of references to the relative nature of shelf rights. As examples, during the third session of the ILC, Ypes proposed that "Should a coastal state fail to carry out its duties (with respect to the shelf)...the international community shall be entitled to prescribe the necessary measures, through a specialized agency of the United Nations, for example, to ensure such protection." Mouton referred to land mining law to suggest that a mine owner is liable for improper use, and the same should be true of the "owner" of the shelf. García-Amador pointed to the protections for shelf users contained in articles 70 and 71 of the 1956 ILC draft, concluding that "protection of the 'general interest' is an equally fundamental purpose of the new legal order which is now coming into being." And so on.

³ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 141.

⁴ Ibid., p. 142.

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may offer avenues of inquiry for whatever may be learned about the reconciliation of multiple interests.

The desire of the Commission to reduce vested interests reflects the trend of property law in the United States - away from the protection of private expectations and toward the realization of broader community goals. Private property no longer represents, as it once did, a bastion against arbitrary or dictatorial intrusions. In a day of a "man's home was his castle," property represented the sphere within the scope of which he might operate with undiluted privilege. The larger his "castle," the greater his "freedom," and the greater the "power" he received from his share of the wealth. Today, however, changing attitudes toward the raison d'être for property, are generating a structure in which the federal government holds an increasingly large share of the wealth. Because private control of wealth did not, for one reason or another, prove totally satisfactory, the government embarked on a deliberate program of amassing large amounts of wealth and redistributing it in ways it deemed proper - that is, in the "public interest." As wealth shifted out of the private sector and into the public, it became increasingly important to develop new concepts of property control because the older ones were not designed to cope with public interest jurisprudence. Thus we will see the institution of the "vested interest" collapse to make way for increased emphasis on relative rights, subject to the pleasure of centers of power on local, state, and federal levels.

Reference to the humdrum of property law may not seem, at first glance, to have much relevance to the continental shelf. Yet the insight of the Commission shows that each nation can be expected to respond to water or submerged land use in accord with its understanding of the nature of property. Thus the degree of success that can be expected in reaching agreements with respect to the shelf will depend in large part on how well commonalities of property can be ascertained and made relevant to the totality of the ocean debate.

For that reason, we should take time to examine our own experience with the control and allocation of property.

First, it is important to understand that we have never viewed "property" as more than a legal concept. Bentham explained this thought well when he wrote:

There is no such thing as natural property...it is entirely the work of the law.

Property is nothing but a basis of expectation; the expectation of deriving certain advantages from a thing which we are said to possess, in consequence of the relation in which we stand towards it.

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Property and law are born together, and die together. Before laws were made there was no property; take away laws and property ceases.⁵

Duguit once observed that property is never a right, but no more than a social function.⁶ The possessor of wealth, by the fact of his possession, has a social function to perform, and if he fails, the community will intervene and force a use consistent with social utility.⁷ Hence, it is not irrational that the United States may recognize the shelf in the same terms of social utility. This is but another way of saying that the shelf should be used in the "public interest."

Before placing too much reliance, however, upon "public interest" as the common denominator from which decisions will flow, we need to isolate a satisfactory mechanism for deriving the interest we wish to protect, and, if the following examples serve their purpose, we will have to do it better than we have in the past. Courts, legislatures, and administrative bodies have demonstrated a common lack of success in ferreting out this most elusive of standards.

A close analogy to water use may be seen in land use. From the civil law developed the concept that there were certain absolute rights enjoyed by the owner of land.⁸ As these rights were abused through the years, a new law developed to protect the parties against unreasonable or arbitrary use. A good example is subsumed under the heading of "nuisance." The law, as it has developed, postulates that one may use his land only so long as he does not without justification interfere with the enjoyment of land by adjacent owners. If he exceeds this reasonable use, he will be stopped. Before, however, an

⁵ Bentham, Theory of Legislation, Principles of the Civil Code, ed. Dumony, trans. Hildreth, Part I, pp. 111-13 (1864).

⁶ As quoted in Pound, The Law of Property and Recent Juristic Thought, 25, 993, 996 (1939).

⁷ See, generally, Cohen, "Property and Sovereignty", 13 Corn. L.Q. 8 (1927).

⁸ "According to the civilians, property involves six rights: a jus possidende or right of possessing, a right in the strict sense; a jus prohibendi or right of excluding others, also a right in the strict sense; a jus disponendi or right of disposition, what we now call a legal power; a jus utendi or right of using, what we should now call a liberty; a jus fruendi or the right of enjoying the fruits and profits; and a jus abutendi or right of destroying or injuring if one likes - the two last also what today we should call liberties." Pound, supra n. 5.

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aggrieved party may invoke the protection of the law against a nuisance, he must be prepared to demonstrate that the interference of which he complains is substantial,⁹ prolonged,¹⁰ and unreasonable.¹¹ Thus the court will, in seeking a resolution of a dispute, weigh the utility of the actor's conduct against the gravity of harm.¹² It is here that we may draw a comparison with ocean use, for in the use of the shelf and superjacent waters (the so-called multiple use problem) we seem to be drifting toward the application of this same kind of analysis without pausing to test its adequacy.

Courts dealing with nuisance usually speak to the problem with an appealing logic, up to a point. For example:

Most of the litigation as to private nuisance has dealt with the conflicting interests of landowners, and the question of the reasonableness of the defendant's conduct. The defendant's privilege of making a reasonable use of his own property for his own benefit and conducting his affairs in his own way is no less important than the plaintiff's right to use and enjoy his premises. The two are correlative and interdependent, and neither is entitled to prevail entirely at the expense of the other. Some balance must be struck between the two. The

⁹"The law does not concern itself with trifles, or seek to remedy all of the petty annoyances and disturbances of every day life in a civilized community." Prosser, Torts, p. 395, See, also, Restatement of Torts, §822, comment g.

¹⁰ Prolongation is relative to the degree of harm inflicted. It is sometimes listed as a requirement. See, e.g., Rogers v. Bond Bros., 130 S.W. 2d 22 (1939). However, where the harm has been substantial, though instantaneous, relief has been granted in some cases, as, for instance, where a powder magazine explodes. Heeg v. Licht, 80 N.Y. 579 (1880).

¹¹ "Liability is imposed only in those cases where the harm or risk to one is greater than he ought to be required to bear under the circumstances, at least without compensation." Restatement of Torts, §822, comment j. See, also, Soukoup v. Republic Steel Corp., 66 N.E. 2d 335 (1946).

¹² The law of nuisance plies between two antithetical extremes: The principle that every person is entitled to use his property for any purpose that he sees fit, and the opposing principle that everyone is bound to use his property in such a manner as not to injure the property or rights of his neighbor. For generations courts, in their task of judging, have ruled on these extremes according to the wisdom of the day, and many have recognized that the contemporary view of public policy shifts from generation to generation." Antonik v. Chamberlain, 78 N.E. 2d 752 (1947). See, also, Prosser, Torts, 410-16.

plaintiff must be expected to endure some inconvenience rather than curtail the defendant's freedom of action, and the defendant must use his own property that he causes no unreasonable harm to the plaintiff. The law of private nuisance is very largely a series of adjustments to limit the reciprocal rights and privileges of both. In every case the court must make a comparative evaluation of the conflicting interests according to objective legal standards, and the gravity of the harm to the plaintiff must be weighed against the utility of the defendant's conduct.¹³ (Emphasis added.)

The problem with this rhetoric is that there are no "objective" legal standards adequate for our use. Courts have not had much success in assigning objective values to "gravity of harm" and "utility of conduct," although the appropriate lip-service is paid. In determining the gravity of the harm, courts find the following factors popular: (1) the extent of the harm; (2) the character of the harm; (3) the "social value" attached by the law to the type of use or enjoyment invaded; (4) the suitability of the use to the locality; and (5) the burden on the person harmed of avoiding the harm.¹⁴ In evaluating utility of conduct, they like to use: (1) the "social value" attached to the primary purpose of the conduct; (2) the suitability of the conduct to the character of the locality; and (3) the impracticability of preventing or avoiding the invasion.¹⁵

In both of these processes, we see the invocation of the "community interest" to assist the court to balance the precise issue between two adversary parties. The community interest has appeared to be the paramount factor in a number of land-use decisions. Thus, one court, in deciding not to grant relief from a nuisance, pointed out of the defendant:

Appellant has practically made the community. It has invested a great deal of money in construction of its plant and has made provision for the maintenance of a necessary industry for many years to come. It has done everything that can reasonably be expected of it to reduce the discomforts that are inseparable from such industrial activity.¹⁶

¹³ Prosser, Torts, pp. 410-11.

¹⁴ Restatement of Torts, § 827, and comments thereto.

¹⁵ Restatement of Torts, § 828, and comments thereto.

¹⁶ Powell v. Superior Portland Cement, 129 P.2d 536, 538 (1942).

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In another instance, a city received the protection of the court even though the conduct complained of was the dumping of raw sewage into an open slough near the plaintiff's property. The court reasoned:

The rule argued for by plaintiffs would unreasonably harrass and possibly defeat a municipality in the performance of its usual and legitimate functions dedicated to the public welfare. Indeed, it might even bankrupt smaller cities of the state. It should be the policy of the law to at all times protect within reason the state's municipalities against such contingencies.¹⁷

It can be seen that throughout the common-law development of the concept of nuisance, private property interests often have been destroyed in the name of the public interest, which, in turn, has only served to obscure the basically arbitrary nature of the decision.

The public interest, sans definition, has been invoked in cases dealing with constitutionally-protected personal rights as well, with the same result. One of the most striking cases concerned an attorney, who, in applying for admission to the bar, refused to tell the state bar examiners whether he was or even had been a member of the Communist Party on the grounds that it infringed his constitutional right to free thought, association, and expression. Despite considerable evidence of his good character, none of which was rebutted, and his sworn and uncontradicted statements that he did not believe in the violent overthrow of the government, nor was he a member of any organization advocating such conduct, he was refused admission. When he sued to establish his rights, the court affirmed the action of the bar examiners saying:

We regard the State's interest in having lawyers who are devoted to the law in its broadest sense, including not only its substantive provisions, but also its procedures for orderly change, as clearly sufficient to outweigh the minimal effect upon free association occasioned by compulsory disclosure in the circumstances here presented.¹⁸

Perhaps at this point we should avoid becoming too philosophical, and again relate all this to uses of the shelf.

Like disputes between owners of parcels of land, arguments between users of ocean space involve issues requiring a balancing of interests. Several questions have been proposed to be used as tests for the resolution of such controversies: To what degree is one proposed use more essential than another?

¹⁷ East St. Johns Shingle Co. v. City of Portland, 246 P.2d 554, 563 (1952).

¹⁸ Konigsberg v. State Bar, 366 U.S. 36 (1961).

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Does one use demand a particular geographical locale, or could it be conducted in alternative areas? How reversible are the undesirable effects of certain uses? How compatible is a use with others that may be proposed? How frequently, with what severity, and over how large an area might conflict arise?¹⁹ While helpful in specific cases, such questions cannot provide the broad tests of universal application that we would seek. In each instance, a conflict could quickly be disposed of, if for example, it could be found that the effects of a proposed use were irreversible. But what does one do if all of the desirable conditions of all of the questions can be answered in the affirmative for both uses? The questions, then, while helpful, only serve as a segmented approach to the inquiry of what is in the "public interest."

An example of the complexity of the task that faces a decision-maker is found in the establishment of navigational fairways in the Gulf of Mexico. In that particular case, the decision was an administrative one rather than judicial, but the principles are precisely the same. Griffin, in his analysis of the fairways problem at the 1967 meeting of this Institute, reported:

From the very beginning of the fairways program there was complete cooperation between the shipping industry, the oil industry, and government in locating and relocating the fairways.²⁰

Last year I took the position that the negotiations should be considered as a successful example of conflict resolution because the groups of interested parties were utilized as the mechanism for establishing a compromise between the desire to maximize the submerged lands available for exploration with the need to have safe access for vessels to the ports of the Gulf Coast.²¹

The first formal meeting of interested parties to the dispute occurred in January, 1963. As a result of this meeting, it was decided that a conference

¹⁹ Teeters, Present and Future Demands Upon the Coastal Zone, A Panel working paper for the Seminar on Multiple Use of the Coastal Zone, National Council on Marine Resources and Engineering Development, Williamsburg, Va., November 13, 14, 15, 1968, at p. 77.

²⁰ W. Griffin, "Accommodation of Conflicting Uses of Ocean Space with Special Reference to Navigation Safety Lanes," The Law of the Sea: The Future of the Sea's Resources, ed. Lewis M. Alexander (Kingston, Rhode Island: University of Rhode Island, 1968), p. 79.

²¹ T. Clingan, "The Transportation Industry and the Continental Shelf," The Law of the Sea: International Rules and Organization for the Sea, ed. Lewis M. Alexander (Kingston, Rhode Island: University of Rhode Island, 1969), p. 214.

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should be called to receive a broad range of views. This conference was scheduled for June 20, 1963, and was held in the office of the District Engineer in New Orleans. Of the forty-four participants at that meeting, about one-quarter were members of the Corps of Engineers, and the remaining participants were spread among the Navy, Coast Guard, Bureau of Land Management, Coast and Geodetic Survey, domestic oil and shipping interests, offshore operators, state and local government officials.²² The point at which the invitation list was drawn is the point at which the "public interest" was determined. We have no insight into the process leading to the drawing of the list, but it is notable that not one foreign flag shipping company attended. Yet, in 1965, of 7,240 ships entering United States Gulf of Mexico ports, 5,551 were foreign.²³ In addition, it was noted during the conference that of the encounters between ships and oil rigs, most of the confusion involved foreign vessels.²⁴ It can only be concluded from this example that the administrative process has not been able to get a firmer handle on a definition of the public interest than have the courts.

It may well be, of course, that the decision to omit foreign shipping interests from the conference was deliberate, based upon a determination that the result would be the same whether they were present or not. The subsequent history of the fairways problem would seem to bear that out. On the other hand, it may also be that the economics of foreign shipping would be such that the absent companies would not have been so quick to accommodate American offshore oil interests had they had the opportunity to choose. Is this, then, a proceeding in the "public interest"? What public and whose interest?

A second example of an attempt to resolve a dispute based upon the public interest can be found in the recent Ray decision.²⁵ Here we find no expressed protection of an articulated welfare, but rather a result-oriented opinion that left no doubts that the court was acting in what it had determined to be the best interests of the United States. Action was brought to prevent private construction atop several coral reefs underlying the high seas about

²² Minutes of a meeting held by Col. Edward B. Jennings, District Engineer, U.S. Army Engineer District, New Orleans, Thursday, June 20, 1963.

²³ Based on the U.S. Census Report FT 975. They do not include coastwise movement however. In the same year, of 7,297 vessels clearing the same ports in foreign trade, 6,183 were foreign vessels.

²⁴ Minutes, supra n. 21, at 4.

²⁵ Memorandum opinion, United States v. Ray, et al., Civ. No. 65-271-Civ-CF, U.S. District Court for the Southern District of Florida, filed January 2, 1969.

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four-and-a-half miles off the coast of Florida, close to Miami. The evidence adduced at trial indicated that the intent of the defendants was to build an island for the purpose of carrying on activities that would not be acceptable had the entrepreneurs proposed them on the mainland.²⁶ It is obvious that the establishment of gambling facilities, the constitution of a Swiss-type bank, and similar institutions, would have had an effect on the city of Miami and the state of Florida, but the nature and extent of that influence was never clearly established.

One of the interesting features of the Ray case is that the court did not expressly rely upon the protection of the interests of the United States, except in a limited sense, but relied on legal technicalities as the articulated basis for its decision. After reaching deep into the provisions of the Outer Continental Shelf Lands Act to find grounds for taking jurisdiction,²⁷ the court based its substantive ruling on the need to prohibit interference to navigation on the navigable waters of the United States under the Rivers and Harbors Act of 1899, as incorporated into the Outer Continental Shelf Lands Act.²⁸ Thus

26 Ibid., pp. 2-4.

27 "The United States district courts shall have original jurisdiction of cases and controversies arising out of or in connection with any operations conducted on the Outer Continental Shelf for the purpose of exploring for, developing, removing or transporting by pipeline the natural resources, or involving rights to the natural resources of the subsoil and seabed of the Outer Continental Shelf." 43 U.S.C. §1333(b).

28 "The creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is prohibited, and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river or any other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of the Army..." Section 10. 33 U.S.C. §403. This authority is extended by the Outer Continental Shelf Lands Act, 43 U.S.C. §1333(f):

The authority of the Secretary of the Army to prevent obstruction to navigation in the navigable waters of the United States is extended to artificial islands and fixed structures located on the Outer Continental Shelf.

The court in the Ray case found that these sections, read together, prohibited the establishment of artificial islands and fixed structures on the outer shelf without the authority of the Secretary of the Army, and, further, that Mr. Ray's caissons constituted artificial islands and fixed structures.

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to find jurisdiction, the court relied on a finding that the reefs were natural resources within the meaning of the Act and the Geneva Convention,²⁹ and in issuing the inhibiting order, the court found that the construction had taken place without the required statutory permit.³⁰

The underlying rationale behind the technical holdings, however, can be ascertained from the following passage:

The issues of this case are of great public interest, involving not only the preservation of rare natural resources, but the preservation of our very security as a nation. If these reefs were available for private construction totally outside the control of the United States Government, they could conceivably support not only artificial islands and unpoliced gambling casinos, but even an alien missile base, all within a short distance of the Florida coast. Congress has seen fit to claim this area so that it may be used for the Commonweal rather than private gain.³¹

Thus the "commonweal" has been substituted for "public interest," once again without definition, though few would doubt that the United States has some interest in this case. This case is now on appeal by all parties.

Swinging from administrative and judicial determinations of public interest, we might pause but briefly to examine how legislative determination fares by comparison. One example is Section 1 of the Merchant Marine Act of 1936. That section declares:

It is necessary for the national defense and development of its foreign and domestic commerce that the United States shall have a merchant marine (a) sufficient to carry its domestic water-borne commerce and a substantial portion of the water-borne export and import foreign commerce of the United States...³² (Emphasis added.)

²⁹ Finding 3, Memorandum Opinion, supra n. 24, at 12.

³⁰ Memorandum Opinion, supra n. 24, at 17.

³¹ Ibid., p. 18.

³² 46 U.S.C. §1101.

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The failure of that declaration of policy is history. Today, the United States carries but approximately six per cent of its foreign commerce in U.S. flag vessels.³³

A second area of legislative declaration of public policy, one that is closer to the subject of the discussions here, is the Submerged Lands Act. That Act declares it to be in the "public interest" that title to lands beneath navigable waters, within certain limits, be vested in and assigned to the respective states.³⁴ The fact is that in enacting such legislation, Congress failed to ascertain the extent of that interest with precision; hence, a long, and complex, and not yet completed series of suits and disputes resulted.

The most recent of these, while it may constitute a slight diversion from the central theme of this presentation, is worth noting. In April, 1969, the United States filed a petition for leave to commence an original action in the Supreme Court against the state of Maine, and twelve other Atlantic Seaboard states.³⁵ The intent of the suit is to abate the threat posed by the issuance by the state of Maine of a permit to the King Resources Company to explore approximately 3.3 million acres of submerged lands on the continental shelf adjacent to that state. These lands have their closest point about eleven miles

³³ Maritime Commission, U.S. Department of Commerce, Maritime Subsidies (1969), at 115. The actual figure was 5.6 per cent. Some other indicators of the failure of the policy: (1) At the end of World War II, the U.S. had an active fleet of 5,500 ships. On March 1, 1968, according to the Maritime Administration, the active, privately-owned U.S. fleet consisted of 802 vessels of 1,000 gross tons or more. (Maritime Administration Press Release of March 1, 1969, at 2.) (2) 85 per cent of the American-flag vessels are over twenty years old.

³⁴ "It is determined and declared to be in the public interest that (1) title to and ownership of the lands beneath navigable waters within the boundaries of the respective States, and the natural resources within such lands and waters... be, and they are, subject to the provisions hereof, recognized, confirmed, established, and vested in and assigned to the respective States...." 3 U.S.C. §1311(a).

³⁵ Filed as Original Action #34, October Term, 1968. The original pleading was denominated a Motion for Leave to File Complaint, Complaint, and Brief in Support of Motion. Named with Maine were: New Hampshire, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. The ostensible reason for including Florida was to clarify the status of the east coast of that state, never fully resolved in the former litigation, U.S. v. Florida, 363 U.S. 121 (1960).

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from shore, and extend seaward as far as eighty miles. King paid Maine the sum of \$333,760 for the privilege, which sum is being held in escrow pending the resolution of the respective rights of the state and the federal government. In other words, the Court once again must determine whether it is in the public interest to allocate authority to one rather than the other. Maine has responded to the initial petition by claiming that since it has done nothing to implement the permit, the case is not ripe for adjudication and should be dismissed.³⁶

This answer is clearly dilatory, and eventually the issue will be decided. It is not clear, at this point, what will be the state's position when it is forced to answer on the merits. Attempts to discover the state's theory have been received with polite abstention. However, a few educated speculations can be attempted.

On its face, the case would seem to be controlled by the California decision in which the Supreme Court said that California was not entitled to rights in the seabed and subsoil out to three miles from its coast.³⁷ But Maine may not feel bound by this decision since it was not a party before the Court in

³⁶ Brief of the State of Maine in Opposition to the Motion of the United States for Leave to File Complaint. The state claims that the allegations of the United States are totally unsubstantiated and unsupported by facts. The gravamen of the defense appears as follows:

The pyramiding of allegation upon unsubstantiated allegation, with such allegations, in turn, being based upon the non-reply to a letter and undocumented "public assertions", appears to be an inappropriate basis upon which to invoke the jurisdiction of this Court. This attempt wholly fails to reveal a situation arising to the dignity of the "case or controversy" which, this Court has consistently held, must exist in order to warrant the exercise of original jurisdiction... Brief, p. 2.

The state relies on U.S. v. West Virginia, 295 U.S. 463 (1935), as authority for its position that the present case is too vague and ill-defined to admit of judicial determination.

³⁷ United States v. California, 332 U.S. 19 (1947). This case held that the thirteen original colonies did not acquire ownership of the three-mile belt and the subsoil and seabed under it, but that such a zone was created by the national government after the formation of the union, vesting title to those lands in the United States. By the Submerged Lands Act of 1953, 43 U.S.C. §§1301-1315, the United States gave ownership of the bed within three miles to all states, reserving certain historical rights to three marine leagues to those states that might qualify.

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that case and because it feels that the case is not controlling upon the issues it would present. Presumably Maine will defend on the basis of certain Crown charter provisions. At this point, we can only speculate what these will be, but it is not unlikely that they will be much different from those found in the charters granted Virginia by King James, beginning in 1606, purporting to give that colony certain rights to a distance of 100 miles from the coast.³⁸

Assuming that Maine can rely on similar provisions, which, incidentally, are far from clear as to the extent of the rights granted, it would then take the position that none of these rights had ever been ceded to the federal government, and that in spite of the fact that the three mile limit subsequently became the adopted policy of the United States, her claims were revived by the adoption of the continental shelf theory by the Truman Proclamation of 1945.³⁹

The remaining hurdle would, of course, be the Submerged Lands Act itself. This would seem to settle the issue. The Act grants, at most, three

³⁸ The relevant portion of the first charter grants to the parties the following:

"...the Soils, Grounds, Havens, Ports, Rivers, Mines, Minerals, Woods, Marshes, Waters, Fishings, Commodities, and Hereditaments whatsoever...all along the said coasts of Virginia and America... as the coast lyeth, and all the Islands within one hundred Miles directly over against the said Sea Coast..."

Thorpe, American Charters, Constitutions and Organic Laws 1492-1908 (1909), at 3785. The third Virginia charter and later charters contained more favorable language:

"...all and singular Soils, Lands, Grounds, Havens, Ports, Rivers, Waters, Fishings, Mines and Minerals, Pearls, Precious Stones, Quarries, and all and singular, other Commodities, Jurisdictions, Royalties, Privileges, Franchises and preheminences both within the said tract of Land upon the Main, and also within the said Islands and Seas adjoining whatsoever and thereunto or thereabouts, both by Sea and Land being situated..." Thorpe, at 3084.

It is clear that these grants appertain to the water, but the language does not lend a great deal of support to subsoil claims.

³⁹ Presidential Proclamation 2667, September 28, 1945, With Respect to Natural Resources of the Subsoil and Sea Bed of the Continental Shelf, 10 Ed. Reg. 12303.

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marine leagues to any state, and restricts most to three miles.⁴⁰ The only answer that Maine can produce here is to assert that the provisions of that Act if applied to Maine are invalid. This argument might be structured as follows: The second California case, which limited the state to three miles, was a declaration by the Supreme Court that California never had historical rights beyond three miles, thus the Act does no injustice to that state. The purpose, however, underlying the Submerged Lands Act was to reserve to states the rights that were historically theirs when they entered the union. To deny any state that right, therefore, would be to violate the "equal footing" rule established in Pollard's Lessee v. Hagan.⁴¹ Since Maine never surrendered its historical rights, the three mile rule, if applied, would be invalid.

I must emphasize that these are not known arguments, but merely the ruminations of a lawyer with tendencies toward occasional senility. Regardless of the tack that Maine does use, it must be realized that in view of the strong reaffirmation of federal rights in the latest Louisiana case,⁴² the chances of Maine for success in the Court would appear very slim. Its relief, if any, would then be found in pressing for an amendment of the Submerged Lands Act, in which case it would be asserting that the public interest was not in fact served by the provisions of that legislation.

What mechanisms can be used to seek the public interest, since that seems to be our concern? If this is the leavening that will enable us to resolve conflicts in ocean space use, then we best be about the task of estab-

⁴⁰ "The seaward boundary of each original coastal state is approved and confirmed as a line three geographical miles distant from its coast line...Any State admitted subsequent to the formation of the Union which has not already done so may extend its seaward boundaries to a line three geographical miles from its coast line....

...Nothing in this section is to be construed as questioning or in any manner prejudicing the existence of any State's seaward boundary beyond three geographical miles if it was so provided by its constitution or laws prior to or at the time such State became a member of the Union, or if it has been heretofore approved by Congress." 43 U.S.C. §1312. Section 1301(b) makes clear that in no event shall the term boundaries be interpreted as extending from the coastline more than three miles into the Atlantic Ocean or the Pacific Ocean, or more than three marine leagues into the Gulf of Mexico.

⁴¹ 3 Howard (U.S.) 212 (1845).

⁴² United States v. Louisiana, et al, 89 S.Ct. 773 (1969). Given the opportunity to distinguish the coast of Louisiana from that of California for the purpose of drawing baselines, the Court nonetheless decided to adhere to the rule set down by the second California decision.

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lishing it. I believe that I have demonstrated that the courts, the administrative process, and the legislature have all, at least in part, failed to avoid arbitrariness in evaluating the necessary factors.

One clear indicator of contemporary interest that we have not yet considered is the market place, and its influence ought to be respected. One of our leading legal writers speaking for the market mechanism is Kenneth Dam. Addressing himself to the North Sea Oil Fields, he observed:

The price system could...resolve some of the...allocation problems in the North Sea. Competitive bidding aside, one might import the notion of easements from the property regime on land to deal with cables, navigation, and the like: let the party who would sail a vessel or pass a cable through a petroleum installation justify his demand by being prepared to pay for the resulting economic limitation on the activities of others. For situations analogous to eminent domain, where the government feels called upon to compel a bargain by one of the parties...let the proposed user pay an amount to the existing user equal to the value of the portion of the sea involved for its most valuable use. If that price seems too high, then the government is probably wrong about the desirability of the proposed use.⁴³

The market place, however unregulated, has not proved to be an answer to what is in the public interest. Constraints have been imposed with increasing frequency to assure that freedom does not become license. The need for such constraints was made pictorially clear in a recent article by Garrett Hardin entitled "How Freedom in a Commons Brings Tragedy." The essence follows:

The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many sheep as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching and disease keep the number of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, when the inherent logic of the commons remorselessly generates tragedy.

As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly he asks, "What is the utility to me of adding one more animal to my herd?" Since

⁴³ Dam, "Oil and Gas Licensing and the North Sea," 8 Journal of Law and Econ. 51, 75 (1965).

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the herdsman would receive all the profits from the sale of an additional animal, and since the bad effects of overgrazing would be shared by all the herdsmen (making his portion of the bad effects quite small), as a rational being the herdsman must conclude that it is only sensible to add one more animal to his herd. And another, and another...

But this is the conclusion reached by each and every national herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit--in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in freedom of the commons. Freedom in a commons brings ruin to all.⁴⁴

Total lack of constraint, then, would seem to be the solution against which Hardin would argue.

New expressions, other than the influence of the market, are beginning to show themselves as factors in the decision-making process. As an example, a recent article in the Washington Evening Star reported that citizen groups in three Maryland counties organized to oppose the construction of an oil desulphurization refinery, a nuclear power plant, and a sand and gravel dredging operation on the ground that they threatened to increase the pollution of the Chesapeake Bay and its tributaries.⁴⁵ Another report showed that a group of citizens in Maine are launching a nation-wide boycott of a sugar beet and potato processing plant's products to force it to stop polluting local waters. The public outrage at the massive oil spill at Santa Barbara needs no documentation. These are indications that the use of the oceans will not much longer be left to decision-makers who are not responsive to public sentiment.

What influence they will have is not yet clear. What is clear is that the advent of what Reich calls the "public interest state"⁴⁶ carries with it great risks. All manner of injustices may be committed under the rubric of public interest, leaving the basic conflicts undiscovered and the real questions unanswered. One can but speculate how the mechanisms for controlling this approach to decision-making will be created. The factors are beginning to emerge. We know that there must be accommodation of the market place. Public interest, in terms of expressed desires, is another consideration. National

⁴⁴ Hardin, "How Freedom in a Commons Brings Tragedy," Washington Sunday Post, May 11, 1969, p. B-2.

⁴⁵ Washington Evening Star, May 16, 1969, p. H-1.

⁴⁶ Reich, "The New Property," 73 Yale L.J. 733 (1964).

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security is another, to the extent that its needs can be known. The scientific, political, and economic effect on other users of ocean space is still another. The list is potentially large. What is needed now is some serious study as to the best method of isolating and introducing tangible and intangible factors, including such difficult externalities as aesthetics, into the process.

It may well be that our experience as a welfare state is yet too new to be able to evaluate the future of "public interest" decisions. What is clear, however, is that either we find the key for ascertaining what is genuinely the public welfare, or a new kind of state feudalism will emerge in which largess may be distributed without logical limitations. Likewise, if the shelf is to be used in the best interests of all, we had best be very careful of the device by which we ascertain those interests.

At a recent disruption of normal campus routine at my own University, disenchanted students broke into a building and did considerable damage. They left behind them a hastily scrawled message: "This wouldn't have happened if you had listened to us." I certainly do not wish to be identified as being in sympathy with this action, yet the message says something. If the new State is to act in the "public interest," it is imperative that we find effective ways of ascertaining affected parties to a dispute, and of bringing them into the decision-making process in a meaningful way. Perhaps, in the grand scheme for ocean space, NACO will be the answer. At least it is the minimum for which we should be prepared to settle.

AN OCEANOGRAPHER'S VIEW OF THE LAW OF THE SEA*

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Abstract

The chief mineral resources of the ocean floor that presently are being exploited are oil and gas (and associated sulfur) plus sand and gravel. Mining of heavy minerals is relatively minor. Production of these resources is almost entirely from the inner part of the continental shelf. Future production of phosphorite (from some outer continental shelves but mostly from isolated bank tops) and of manganese nodules, metals from hot-brine deposits, and oil from the continental rise (all from the deep-ocean floor) is rather speculative for at least a decade. The best geological boundary separating the geological resources of the shelves from those of the deep-ocean floor is the continental slope, probably the base of the slope. Oversimplified legally-defined boundaries between national and international control over actual and potential geological resources are confusing and inappropriate in many instances. Although the continental shelves contain all of the proved economic mineral resources and probably most of the future ones, the 1958 Geneva Convention on the Continental Shelf has hindered rather than promoted scientific investigation of the composition, structure, and origin of the continental shelves and of their mineral potential.

INTRODUCTION

During the past two decades the rate of production of oil and gas from the ocean floor has increased tremendously. This increase has been accompanied by rather wild optimism about the likelihood of future recovery of many other minerals from the ocean floor. The optimism, in turn, has led coastal nations to demand greater widths of their adjoining ocean floor and the United Nations, on behalf of developing or interior nations, to want the control of ocean floors more or less distant from coasts of the world.

The time has come for a review of the potential value of offshore resources, of the nature of ocean-floor provinces, and of the effect produced by conflicting claims upon the investigation and exploitation of the ocean floor.

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RESOURCES

The mineral resource from the ocean floor that presently has the greatest annual value (Table 1) is oil and gas. Rising from only a few million dollars in 1945 to nearly \$4 billion per year in 1967-68, the ocean-floor production can be predicted to reach something like \$15 billion by 1980. Approximately \$1 billion worth of oil and gas per year comes from each of three ocean-floor areas: the shelf off Louisiana (U.S.), Lake Maracaibo (Venezuela), and the Persian Gulf. New offshore discoveries reported during 1968 include the shelves off southwestern Africa, western Africa, northern Java, the North Sea (oil in the Norwegian sector), eastern Italy, eastern Brazil, southeastern and western Australia, and western New Zealand. Finds are expected during 1969-70 off northern Alaska, western Canada, southeastern Thailand, northern Taiwan, western and southern South Korea, and elsewhere. Some of these new fields may also prove to be giant ones. In fact, there is a strong possibility that production on land and ocean floor may develop a temporary excess of supply over demand, leading to some reduction of exploration and exploitation. All ocean-floor production to date has been on the continental shelf, almost entirely the shallow inner half of the shelf. The great success there makes unlikely any immediate exploitation from areas beyond the shelf edge where costs are likely to be much greater, although some pilot production will occur in order to evaluate future prospects and costs.

Sand and gravel is the second most valuable ocean-floor resource (Table 1) in spite of its low per-unit price. The estimate of world production on land is very approximate, but that for the ocean floor (about \$0.16 billion per year) is fairly well based. About two-thirds of the ocean-floor production is from off the United States, with the rest mainly from off England; all of it is from the shallow inner part of the continental shelf. The growth of coastal megapoli insures increased production in the future and from off many coastal nations, reaching perhaps \$0.5 billion per year by 1980.

The heavy detrital minerals can be grouped into several categories: heavy heavy minerals (gold, tin, and platinum), light heavy minerals (ilmenite, rutile, zircon, monazite, and magnetite), and gems (mainly diamonds). The heavy heavy minerals occur chiefly in stream deposits within a few km of their primary igneous and metamorphic source rocks. Only tin is produced in any quantity from the ocean floor, and the annual rate may reach \$10 million per year by 1980, chiefly from southeastern Asia. Gold and platinum are unlikely to reach production as great as \$1 million annually by that year. The light heavy minerals occur chiefly on beaches, where large quantities are concentrated by the high energy of waves. Present production from submerged former beaches is almost negligible (Table 1), with production of iron sand off Japan even markedly decreasing because of its low grade and its interference with fisheries. Production of all light heavy minerals by 1980 is likely to be small, and, even though exploration is continuing, the high costs of offshore mining and concentration coupled with the small profit margin suggests that annual production of all of them can scarcely exceed \$3 million by 1980. The last group of heavy

minerals, gems, is restricted on the ocean floor to diamonds, because most other gems are too fragile to withstand the rigor of the ocean environment. To date, the cost of mining diamonds from the ocean floor has exceeded their value; new methods of recovery may permit diamond mining to be profitable, but production by 1980 is unlikely to be much greater than at present. In summary, all heavy minerals now produced from the ocean floor are in shallow depths, near the shore except for some of the tin off southeastern Asia.

Precious coral occurs around some of the coral reefs of the equatorial western Pacific Ocean and probably in the Indian Ocean. It is gathered mainly by dredging, but its occurrence in crevices suggests that it will never be a mass product for mining. Increased interest in it may lead to annual production above the present estimated \$2 million (Table 1), but it can scarcely exceed \$6 million per year by 1980.

Phosphorite occurs on the ocean floor, mainly on bank tops off southern California, southeastern United States, Peru-Chile, South Africa, and probably northwestern Africa. Its presence has been suggested off India, but such an occurrence appears to be unlikely from present knowledge of the sediments there. The major requirements for phosphorite deposits appear to be abundance of marine life due to past or present upwelling of nutrient-rich ocean water, and an absence of diluting sediment either from land or from calcareous debris of marine animals. Although phosphate is needed in quantity for fertilizer and chemicals, the reserves on land are so great and the per-unit production cost is so low (about \$5 per ton) that mining from the ocean floor is considered marginal at best. Difficulties are due to the high initial capital investment for ocean-floor mining equipment and the fact that the phosphate content of known ocean-floor phosphorites is lower than that of the large land deposits. Serious production from the ocean-floor is considered likely only several decades hence.

Much has been written about the value of manganese nodules on the deep-ocean floor, their vast widespread distribution, and the faster rate of deposition of manganese than of present utilization by industry. Perhaps 30 tons have been recovered by oceanographic ships and by pilot mining ships. The nodules having the highest content of manganese (24% average for the Pacific Ocean), nickel (1%), copper (0.5%), and cobalt (0.5%) are in very deep water distant from land. Nodules from the Atlantic Ocean floor are about half as rich in these metals, owing to greater dilution by sediments from land organisms. The manganese content of the best deep-ocean nodules is about half the minimum concentration in manganese ore of international commerce, and thus it may be considered as a waste component at present. Copper and nickel are in demand for metal products, and their concentrations in the nodules are high enough that they might be extracted if the nodules were cheaply accessible. For the present, however, the mining of the nodules appears to be too expensive for them to compete with land sources of copper and nickel, as well as of the other metals. The writer is of the opinion that large-scale ocean-floor mining

Table 1

Annual Value of Mineral Resources of the Ocean Floor Beyond the Beach Zone
 (1967-1968 Production in \$ Millions)*

	World Total	Offshore (excluding beaches)
Petroleum and Associated Materials		
Oil and Gas	26,000	3,900
Sulfur	340	15
Sand and Gravel	2,000	160
Heavy Minerals		
Gold	1,900	0
Tin	460	5
Platinum	150	0
Ilmenite (titanium)	54	0
Rutile (titanium)	16	0
Zircon (zirconium)	10	0
Monazite (rare earth elements)	2	0
Magnetite (iron)	4,300	1
Diamonds	290	4
Precious Coral	2	2
Phosphorite	400	0
Elements in Manganese Nodules		
Manganese	420	0
Copper	4,200	0
Nickel	800	0
Cobalt	30	0
Elements in Red Sea Hot-Brine Deposits		
Zinc	70	0
Copper	4,200	0
Silver	340	0
Gold	1,900	0
Subsurface Consolidated Deposits		
Coal	18,500	335
Iron	4,300	17
Elements Removed from Solution		
Food	260,000	7,000

* From Emery, 1966; Degens and Ross, 1969; D'Amico, 1968; Fye, Maxwell, Emery, and Ketchum, 1968; Committees of the National Academy of Sciences and the National Academy of Engineering, 1969; Commission on Marine Science, Engineering and Resources (Panel Report, Vol. 3), 1969.

of the nodules is unlikely for several decades pending greater depletion of land reserves of the metals and the development of ocean-mining technologies.

During the middle 1960's mineral deposits under hot brine pools on the floor of the Red Sea were discovered and partly investigated. The deposits are rich in certain metals, notably zinc (3.4%), copper (1.3%), silver (0.005%), and gold (0.00005%), that have a total estimated value of about \$2 billion if they could be mined and extracted at no cost. However, the cost of mining is apt to be great because the metals are most concentrated in a bed less than 2 meters thick beneath 5 to 10 meters of sediment having lesser value and beneath 2,200 meters of water. Separation of the valuable metals is made difficult by intergrowths of the desired minerals with valueless ones, by calcium carbonate in the sediments (neutralization of acid used in ore treatment), and by absence of energy sources in adjacent land areas. Pilot-scale extraction may occur, but large-scale production appears to be unlikely before 1980.

Coal is frequently mentioned as an ocean-floor resource, but in reality the coal is deeply buried beneath the ocean floor and is mined through shafts that are sunk beneath the adjacent land or beneath artificially constructed islands. It, plus some iron ore (Table 1), is best considered as land rather than marine resources.

The present total annual value of all marine mineral resources (except subsurface coal and iron) is less than \$4.1 billion. Only about \$0.18 billion (4% of the total) is independent of the oil industry. Chief of these is sand and gravel. In contrast, nearly \$0.4 billion worth of chemicals are extracted from solution in ocean water, and about \$7 billion worth of food (both animals and plants) are taken each year. Probably the annual value of oil and gas alone will exceed that of the food recovery by 1980, about \$15 billion versus \$10 billion per year. Mining of sand and gravel and extraction of dissolved chemicals may each increase to about \$1 billion per year. Unless cheap mining and extraction techniques are developed for phosphorite, manganese nodules, and hot-brine deposits, the total annual value for all other minerals from the ocean floor other than oil and gas plus sand and gravel is not apt to exceed \$0.1 billion annually by 1980.

OCEAN-FLOOR PROVINCES

In 1869 De Pourtales¹ noted that "the 100-fathom line...marks the real contour of the continents," and the term continental shelf was used in Murray and Renard's report on the deep-sea deposits collected by H.M.S.

¹ L. F. De Pourtales, The Characteristics of the Atlantic Sea Bottom off the Coast of the United States, Report of the Superintendent for 1869 (U.S. Coast Survey, 1872), Appendix 11, pp. 220-25.

CHALLENGER during her cruise of 1872-76.² The continental shelf, shelf edge, and borderland were more formally defined in 1952 by an international committee chaired by Wiseman and Ovey as:

The zone around the continent extending from the low-water line to the depth at which there is a marked increase of slope to greater depth. Where this increase occurs the term shelf edge is appropriate. Conventionally, the edge is taken at 100 fathoms (or 200 meters) but instances are known where the increase of slope occurs at more than 200 or less than 65 fathoms. When the zone below the low-water line is highly irregular and includes depths well in excess of those typical of continental shelves, the term continental borderland is appropriate.³

The same definition was used by Guilcher, Kuenen, Shepard, and Zenkovich⁴ in their report for UNESCO in preparation for the 1958 Geneva Convention on the Law of the Sea. Seaward of the continental shelf is the continental slope, a declivity that averages about 4-1/4 degrees in steepness.⁵ Except where the continental slope is bounded by a trench, a continental rise laps against it. Continental rises have slopes that average about half a degree; depths at their landward edge range from about 1,200 to 3,500 meters and at their seaward edge from about 3,500 to 5,500 meters.⁶ Still farther seaward are abyssal plains that are among the flattest surfaces of the earth.

Ocean-floor provinces having distinctive geology and mineral resources cannot be based upon simple depth or distance limits. For the convenience of the non-scientists at the conference, Gaskell, Guilcher, Ninno, and the writer prepared a list of simple geological definitions of ocean-floor terms that commonly are used or misused in a legal sense (Table 2).

² John Murray and A. F. Renard, Deep-Sea Deposits: Report on the Scientific Results of the Voyage of H.M.S. Challenger during the Years 1873-76 (London, England: Her Majesty's Stationery Office, 1891), p. 185.

³ J. D. H. Wiseman and C. D. Ovey, "Definitions of Features on the Deep-Sea Floor," Deep-Sea Research, Vol. 1, pp. 11-16.

⁴ André Guilcher, P. H. Kuenen, F. P. Shepard, and V. P. Zenkovich, "Scientific Considerations Relating to the Continental Shelf," UNESCO, Conference on the Law of the Sea, 1957.

⁵ F. P. Shepard, Submarine Geology (2d ed.; New York: Harper & Row, 1963), p. 289.

⁶ K. O. Emery, "Continental Rises and Oil Potential," Oil and Gas Journal, Vol. 67, No. 19, pp. 231-43.

Table 2

Geological Definitions of Some Ocean-Floor Provinces

Continents: The large blocks of the earth that stand well above (about 4-6 km), the general level of the earth's rock surface owing to the low density of the rocks.

Ocean Basins: The two-thirds of the earth's surface that form the floor of the deep oceans characterized by high density rocks.

Enclosed and Marginal Seas: These are usually shallower than the ocean basins and range from almost completely enclosed seas (such as the Mediterranean) through relatively open ones (such as the Gulf of Mexico) to open ones (such as the East China Sea). All are characterized by crustal densities intermediate between those of continents and ocean basins.

Continental Shelf: The zone around the continent extending from the low-water line to the depth at which there is usually a marked increase of declivity to greater depth. Where this increase occurs the term shelf edge is appropriate. This shelf edge ranges in depth from less than 60 to more than 500 meters and it averages 130 meters. Where the zone below the low-water line is highly irregular and contains depths well in excess of those typical of continental shelves (as off southern California), the term borderland is appropriate.

Continental Slope: The zone bordering the continental shelf that extends seaward from the shelf edge at declivities that average about 4-1/4 degrees down to depths of 1,200 to 3,500 meters. Its outer edge approximately marks the boundary between the low density rocks of the continents and the high density ones of the deep ocean floor or the intermediate ones of the enclosed or marginal seas.

Continental Rise: The zone that borders the base of many continental slopes and has a smooth declivity that averages about 0.5 degree to depths of 3,500 to 5,500 meters.

Deep-Sea Trench: The long narrow trench that borders island arcs or some continental slopes and reaches depths as great as 11,000 meters, roughly twice the depth of the deep-ocean floor.

Abyssal Plain: The extremely flat areas of the deep-ocean floor.

Continental Terrace: The combined continental shelf and continental slope.

Continental Margin: The combined continental shelf, continental slope, and continental rise.

As shown by Emery,⁷ the continental shelf consists of a wedge of seaward-dipping sediments several km thick and held in place by dams of tectonic, diapiric, or biogenic origin, or even by the effective angle of rest of the sediments. Where dams are present they commonly underlie the continental slope, although they may be buried under a blanket of sediment. In few places does the continental shelf contain outcrops of igneous and metamorphic rocks; thus it is more favorable for accumulations of oil and gas than are the adjacent land areas and it is far less favorable for hard minerals that are weathered from older rocks. The combined continental shelf and slope has an area of about 55 million sq. km, or about 11 per cent of the total area of the earth.

The continental rise consists of many layers of sediment deposited partly grain by grain from suspension in the water, partly as sandy turbidites, and partly as slides from the steeper continental slope.⁸ Their area totals about 25 million sq. km, and their volume may be 100 million cu. km. Probably their only mineral resource is oil and gas, but detailed exploration and exploitation are likely to be so expensive that production will be delayed for at least several decades.

Abyssal plains consist of sediments whose layers are variously formed by slow deposition from suspension, fast deposition by turbidity currents, and probably intermediate-rate deposition by organic debris and chemical precipitates. The total thickness is only a few hundred meters, and probably the only minerals of potential economic value are within manganese nodules. These nodules are most abundant on abyssal plains that are protected from the influx of detrital sediment from land by intervening trenches or ridges.

Lastly, ancient ridges or banks that rise above the general level of the adjacent ocean floor are the sites of the chemically precipitated deposits of manganese nodules (mostly deeper than 1,000 meters) and of phosphorite (mostly shallower than 1,000 meters).

All of the ocean-floor provinces, as well as those of the land, are subordinate to the two chief physiographic units of the earth - the continents and the ocean basins. The average level of the continents is about 4 km above that of the ocean basins, simply because they consist mostly of lighter rocks (average specific gravity of about 2.7 versus 3.1 for the ocean-floor rocks). The exact height of the continents above the ocean basins depends upon the

⁷ K. O. Emery, "Geological Methods for Locating Mineral Deposits on the Ocean Floor," Exploiting the Ocean, Transactions 2nd Marine Technology Society Conference, June 27-29, 1966, pp. 24-43; K. O. Emery, "Shallow Structure of Continental Shelves and Slopes," Southeastern Geology, Vol. 9, pp. 173-94.

⁸ K. O. Emery, "Continental Rises and Oil Potential," op.cit.

thickness of the light rocks of the continents, the thickness of sediments in the ocean basins, and the degree to which equilibrium has been reached (isostasy) by lightening of the continents through erosion and weighting of the ocean basins by deposition of sediments. Properties of basement rock, such as their density (by gravity surveys), sound velocity (by seismic refraction surveys), and magnetism (by geomagnetic surveys), show that rocks characteristic of the continents underlie the continental shelf, but not the continental rise. The boundary between the rocks of continents and ocean basins appears to underlie the continental slope, but the exact nature of the boundary is unknown. Certainly, the minerals, sediment types, and structures of the continents and the ocean basins are separated at or near the continental slope. In the absence of precise information about the details of rock and structure, the most reasonable and practicable geological boundary might be taken as some depth contour of the continental slope, such as 1,000 meters.⁹ The objection has been raised that depths are subject to change by deposition of sediment and by mass movements; nevertheless, depth is much more easily and accurately measured than is geographic position¹⁰ which with ridge crests, streams, and shorelines constitute the political boundaries on land.

RESULTS OF LEGAL DEVELOPMENTS DURING THE PAST DECADE

Redefinitions

The 1958 Geneva Convention on the Continental Shelf, Article 1, stated:

For the purpose of these articles, the term "continental shelf" is used as referring (a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands.

This redefinition excludes from the continental shelf the nearshore zone that is termed the territorial sea, and it extends the outer edge of the continental shelf to whatever depth can be exploited - probably in time to depths of several thousand meters. According to this open-ended definition, the continental shelf eventually could include almost the entire ocean floor.

⁹ K. O. Emery, "Geological Aspects of Sea-Floor Sovereignty," The Law of the Sea: Offshore Boundaries and Zones, ed. Lewis M. Alexander (Columbus: Ohio State University Press, 1967), pp. 139-59.

¹⁰ E. C. Brockett and H. D. Hedberg, Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, 1969).

The writers of the Convention evidently underestimated the national interests in ocean-floor resources and the rapidity in development of marine technology. During the years since 1958 the underestimation has changed to overestimation of the potential profit of these resources, and the fear has arisen that exploitation will lead to conflicting claims and to a division of the deep-sea floor among only a few nations that have adequate financial resources and technologies advanced enough to exploit these areas. Under the Convention revision can be made five years after ratification by the required twenty-two nations; this date is June 10, 1969. As a result, proposals are being suggested to redefine the continental shelf as extending to a given depth, a given distance from shore, or to a given arbitrary line.

The Commission on Marine Science, Engineering, and Resources¹¹ suggested a seaward limit of any coastal nation's continental shelf beyond the territorial sea as 200 meters or 50 nautical miles, whichever yields the greater width. The Commission also suggested the creation of an intermediate zone having an outer limit at 2,500 meters or 100 nautical miles, whichever yields the greater width. In the first zone, the "legal continental shelf," the coastal nation has exclusive rights to explore and exploit the mineral resources; in the intermediate zone it has the same rights except that claims must be registered with an International Registry Authority. Farther seaward any nation may make claims for exploration and exploitation with registry and payments to the Authority. Off some coasts the depth limit of 200 meters would permit the "legal continental shelf" to be only a few miles wide. The 50-mile alternate limit is intended as a sort of equalizer, but off Peru and Chile it would permit the "legal continental shelf" to include the true continental shelf, the continental slope, a deep-sea trench (to 8,000 meters), and abyssal plains. Clearly, jurisdiction over geological resources must be based upon geological definitions, not oversimplified and thus confusing legal ones. Redefinition of a well-known, long-used, and perfectly good geological definition of the continental shelf to suit temporary legal desires is to be avoided; otherwise, the feature must be identified as the "legal continental shelf" or the geological (or illegal!) continental shelf. The legal definition is something of a subterfuge, about like the custom of stopping the clock in Congress in order not to legislate past a stated deadline. Are the lawyers so bereft of terminology that they must confuse geological terms by redefining them? Can they not find a suitable new expression for ocean-floor areas whose mineral resources are subject to national control? The law is highly dependent upon precedence; do lawyers fail to recognize precedence of usage in professions other than their own?

In order to avoid the confusion of applying well-known geological terms to legal objectives, the following terms are suggested as more suitable for legal use:

¹¹ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), pp. 145-56.

Territorial Seabed: The seabed under the territorial sea as defined by the Geneva Convention on the Territorial Sea and the Contiguous Zone in 1958.

National Seabed: The seabed beyond the territorial seabed in which the coastal State has jurisdiction over the seabed and its mineral resources. Its outer limit can be defined by depth, distance from shore, or other considerations.

International Seabed: The seabed beyond the national seabed.

Exclusion of Scientific Investigation

The Geneva Convention on the Continental Shelf in Article 5(8) states:

The consent of the coastal State shall be obtained in respect of any research concerning the continental shelf and undertaken there. Nevertheless, the coastal State shall not normally withhold its consent if the request is submitted by a qualified institution with a view to purely scientific research into the physical or biological characteristics of the continental shelf, subject to the proviso that the coastal State shall have the right, if it so desires, to participate or to be represented in the research, and that in any event the results shall be published.

Many instances are known where permission has not been granted to scientific organizations to make studies of continental shelves. According to Revelle¹² between 1963 and 1966 there were six instances in which other nations refused requests from American vessels to conduct scientific research on their continental shelves or in their territorial seas, and during 1967 and 1968 (to September) there were twelve such refusals. The writer is aware of five examples during the first half of 1969. Still other instances are known in which German and Italian vessels similarly were refused permission to conduct scientific research on shelves. In some instances the permission may have been refused because of fear that the scientific study would reveal information of military value; presumably, it was not due to fear that valuable resources would be removed. Probably many failures to provide permission are due simply to lack of interest and understanding or to bureaucratic inertia of the government of the adjacent nation. In still other instances a request for permission cannot be effective if the nation of the oceanographic ship does not have diplomatic relations with the coastal nation adjacent to the continental shelf that is of interest.

¹² Roger Revelle, "Scientific Research on the Sea-Bed, International Cooperation in Scientific Research, and Exploration of the Sea-Bed," Symposium on the International Regime of the Sea-Bed, Istituto Affari Internazionali, Rome, June 30-July 5, 1969.

The net effect of exclusion of scientific investigation from a given continental shelf is that the adjacent coastal nation (as well as the oceanographer) learns nothing about the shelf. The oceanographer can easily investigate a different, though apparently similar, shelf rather than waste time in further search for permission. Clearly, the trend is toward the gaining of more knowledge about the origin, composition, and structure of continental shelves off nations that permit the making of studies and that have large coastal lengths. Since the usual sequence in science is observation, understanding, prediction, and utilization, it is obvious that the chances of eventual utilization are best where observation has yielded some information through free scientific investigation. Obviously, the bordering nation can easily control the exploitation (utilization) because of its proximity and because exploitation requires a long time and usually some permanent installations.

Article 3 of the Convention on the Continental Shelf states, "The rights of the coastal State over the continental shelf do not affect the legal status of the superjacent waters as high seas, or that of the airspace above those waters." This has sometimes been interpreted as meaning that the oceanographer may not sample the bottom, but that he may make geophysical measurements that have no direct contact with the bottom. This is a fine distinction, because more can be learned about the general composition and structure of the ocean floor by remote seismic, geomagnetic, and gravity measurements than by direct bottom sampling. Additional confusion in terminology is indicated by Article 5(1), which states that exploration and exploitation must not "result in any interference with fundamental oceanographic or other scientific research carried out with the intention of open publication." Although geological investigation of continental shelves requires permission of the coastal State, the Convention on the High Seas preserves international fishing rights beyond an exclusive national fishery zone (usually twelve nautical miles wide, though 200 miles are claimed by several nations). Does this mean that rocks recovered in trawling for bottom fish are to be thrown overside without geological examination? It is to be hoped that the Convention will be revised so as to remove uncertainties about the words investigation, exploration, and exploitation and to permit scientific investigation to be less easily blocked than by the 1958 Convention.

If the present control by individual nations over continental shelves is extended seaward into the deep ocean basins, it is bound to lead to further restriction of oceanographic studies and further failure to learn about the nature and origin of the ocean floor.

Delay of Exploitation

The present statements in the Convention on the Territorial Sea and the Contiguous Zone provide for boundaries between adjacent nations and opposite nations. Left to unilateral agreement are questions of preference for median lines versus lines of maximum depth between nations on opposite sides of open water. Cases of such situations occurring between the United States and Canada, and

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between Norway and Great Britain were decided in favor of the median line. Is such a decision reasonable for the ocean floor between the People's Republic of China (mainland China) and the Ryukyu Islands (Japanese, with temporary control by the United States)? The mainland and the chain of islands are separated by very deep water of the Okinawa Trough.

Islands can have an importance far beyond their land areas if median lines are to be based upon them; witness the large areas of deep-ocean floor thus controlled by Bermuda and the Hawaiian Islands. For this reason suggestions have been made that islands should control no more ocean floor than is equal to their area. Should not such a suggestion be applied to coastal nations as well?

There is no doubt that uncertainties in the law of sovereignty over the resources of the ocean floor are delaying the exploitation of these resources. A recent example is that of the National Republic of China (Taiwan) which awaits decisions on its boundaries with mainland China and with Japan before leasing ocean-floor tracts to oil companies for detailed exploration and exploitation.

On the other hand, the predicted excess of oil supply over demand in a few years may reduce the pressure for settlement of ocean-floor sovereignties. A change from a seller's to a buyer's market should also reduce the ability of coastal nations to charge the high bonus payments and royalties that now are current. Moreover, it will reduce the need for oil companies to deal with some of the smaller and less stable governments of the world. Until the oil reserves on the continental shelf are rather fully exploited, the pressure for development of oil wells on the continental rise should be minor and thus not likely to demand immediate settlement of jurisdiction. However, the time will come when decisions about jurisdiction of the seabed in deep water will be needed.

Exploitation of sand and gravel and of heavy detrital mineral deposits is more a national than an international problem, because these resources occur mainly in shallow waters near the shore. Subsurface coal and iron mines belong in the same category, because they are worked from shafts sunk on land.

Phosphorite, manganese nodules, and hot-brine deposits of the Red Sea occur far enough from shore and/or in such great depths that jurisdictional disputes are likely to arise if the deposits can be exploited economically. Even though the economic values are still doubtful, settlement of jurisdiction would promote interest in advancing the technology of mining and extraction of metals in these deposits. All of these deposits appear to be thin-bedded ones that require mobility of the mining operation, not fixed installations as are needed for extracting oil and gas. For at least the manganese nodules, the area containing them is so vast and the economic demands relatively so small that mining operations can easily be shifted from area to area if bonus and royalty payments should become excessive, or if seabed claims of several exploiters should overlap.

BIBLIOGRAPHY

- Brockett, E. C., and Hedberg, H. D. (chairmen). Petroleum Resources Under the Ocean Floor. Washington: National Petroleum Council, 1969.
- Commission on Marine Science, Engineering and Resources. Marine Resources and Legal-Political Arrangements for Their Development. Washington: U.S. Government Printing Office, 1969. Panel Report, Vol. 3.
- Commission on Marine Science, Engineering and Resources. Our Nation and the Sea. A Plan for National Action. Washington: U.S. Government Printing Office, 1969.
- Committee of the National Academy of Sciences and the National Academy of Engineering. An Oceanic Quest. The International Decade of Ocean Exploration. (Publication No. 1709.) Washington: NAS/NAE, 1969.
- D'Amico, Kathleen J. "Statistical Summary," Minerals Yearbook, 1967. Washington: U.S. Bureau of Mines, 1968. Vols. 1-2, pp. 101-37.
- Degens, E.T., and Ross, D. A. (eds.). Hot Brines and Recent Heavy Metal Deposits in the Red Sea. New York: Springer Verlag, 1969.
- De Pourtales, L. F. The Characteristics of the Atlantic Sea Bottom off the Coast of the United States: Report of the Superintendent for 1869. Washington: U.S. Coast Survey, 1872. Appendix 11, pp. 220-25.
- Emery, K. O. "Geological Methods for Locating Mineral Deposits on the Ocean Floor: Exploiting the Ocean," Trans. 2nd Mar. Techn. Soc. Conf., June 27-29, 1966, pp. 24-43.
- _____. "Geological Aspects of Sea-Floor Sovereignty," The Law of the Sea: Off-shore Boundaries and Zones, ed. Lewis M. Alexander. Columbus: Ohio State University Press, 1967, pp. 139-59.
- _____. "Shallow Structure of Continental Shelves and Slopes," Southeastern Geology, Vol. 9, pp. 173-94.
- _____. "Continental Rises and Oil Potential," Oil and Gas Journal, Vol. 67, No. 19, pp. 231-43.
- _____, Hayashi, Y., Hilde, T. W. C., Kobayashi, K., Koo, J. H., Meng, C. Y., Niino, H., Osterhagen, J. H., Reynolds, L. M., Wageman, J. M., Wang, C. S., and Yang, S. J., Geological Structure and Some Water Characteristics of the East China Sea and the Yellow Sea. (Technical Bulletin No. 2.) Bangkok, Thailand: Economic Commission for Asia and the Far East, Committee for Co-ordination of Mineral Prospecting in Asian Off-shore Areas, 1969, pp. 3-43.

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- Fye, P. M., Maxwell, A. E., Emery, K. O., and Ketchum, B. H. "Ocean Science and Marine Resources," Uses of the Seas, ed. E. A. Gullion. (Publication of the American Assembly, Columbia University.) Englewood Cliffs, New Jersey: Prentice-Hall, 1968, pp. 17-68.
- Guilcher, André, Kuenen, P. H., Shepard, F. P., and Zenkovich, V. P. "Scientific Considerations Relating to the Continental Shelf," UNESCO, Conference on the Law of the Sea, 13/2 (mimeographed).
- Murray, John, and Renard, A. F., Deep-Sea Deposits: Report on the Scientific Results of the Voyage of H.M.S. CHALLENGER during the Years 1873-76. London: Her Majesty's Stationery Office, 1891.
- Revelle, Roger. "Scientific Research on the Sea-Bed, International Cooperation in Scientific Research, and Exploration of the Sea-Bed," Symposium on the International Regime of the Sea-Bed, Istituto Affari Internazionali, Rome, Italy, June 30-July 5, 1969.
- Shepard, F. P. Submarine Geology. 2d ed. New York: Harper & Row, 1963.
- Wiseman, J. D. H., and Ovey, C. D. "Definitions of Features on the Deep-Sea Floor," Deep-Sea Research, Vol. 1 (1953), pp. 11-16.

INTERNATIONAL AND DOMESTIC MANAGERIAL REGIMES¹
FOR COASTAL, CONTINENTAL SHELF AND
DEEP-OCEAN MINING ACTIVITIES

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I: INTRODUCTION

The interesting proposals which the Commission on Marine Science, Engineering and Resources have put forward in Our Nation and the Sea² and in the three volumes of Panel Reports³ deserve far more time than my ten minute commentary, and far more space than this paper. Generally speaking, I would commend the Commission's blueprints for national and international policy. On the other hand, I must register disagreement on a number of important points, and make some proposals on basic issues. These proposals include the addition of essential concepts which the Commission, or its International Panel, have either overlooked or by-passed. They are, nevertheless, necessary to make the Commission's blueprints meaningful and workable.

Although the Panel Reports and Our Nation and the Sea contain a lot of material and analysis on fisheries, the concentration in this paper will be on the winning of offshore mineral resources, including those of the deep oceans. There is, however, one exception to the self-denying ordinance I have just enunciated. Namely, the brief critique, in the pages which follow, of the Commission's and the International Panel's definition and commentary on the contiguous zone doctrine. This exception is due to the need to clarify a generally held fallacy regarding a number of exclusive maritime jurisdictions which, as it were, radiate out from the coastal States to effectuate certain of their shore-based policies. Among these is the doctrine of the contiguous zone. The critique which follows will be applicable, mutatis mutandis, to other specialized maritime jurisdictions.

¹ For an indication of the concept of managerial or administrative regimes, see Goldie, "The Oceans' Resources and International Law - Possible Developments in Regional Fisheries Management," 8 Columbia J. Transnat'l. L. 1, 17-18, 45-51 (1969) [hereinafter cited as "Goldie, 'Fisheries Management'"].

² (1969) [hereinafter cited as "Our Nation and the Sea"].

³ I.e., Vol. 1, Science and Environment (1969); Vol. 2, Industry and Technology: Keys to Ocean Development (1969); Vol. 3, Marine Resources and Legal-Political Arrangements for Their Development (1969) [hereinafter cited as "Panel Reports" and prefixed by the appropriate volume number].

II: THE CONTIGUOUS ZONE: A CLARIFICATION

Our Nation and the Sea critically comments on the definition of "the Contiguous Zone" in Article 24 of the Geneva Convention on the Territorial Sea and the Contiguous Zone⁴ as follows:

Although the Convention seems to restrict the purposes for which national control may be exercised in the contiguous zone, the coastal nation's authority is not, in fact, so limited. This is true, because one way or another, coastal nations claim permanent, exclusive access to the living resources of the sea up to 12 miles and more from the baselines from which the breadth of the territorial sea is measured. Thus, the United States has passed laws and regulations prohibiting foreign vessels from fishing in its 12-mile "exclusive fisheries zone" without its permission.⁵

⁴ Done April 29, 1958, [1964] 2 U.S.T. 1606, T.I.A.S. No. 5639, 516 U.N.T.S. 205. This treaty came into force on September 10, 1964, see 516 U.N.T.S. 206 n. 1. That definition is as follows:

1. In a zone of the high seas contiguous to its territorial sea, the coastal State may exercise the control necessary to:

- (a) Prevent infringement of its customs, fiscal, immigration or sanitary regulations within its territory or territorial sea;
- (b) Punish infringement of the above regulations committed within its territory or territorial sea.

2. The contiguous zone may not extend beyond twelve miles from the baseline from which the breadth of the territorial sea is measured.

3. 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 contiguous zone 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 the two States is measured.

⁵ Our Nation and the Sea 50, see also 3 Panel Reports VIII-12-13.

This commentary disagrees with three leading authoritative studies in the field, namely those by Gidel,⁶

⁶ 3 Gidel, Le Droit International de la Mer 11-22 (1934) [hereinafter cited as "Gidel"]. Compare especially id. at 14 where Gidel writes:

La "zone de haute mer contiguë aux eaux territoriales" où, plus brièvement, la "zone contiguë," est, répétons-le, l'espace où l'Etat riverain exerce, au delà de la limite des eaux territoriales, certaines compétences rigoureusement spécialisées et auxquelles il ne saurait prétendre sur le reste des espaces appartenant à la haute mer. Etant donné qu'elle commence seulement au delà de la limite des eaux territoriales, la zone contiguë forme une partie de la haute mer; mais cette partie de haute mer est dotée, à raison de sa situation géographique proche des côtes, d'un statut juridique particulier qui n'est pas celui des autres espaces de haute mer. D'autre part la zone contiguë se distingue essentiellement de la mer territoriale. Dans la mer territoriale, l'Etat riverain peut prétendre, sous les limitations résultant du droit international, à l'exercice du faisceau des compétences dont l'ensemble constitue la souveraineté. Dans la zone contiguë, l'Etat riverain ne peut prétendre qu'à l'exercice de compétences fragmentaires, limitativement déterminées.

Note, however, that Gidel, includes "protection des richesses de la mer" among the "compétences fragmentaires, limitativement déterminées." Unlike the opening sentence of the paragraph just quoted in the text from Our Nation and the Sea, however, Gidel does not see this inclusion as negating the specific quality of the coastal State's authority or as undermining the Zone's quality as "de la haute mer."

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McDougal and Burke,⁷ and Shalowitz.⁸ By holding that the addition of coastal

⁷ M. McDougal and W. Burke, The Public Order of the Oceans 518-19 (1962).
Note especially id. where the authors write:

The argument is often made that the recognition of a variety of contiguous zones for different purposes is no improvement over an extension of the territorial sea to include all such zones since the same authority is being recognized, so it is asserted, under different labels. Limited authority for specific purposes is not, however, the same as comprehensive authority for all purposes. States do frequently have particular objectives which they seek by extending limited authority seaward, such as in the control over fisheries, smuggling of guns, customs surveillance, and prevention of other undesirable activities, and both their concern for limited objectives only and their reciprocal claims for limited authority are very often completely genuine. Recognition by the general community of particular contiguous zones for particular purposes is not, therefore, tantamount to an invitation to states to create comprehensive zones for all purposes.

(Footnotes omitted, but note footnote 202.)

⁸ See I A. Shalowitz, Shore and Sea Boundaries 238 (1962), where the author writes:

The term "contiguous zone" in international law may be defined as an area of the high seas, outside and adjacent to the territorial sea of a country, over which it exercises control for special purposes, such as the protection of its revenue and health laws. The origin of this doctrine goes far back into history, but the first attempt to codify it as a principle of international law was in 1930 at the Hague Codification Conference. No agreement was reached on the matter, but nations continued to claim various rights of control for different purposes in areas beyond the traditional 3-mile limit.

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States exclusive fisheries authority to their other specific powers in the contiguous zone changes that concept from one of a collection of specific and restricted purposes, Our Nation and the Sea tends to throw its authority behind the avoidable and pernicious thesis that the contiguous zone, like the territorial sea, provides coastal States with "un faisceau des compétences."⁹

Unlike Our Nation and the Sea, Gidel saw no inconsistency between the specificity of the contiguous zone doctrine and the inclusion of coastal States' exclusive fisheries within its terms. For him these were merely another of the separate and restrictively defined specific competences within the scope of the coastal State's contiguous zone. On the other hand, not only does the Geneva Convention on the Territorial Sea and the Contiguous Zone not include exclusive fisheries within the zone but, further, legislation¹⁰ and a multilateral treaty¹¹ promulgated since that time have been drafted to vest ipso jure in the coastal State the exclusive fisheries zones which they created, or whose creation they authorized. Exclusive fisheries zones may, despite Gidel's characterization of them, be viewed as an independent category of international law, rather than as added specific instances of the protective competences within the contiguous zone doctrine. I would like to suggest that this should be the preferred view. This does not, of course, disagree with Gidel's central thesis on contiguous zones.

III: THE LIMITS OF THE CONTINENTAL SHELF -

IN DEFENSE OF THE COMMISSION'S RECOMMENDATIONS

In July, 1968, the American Branch of the International Law Association's Committee on Deep Sea Mineral Resources offered, in its Interim Report the conclusion that:

Since exploration and exploitation of undersea minerals is likely to occur earlier in the shallower waters of the

⁹ See, supra, n. 5.

¹⁰ See e.g. Fisheries Limits Act (U.K.) 1964 c. 72. Contrast, Act to Establish a Contiguous Fishery Zone Beyond the Territorial Sea of the United States, 80 Stat. 908 (1966), 16 U.S.C.A. §§1091-94 (Supp. 1967). It is submitted that resort to contiguous zone terminology in the United States statute is at best otiose and at worst misleading.

¹¹ European Fisheries Convention, done March 9, 1964, CMND 2355.

oceans adjacent to the continents than in the abyssal depths, it follows that if jurisdictional uncertainties arise to impede such operations during the next several decades, such problems will be primarily related to the scope of the mineral jurisdiction which is already vested exclusively in the coastal states by the "exploitability" and "adjacency" criteria of jurisdiction which now appear in the Continental Shelf Convention. This uncertainty, if necessity for its resolution occurs, might be removed by consultation among the major coastal nations which are capable of conducting deep sea mineral development, looking toward the issuance by those states of parallel ex parte declarations. These declarations might appropriately restrict claims of exclusive sea-bed mineral jurisdiction, pursuant to the exploitability and adjacency factors of the Continental Shelf Convention, to (i) the submerged portions of the continental land mass, limiting this provisionally to a depth of, say, 2,500 meters, or (ii) to a stated distance (say 100 miles) from the base line, whichever limitation encompasses the larger area. Such declarations might appropriately recognize special cases. Two such classifications suggest themselves: (i) In the case of states whose coasts plunge precipitously to the ocean floor (e.g., on the west coast of South America), the suggested 100-mile limit on sea-bed mineral jurisdiction would automatically operate on the deep ocean floor. (ii) In the case of narrow or enclosed seas, the principle of adjacency might appropriately carry coastal mineral jurisdiction to the median lines, even though these are beyond the continental blocks.¹²

The National Petroleum Council's recent publication Petroleum Resources Under the Ocean Floor¹³ has more recently offered a conclusion which bears some striking resemblances to that the American Branch Committee has already put forward - leaving aside the earlier publication's denomination of either a bathymetric contour line, or a line of distance (whichever should encompass the larger area) as a "provisional" delimitation of the shelf's outer limits. The National Petroleum Council argued that:

¹² Committee on Deep Sea Mineral Resources of the American Branch of the International Law Association, Interim Report XVII-XVIII (July 19, 1968) [hereinafter cited as "American Branch Committee Report"]. Note, however, Professor Henkin's Dissenting Statement, id., at XXI.

¹³ (1969) [hereinafter cited as "National Petroleum Council Report"].

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Moreover, since the plunge of the slope has often been locally overlapped extensively by the sediments of the continental rise, a boundary just oceanward of the base of the slope, to include the shelf, the slope, and the landward portion of the continental rise, where developed, most closely approaches the true ocean-bottom boundary between continental and oceanic areas and is the most natural and appropriate outward limit of a country's sovereign rights over bottom resources. A boundary thus drawn gives recognition to the natural oceanward extension of the domain of each coastal nation and the inclusion under its jurisdiction of that suboceanic territory over whose natural resources the coastal nation is most practically suited to exercise control.

In summary, given a recognition of the above scientific facts, it is apparent that the outer edge of the continent is a far more logical choice than the outer edge of the geological continental shelf as the limit of coastal-nation exclusive jurisdiction over the natural resources of the seabed and subsoil. The participating nations at Ciudad Trujillo in 1956 and at Geneva in 1958 wisely declined to limit the coastal-nation's exclusive jurisdiction to the geological continental shelf or to the 200-meter isobath.¹⁴

The "broad" continental shelf¹⁵ which the National Petroleum Council advocates was rejected by the Commission on Marine Science, Engineering and Resources. It wrote:

There is little question but that the NPC view of adjacency extends too-far beyond the 200 meters, the depth of most geological shelves of the world. Considering the totality of its interests in the oceans, the United States would

¹⁴ Id., 67.

¹⁵ The "broad" continental shelf may be defined as the extension of the coastal States' exclusive continental shelf jurisdiction out to the "continental rise" or "toe" of the slopes where the continental pedestal joins the abyssal plains. The "narrow" continental shelf may be defined as the region of coastal States' exclusive continental shelf jurisdiction out to, and terminating at, the 200-meter bathymetric contour line. For a discussion and evaluation of the "wide" and "narrow" continental shelf theories respectively, see L. Henkin, Law for the Sea's Mineral Resources 37-41, 45-46 (ISHA Monograph No. 1, 1968) [hereinafter cited as "Henkin"].

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never have accepted the Convention on the Continental Shelf as NPC now reads it.¹⁶

I very strongly suggest that the main criticisms I levelled at the American Branch Committee Report during the Deep-Sea Mining Session¹⁷ of the International Law Association's Fifty-third Biennial Conference at Buenos Aires on August 25-31, 1968, apply, mutatis mutandis, to the relevant pages of the National Petroleum Council's Report.

While the deep ocean sciences and engineering technologies advance, and markets fluctuate in response to production and need, the exploitability test must always have a contingent operation. Even the probability of a brilliant future for the human exploitation of the resources of the ocean bed and its subsoil cannot remove the contingent and uncertain qualities of time and utilization. In contrast with that discussion, the National Petroleum Council Report entirely ignores the contingent quality of the exploitability test. In contrast with the clear words of Article 1 of the Continental Shelf Convention, the National Petroleum Council interprets the exploitability test as a sanguine beneficiary might ignore intermediate interests (not unlike, perhaps, the "hero" of Kind Hearts and Coronets?) and interpret a contingent gift in his favor as if it were one which had immediately vested in him.

This writer's concern is not the result of a grammarian's fetishism for exact meaning, but for the disastrous policy results which would follow from resorting to the National Petroleum Council's solecism with legal language.

It involves a regression to the snatch and squat mentality of the age of colonialism, and is, accordingly, directly opposed to President Johnson's noble appeal:

Under no circumstances must we ever allow the prospect of 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 to hold the lands under the high seas. We must ensure that the deep seas and the ocean bottoms are, and remain, the legacy of all human beings.¹⁸

¹⁶ 3 Panel Reports VIII-20. See also Our Nation and the Sea 144-45.

¹⁷ Goldie, International Law Association 53rd Biennial Conference, Buenos Aires, Comments from the Floor at the Deep-Sea Mining Session 9-10 (mimeo. August 26, 1968).

¹⁸ President Johnson, "Remarks at the Commissioning of the Research Ship Oceanographer," 2 Weekly Compilation of Presidential Documents, July 13, at 930-31 (1966).

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Secondly, the whole underlying assumption of the National Petroleum Council Report's presentation of the exploitability test as capable of denominating a boundary within which a total submarine "mineral estate" of all available resources appertains to the Coastal States fails (as it must) to examine the meaning of the key term "exploitability" as it appears in the context, and against the background, of its use in Article 1. I have carefully pointed out elsewhere that:

Since different resources call for different techniques for their exploitation, the exploitability test, in order to remain true to its meaning, should be applied as a basis for extending a coastal State's sovereign rights over the exploitation of only such specific resources as are at that time exploitable. For example, although manganese nodules may be won from great depths in the near future, any concept of "exploitability" based on that potential would be irrelevant to mining for solid minerals in the subsoil of a submarine continental terrace. Similarly, an application of the exploitability test, which might well be relevant to taking oil and gas, would be irrelevant to a claim to exercise exclusive continental shelf rights over a sedentary fishery.¹⁹

Views such as that of the National Petroleum Council, in contrast to those in the above quotation, are guilty of a legal solecism here also. It is mistaken to assimilate coastal States' exclusive continental shelf rights to territorial notions. Those rights should be seen, as they were originally conceived of, and as they were originally drafted, namely, as being specific and limited extra-territorial competences over exploration and exploitation activities on and under the shelf.²⁰

¹⁹ See Goldie, "The Contents of Davy Jones's Locker - A Proposed Regime for the Seabed and Subsoil," 22 Rutgers L. Rev. 1, 17 (footnotes omitted) [hereinafter cited as "Goldie, 'Davy Jones's Locker'"]. See also 3 Panel Reports VIII-16.

²⁰ Int'l L. Comm'n, "Articles Concerning the Law of the Sea: Part II, Section III, The Continental Shelf," [1956] 2 Y.B. Int'l L. Comm'n 256, 297; 6 U.N. Conf. on the Law of the Sea, Geneva 1958, Official Records (Fourth Comm.) 50-72, U.N. Doc. A/CONF.13/42. See especially id. at 51-52 (Munch), 52 (de la Pradelle), 52-53 (García-Amador), 54-55 (Souter), 65 (Mouton), 66 (Molodtsov), 68 (Gutteridge). Gidel evaluated the coastal States' rights over the continental shelf as follows: "The consequence of the restricted and specialised nature of the rights of the coastal State is that their exercise should leave the use of the high seas as intact as possible." Gidel, "The Continental Shelf" (Goldie transl.), 3 U.W. Aust'l L. Rev. 87, 96 (1954).

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Someone reading the National Petroleum Council Report or the American Branch Committee Report may well set to musing why such an elaborate construction was attempted in the first place - and reiterated in the second. There would appear to be a simple answer. Both Reports express the position of those who are pressing for a wide continental shelf.²¹ Surely, it would have been better to have frankly advanced the policy arguments favoring a wide shelf,²² than to have engaged in an exegesis which has tended to becloud the debate by directing attention from what is needed to what may, or may not, have been intended over a decade ago at the 1958 United Nations Conference on the Law of the Sea at Geneva - or even earlier by the International Law Commission. The following Section foreshadows a debate in these terms.

IV: THE INTERMEDIATE ZONE

Some writers who favor the narrow continental shelf have suggested what would appear to be a compromise between their position and a wide continental shelf.²³ Following these writers, the Commission's International Panel has proposed the definition and demarcation of an "intermediate zone".²⁴ In brief, this is to be a legally defined zone equivalent to the "continental borderlands"

²¹ See, supra, n. 15.

²² Henkin 25-36.

²³ Id., 45-48.

²⁴ 3 Panel Reports at VIII-34-35, Our Nation and the Sea 151. See also Henkin 46-48.

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or "continental terraces"²⁵ of the seabed. In order to assure it a relatively fixed and certain delimitation, the Commission and its International Panel have suggested the following lines of demarcation (the practicality of which I do question):

[I]t is recommended that the outer limits of the intermediate zone be defined in terms of the 2,500 meter isobath or 100 nautical miles from the baselines for measuring the breadth of the territorial sea, whichever alternative gives the coastal State the greater submarine area for the purposes for which the intermediate zone is created.²⁶

In this area only the coastal State or its licensees, "which may or may not be its nationals"²⁷ are to be "authorized to explore or exploit the

²⁵ The International Hydrographic Bureau, Monaco, has now accepted the following definitions, 31 Int'l Hydrographic Rev. 97 (May 1954):

Continental Shelf, Shelf Edge and Borderland. The zone around the continent, extending from the low water mark line to the depth at which there is a marked increase of slope to greater depth. Where this increase occurs the term "Shelf Edge" is appropriate. Conventionally its edge is taken at 100 fathoms (or 200 meters), but instances are known where the increase of slope occurs at more than 200 or less than sixty-five fathoms. When the zone below the low water line is highly irregular, and includes depths well in excess of those typical of continental shelves, the term "Continental Borderland" is appropriate;

Continental Slope. The declivity from the outer edge of the continental shelf or continental borderland into great depths;

Borderland Slope. The declivity which marks the landward margin of the continental borderland;

Continental Terrace. The zone around the continents, extending from the low water line to the base of the Continental Slope.

See also M. Mouton, "The Continental Shelf," 85 Hague Acad. Int'l L., Recueil des Cours 343, 348 n. a (1954-I).

²⁶ 3 Panel Reports at VIII-34-35. See also Our Nation and the Sea 151.

²⁷ Id., at VIII-35.

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mineral resources of the intermediate zone."²⁸ On the other hand, that zone is not to be permitted to fall within the scope of coastal States' continental shelves. It must always remain within the international regime for deep-ocean mining.²⁹

Preliminarily the Commission's selection of the 2,500 meter isobath as providing the outer limit of the intermediate zone is questionable. The concept of the intermediate zone has been offered by the supporters of the narrow shelf as a middle and mediating position between the view they profess and that of the wide shelf advocates. That isobath, one may presume, is put forward as indicating the outer limit of the broad continental shelf, as representing the "true" geological or topographical "boundary" on the sea floor between the crust of the deep ocean basins and the continental land masses. This geological "boundary" is said to exist as an empirical fact. One may be confident, therefore, that it does not exist in all places at exactly the 2,500 meter isobath.

For example, the Committee on Deep Sea Mineral Resources of the American Branch of the International Law Association, basing its thesis that the outer limits of the continental shelf subject to coastal States' exclusive jurisdiction be at the 2,500 meter isobath on the work of Dr. Pecora, of the U.S. Geological Survey, tells us that there is so "marked [a] change of structure between the continental mass and the crust of the deep ocean basins...generally to be found at a depth of from between 2,000 and 3,000 meters"³⁰ (namely at the supposed foot or "toe" of the continental slopes) that it is only at this geological change of structure that, so the American Branch Report's argument runs, is there a "true" geological or topographical "boundary" which can be clearly designated as a legal boundary. Three criticisms of this argument spring to mind. First, the Report glosses over the great difference in both depth and lateral extent between the 2,000 and 3,000 meter isobaths, both of which provide the American Branch Report with its empirical points of reference. Second, there cannot be much congruence with geological realities when the toe of the continental slopes is equated with the 2,500 meter bathymetric contour line since, in fact, that toe might be anywhere, on the Report's own showing, between the 2,000 and 3,000 meter isobaths (a lawyer's compromise between

28 Id.

29 For an outline of the Commission's recommended regime for deep-ocean mining see id., VIII-35-44, and Our Nation and the Sea 146-51.

30 American Branch Report X (1968). Note should be taken that this "Interim Report" was published on July 8, 1968, but no further or final report has been published as of the date of this writing, namely December 28, 1969. One should note that this document and National Petroleum Council Report are two of the main vehicles of the "wide shelf" advocates.

geological facts?). Third, the Report of the United Nations Secretary-General to the Economic and Social Council on the Resources of the Sea, Part One: Mineral Resources of the Sea Beyond the Continental Shelf,³¹ gives us a very different picture of the continental terraces and of the floor of the abyss. It tells us that the continental slopes extend "from the outer edge of the continental shelf to the abyssal ocean floor." Then there is the further statement:

This abyss or ocean floor appears to be a rolling plain from 3,300 to about 5,500 metres below the surface of the sea....The mean depth of the superjacent waters is 3,800 metres.³²

It is not for me, or perhaps any of us here, to seek to judge between Dr. Pecora's work and this Report by the Secretary-General of the United Nations. I have the greatest respect for the pronouncements of both of these eminent authorities. But when geologists and geographers do not appear to be unanimous on matters of their empirical science, surely all of us should hesitate to rush into the game of drawing geological boundary lines at such crushing abyssal depths as 2,500 meters, and perhaps beyond. In such regions, the ratification of a "territorial imperative" in terms of a fixed isobath seems to be without practical meaning.

In the light of the foregoing points, I would suggest that the outer geographical limit of an intermediate zone should be that indicated by the National Petroleum Council when it advocated that the outer edge of the geological continental shelf should provide "the limit of coastal-nation exclusive jurisdiction over the natural resources of the seabed and subsoil."³³ Here an empirical, topographical, test is substituted, in the name of realism and practicality, for the abstract and barely relevant test proposed by the Stratton Commission.

Despite the intermediate zone's attractiveness as a compromise between the wide shelf and the narrow shelf parties, I suggest that it has some fatal flaws. First, in practice there might well develop contests between coastal States and the international regime as to the modalities of control. Whereas mining activities in the zone would be regulated by the International Authority, coastal States may well demand a further say in what goes on in the zones fronting onto their continental shelves. This could be asserted by imposing conditions in the licenses they grant. If the coastal State's demands

³¹ UN Doc. E/4409/Add.1 (mimeo. 19 Feb. 1968).

³² Id. at 5.

³³ National Petroleum Council Report 67 (1969), see also text accompanying n. 14.

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for a dominating position become intense, the conditions they stipulate for granting their licenses might well become of greater practical importance than the international regime's regulations. This latter authority might, indeed, subside into a residual revenue-collecting regulatory agency. The chances of this possibility becoming an eventuality are enhanced when one recalls how contemporary events in maritime law and policy reflect the greater pressure and authority of exclusive State claims over international claims.³⁴

Since it is conceived of as a compromise, the intermediate zone may, in effect, be merely a temporizing and temporary legal institution, ready and poised to be merged into whichever of the two adjoining regimes may come to exercise the stronger attraction. On this count it may be seen as no more than a compromise of the moment.

In place of an intermediate zone, tout court, I suggest, with all respect, that a seabed zone with similar geographical boundaries and dimensions to those of that proposed zone be earmarked. But, in place of one kind of regime, which may not be feasible in many parts of the world, a number of variants could be developed to suit more closely the political geography and community histories of various parts of the world.

While the geographical areas of the intermediate zones off, for example, the greater part of such countries as Australia, Canada, the Soviet Union or the United States might well be absorbed into those countries' exclusive continental shelves, off the Caribbean submarine slopes of Central America or on the northern continental borderlands and slopes of the North Sea bed, for example, political and economic factors might militate against individual countries gaining exclusive rights over "broad shelves." In such regions submarine areas beyond the "narrow" continental shelf should be regulated by means of a managerial regime of conciliation and/or cooperation³⁵ established by all the States of the region.

Finally, in other areas, where the facts of political and physical geography could, ceteris paribus, lend the offshore zones beyond the 200-meter bathymetric contour line to the regional managerial regime blueprint, but where local internal political instability, territorial rivalries, irredentism or long-lived hatreds (for example, perhaps, off West Africa, east of the Strait of Hormuz, off the Horn of Africa or the west of Ireland) preclude the formation of such a regime, the zone should be administered under the international regime to be established to regulate the resources of the deep-ocean bed. Such

³⁴ For a discussion of this process see Goldie, "Davy Jones's Locker" 13.

³⁵ For an introduction to managerial conciliation or cooperation regimes see Goldie, "Fisheries Management," supra, n. 1, 17-18, 45-46. See also §V infra.

a take-over should not be accomplished, however, until a local regime of managerial cooperation had been tried. Furthermore, it should be conducted as a trust for the countries (as a group) which have been unable to combine effectively to administer the submarine areas in terms of a regime of administrative or managerial conciliation.

Thus, in place of the Commission's intermediate zone, I would suggest a variety of blueprints, each adapted to the physical, economic and political realities of its offshore region and its mainland. These blueprints need not be exact replicas of the three kinds I have just outlined. But all of them should have in common the capability of balancing the region's inclusive and exclusive claims so as to achieve both maximum political stability and economic return with the minimum of friction.

V: EXCURSUS ON MANAGERIAL CONCILIATION REGIMES

I first outlined the concept of managerial or administrative conciliation regimes in my Fisheries Management³⁶ study. That was built upon the provisions of the Convention on Fishing and Conservation of the Living Resources of the High Seas.³⁷ But that concept is also applicable, mutatis mutandis, to the formulation of regional regimes regulating exploration and exploitation activities on the continental slopes between the 200-meter bathymetric contour line and the continental rise where the continental pedestal meets the abyssal plains of the deep-ocean bed. A brief outline will suffice here.

A. Criteria

1. Goals

Managerial regimes should be guided by such goals as: (i) improvement

³⁶ See, supra, n. 35.

³⁷ Done April 29, 1958, [1966] 1 U.S.T. 138 T.I.A.S. No. 5969, 559 U.N.T.S. 285. Note should also be taken of the fact that the United Nations Conference on the Law of the Sea, 1958, Geneva, supplemented this Convention with two Resolutions relating to conservation matters (namely: III, International Fishery Conservation Conventions; IV, Co-operation in Conservation Measures), one entitled the Humane Killing of Marine Life (Resolution No. V), and one emphasizing the special interest of coastal States whose "people are overwhelmingly dependent upon coastal fisheries for their livelihood or economic development," Resolution No. VI entitled Special Situations Relating to Coastal Fisheries. This Convention came into force March 20, 1966. See 559 U.N.T.S. 286, n. 1.

of techniques, thereby implementing the goal of optimizing world welfare as well as the enhancement of the rewards which the deep-ocean mining industry may offer those participating in it; (ii) facilitation of participating States' domestic policies, be they oriented to the creation of employment opportunities or to the expectation that the deep-ocean mining activities will contribute to those States' economies - either by earning foreign currency or by saving purchases abroad of necessary minerals; and (iii) generation of a value in the right to mine beyond the continental shelves of coastal States - part of which could be made recoverable from license fees, royalties or taxes. These could be applied on behalf of the mining regime as a whole to defray such costs as research, administration and control. Surpluses should also be available for general purposes in the region, and perhaps outside it, if the participating States agree.

The strategy best suited for realizing these goals could, in most cases, well be that of controlling access to a given deposit or resource - a procedure which, in turn, calls for the joint action of all States participating in the regime to delegate, to a common regulatory authority and for the benefit of all, a part of each's separate authority, and, in particular, their pre-existing right to act pre-emptively. The advantage for each is that, as the whole industry increases in value, so will the share to each participating country. Such a share could soon exceed in value what any one State might have previously taken by unilateral pre-emptive action at the expense of all the others. There is a further proposal regarding regional managerial regimes. The goals just outlined could best be achieved by a functional integration of the resource's uses by means of a supranational agency.

2. Participants

A supranational regional managerial regime should not only include the coastal States of the region, but also other States with a bona fide claim to participate in the deep-ocean mining industry - even if they have been physically excluded by force majeure. Diplomatic protests against the arrest of ships for exploring or exploiting the minerals under the high seas as recognized by international law, but within limits claimed by certain coastal States, or protests against unilateral legislative assertions of excessive maritime zones, or approaches to negotiate a compromise which would allow the claimant States to exercise high seas rights without fear of the use of force against their vessels, or proposals to have differences arising out of the coastal States' claims of exclusive rights and the claimant States' assertions of inclusive ones should be submitted to arbitral or judicial settlement, should each and all be acceptable to evidencing a bona fide claim to participate. A

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cut-off date, the "critical date"³⁸ could be established. After a "reasonable time" following the designation of such a date, States (other than successor States of the participants) could be excluded from the negotiations called to establish the regional management regime. The "reasonable time" should be sufficient to allow any uninvited State to lodge a claim to participate - the rejection of such a claim being a matter for compulsory judicial or arbitral settlement.

3. Measures

First, a regional managerial regime should acknowledge the importance of research - including economic research - so that the yield from deep-ocean mining would not only be regulated in terms of engineering criteria, but also by considerations which ensured the optimum uses of capital and labor so as to secure the maximum economic use of the deep-ocean mineral resources.

Secondly, all forms of discrimination between the applicant enterprises on the basis of nationality, provided the enterprise has the support of at least one of the States participating in the regime, should be eliminated.

B. Alternative Regimes

1. Administrative Conciliation

This form of conciliation is different from all others, since it does not look to any final settlement of claims. Rather, it provides a framework for resolving differences by means of a continuing readjustment of the satisfactions to be distributed. Recurrent fluctuations in the market and changes in technology might, in fact, call for a continuing reappraisal of the basic criteria of the resources distribution among the countries involved. Administrative, or managerial, conciliation does not indicate a process of widening the area of agreement by building on previously settled aspects of a dispute, but the continuous management of the development and distribution and redistribution of the resource in terms of continuously changing controlling factors. To carry out its tasks effectively, a conciliation commission would have to operate without any goal of achieving final solutions. It would, in fact, become a permanent administrative group regulating the regions so as to enhance the local deep-ocean mining industry's efficiency and value, and to achieve a just distribution of its products. If such a commission were invested with supranational powers, the industry and all those who depend upon it would be the better served. The commission would be able to administer the industry as

³⁸ For a generalization of the critical date concept from territorial disputes to all international disputes involving temporal issues, see Goldie, "The Critical Date," 12 Int'l & Comp. L. Q. 1251 (1963).

a single unit without having to respect the special claims of sovereign States through which, otherwise, it would have to operate.

2. Multinational Public Enterprises³⁹

Today, multinational public enterprises are employed for many diverse purposes and in many different areas of international economic activity - each of them being established and justified by pragmatic and functional criteria. They are brought into being when the States creating them seek to attain common ends "by making use of the present social and scientific opportunities to link together particular activities and interests, one at a time, according to need and acceptability, giving each a joint authority and policy limited to that activity alone."⁴⁰ Secondly, although they are called upon to fulfill very divergent tasks, these entities "possess certain common characteristics which distinguish them from other international organizations. They perform economic tasks of a public nature, for which they require the long-term investment of capital and a permanent organization. They generally perform operational functions, and are vested with a power of direct action."⁴¹ As Professor Wolfgang Friedmann has pointed out, quoting President Roosevelt's characterization of the Tennessee Valley Authority, they are "clothed with the power of government, but possessed of the flexibility and initiative of private enterprise."⁴²

Adequately designed, therefore, a multinational public enterprise could effectively combine the advantages of the "agent State"⁴³ solution with those of administrative conciliation. Such an enterprise could either engage directly in deep-ocean mining as a multinational enterprise or, alternatively, it could

³⁹ For the choice of this term, from among a number of others, see C. Fligler Multinational Public Enterprises 7-8 (IBRD Study 1967).

⁴⁰ Mitrany, "The Prospect of Integration: Federal or Functional," 4 Comm. Mkt. Studies 119, 135 (1965). See also Mitrany, A Working Peace System 41 (1966).

⁴¹ Fligler 7.

⁴² W. Friedmann, "International Public Corporations," 6 Modern L. Rev. 185, 186 (1943). For a discussion of the more detailed aspects of a blueprint for a multinational public corporation to regulate a regional fishery see Goldie, "Fisheries Management," supra, n. 1, at 49.

⁴³ For a discussion of the concept, in the context of fisheries management of the "agent state," see F. Christy & A. Scott, The Common Wealth in Ocean Fisheries 196 (1965), and Goldie, "Fisheries Management," 53-55.

give licenses to mine to mining corporations which comply with the standards it would set for safety of equipment, employment policies, and economic efficiency. In either case, the enterprise would have to be accorded a monopoly of the industry. It would enjoy the advantages of the agent State approach as it would be the delegate of all the States participating in the regime. It would, in addition, avert the disadvantage of that approach since no State, or group of States, need be placed in a favored position. This proposal would also provide the regime with the advantage of the administrative conciliation procedure since its blueprints should include a politically-oriented commission with authority to give overall direction to the corporation in the light of the values, demands, expectations and contributions of the participating States. The corporation would have the further advantage, and one which multinational public enterprises have in common, of building transnational habits of cooperation, and of problem-solving, coterminous with the area of the regime rather than that of a any State within it.⁴⁴

VI: THE COMMISSION'S BLUEPRINTS FOR
INTERNATIONAL LEGAL - POLITICAL FRAMEWORK

In putting forward its position, as proposed first of all in the "Recommended International Legal-Political Framework...Governing the Bed of the Deep Seas and Its Subsoil,"⁴⁵ and as finalized in "An International Legal-Political Framework...Recommended Legal-Political Arrangements for Subsea Areas Beyond the Shelf"⁴⁶ the Commission had formulated a similar blueprint to the one I outlined first of all in my 1966 paper here at Kingston,⁴⁷ and then more

⁴⁴ See, e.g., Fligler 10; I. Claude, Swords Into Ploughshares 348 (1964).

⁴⁵ 3 Panel Reports VIII-35-43.

⁴⁶ Our Nation and the Sea 141-51.

⁴⁷ Goldie, "A Symposium on the Geneva Conventions and the Need for Future Modifications," The Law of the Sea: Offshore Boundaries and Zones 273, 280-85 (L. Alexander ed. 1967) [hereinafter cited as "Goldie, 'Geneva Conventions'"].

recently in my "Davy Jones's Locker" article.⁴⁸ On the other hand, the Commission's proposals, unlike those I have put forward, do not include any procedures for allocating competence over enterprises' exploration and exploitation activities among licensing States. Nor do they call for a system of full faith and credit among the States who are parties to the registration regime. These are two serious omissions.

1. The Need for Allocation Procedures

This need can be illustrated by discussing the answers to three questions. Those questions are: What is the basis for, and the validity of, any claim that a State may seek to have registered? Is that issue of validity to be resolved within the framework of the registration regimes and under its sub-

⁴⁸ Goldie, "Davy Jones's Locker," supra, n. 19, at 43-48.

The National Petroleum Council Report, supra, n. 13, at 120, offers the following comment on contemporary proposals for international regimes governing deep-ocean minerals:

On the basis of the exceedingly incomplete information that is now available concerning deep-ocean areas, it would be highly undesirable and indeed irresponsible for the United States to commit itself to any international regime to govern exploration and exploitation in these areas. Our Nation should, nevertheless, be prepared to provide leadership and cooperation to the international community looking toward optimum arrangements for development of deep-ocean mineral resources "for the benefit of and in the interest of all mankind."

The first sentence of the above inevitably reminds a reader very strongly indeed of the late Professor Cornford's Principle of the Dangerous Precedent. He defined it as follows:

The Principle of the Dangerous Precedent is that you should not now do an admittedly right action for fear you, or your equally timid successors, should not have the courage to do right in some future case, which ex hypothesi, is essentially different, but superficially resembles the present one. Every public action which is not customary, either is wrong, or, if it is right, is a dangerous precedent. It follows that nothing should ever be done for the first time.

Or would Cornford's Principle of the Wedge be more appropriate? See F. Cornford, Microcosmographic Academica 23 (6th ed. 1964).

stantive rules? What priorities are to be given when two or more States simultaneously present claims to the same mineral resource and area?

As discussed by international lawyers and non-lawyers writing in this field, the international registration system envisaged for deep-ocean mining activities⁴⁹ accepts the validity of the registrant's title (be the registrant

⁴⁹ The term "registration" (and its grammatical variants) as used in this paper does not intend to import any analogies from domestic law doctrines of "registered" as opposed to "recorded" title. Indeed, the closer domestic law analogy here would be with "recordation" rather than "registration" systems. The use of the word register and its variants here is merely to conform to what seems to have become the general usage among international law writers when discussing systems of public records of titles.

In the United States systems of title recordation are not all identical, but there are certain basic uniformities which enable them to be contrasted with title registration systems (usually designated by such phrases as "Torrens Title," "Torrens System," and so forth). In State *ex rel.* Douglas v. Westfall, 85 Minn. 437, 89 N.W. 175 (1902), Start, C.J., enunciated this distinction with great clarity and force:

The basic principle of this system [*i.e.*, the Torrens System of registration] is the registration of the title of land, instead of registering [*i.e.*, recording] as the old system requires, the evidence of such title. In the one case only the ultimate fact or conclusion that a certain named party has title to a particular tract of land is registered, and a certificate thereof delivered to him. In the other, the entire evidence, from which proposed purchasers must, at their peril, draw such conclusion, is registered [recorded]. Necessarily the initial registration of the title - that is, the conclusive establishment of a starting point binding upon all the world - must rest upon judicial proceedings.

Id. at 438, 89 N.W. at 175 (emphasis added).

Briefly put, where registration gives title, recordation only evidences title. The reasons for advocating recordation over registration for an international regime governing deep-ocean mining are:

(1) A viable registration system (*i.e.*, Torrens) requires the establishment of title in the first place by compulsory judicial or quasi-judicial process - otherwise one State with a possible claim, and an objection to having that claim adjudicated, could with regard to that case bring the whole machinery of registration to a halt. The widespread contemporary resistance to becoming a party

a State recording its "title to exercise the permitted competences, under the regime, over a Submarine Zone of Special Jurisdiction,⁵⁰ or an enterprise recording a proprietary "title" to engage in exploration and/or exploitation activities) as being rooted in the general law. (This system is to be contrasted with registration systems properly so called where registration gives title.⁵¹) Registration as used in the context of the present topic, then, merely provides an easy, but not necessarily conclusive, evidence of the validity of the registered title. If that title's ultimate basis of validation is a matter of general international law, the problem then becomes one of determining what titles international law permits. Even if the registration authority were to agree that it could not register, as contrary to the United Nations Charter, a title to a submarine jurisdiction based on conquest, or one resulting from a cession obtained by "the threat or use of force,"⁵² it would not be able to use a

to the Optional Clause of the I.C.J. Stat. art. 36, para. 2, and to compulsory international judicial process generally, could jeopardize acceptance of the regime advocated here - if its efficaciousness were made dependent upon a true registration system. Hence, regrettably, registration must be eliminated on considerations of acceptability and political feasibility;

(2) The installation of a system of the international registration of States' Zones of Special Jurisdiction appears to this writer possibly to be unacceptable to many States on the ground that it would give the impression of investing the relevant international agency with powers to grant regions of the seabed and subsoil. (Like that in (1) above, this point is also made with regret.)

⁵⁰ For a detailed exposition of these concepts see Goldie, "Davy Jones's Locker," supra, n. 19, at 40-41, 43-45.

⁵¹ For a contrast of registration when used to indicate recordation with registration as used to indicate its true meaning, see, supra, n. 49.

⁵² See U.N. Charter art. 2, para. 4.

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similar argument against titles stemming from the doctrine of occupatio terrae nullius,⁵³ since, except for certain specific instances such as Antarctica⁵⁴

53 The classic definition of occupatio terrae nullius is to be found in art. 35 of the Berlin General Act, Feb. 26, 1885, 10 Martens Nouveau Recueil 2d 384, 396-97. The leading international law cases are: Legal Status of Eastern Greenland Case, [1933] P.C.I.J. ser A/B No. 53; Clipperton Island Case, 26 Am.J.Int'l L. 390 (1932); Island of Palmas Case (United States v. The Netherlands), Hague Court Reports (2d Ser) (Scott) 83, 2 U.N.R.I.A.A. 829 (Perm. Ct. Arb. 1928). See also Jacobsen v. Norwegian Government (the Jan Mayen Island Case, [1933-1934] Ann. Dig. 109 (No. 42) (Supreme Court, Norway 1933).

On the traditional international law doctrine of occupation as applied to seabed resources (sedentary fisheries) see 1 Oppenheim, International Law 628-29 8th ed. Lauterpacht 1955) [hereinafter cited as "Oppenheim"], cf id., 7th ed., at 576 noting omission of words "by strictly local occupation" in the 8th ed.; Vattel, The Law of Nations bk. 1 §287 (White ed. 1787); Goldie, "Australia's Continental Shelf: Legislation and Proclamations," 3 Int'l & Comp. L.Q. 535, 559-61 (1954); Goldie, "The Occupation of the Sedentary Fisheries Off the Australian Coasts," 1 Syd. L. Rev. 84 (1953). For the right of capture (i.e., the taking of possession of, or occupation of unowned property, e.g., fish, animals, and minerals lying in situ) in international law, see e.g., Grotius Mare Liberum 25-30 (Carnegie Endowment for International Peace ed. 1916); 1 Oppenheim, supra at 556, 630; Puffendorf, De Jure Naturae et Gentium Libri Octo bk. 4 ch. 6 (1688); Vattel, supra §§204-10, at 234, 279-81.

For a minimal number of divergent but landmark examples (over a span of some 1,700 years) of the adoption of the "natural" doctrine of occupation in private law see, e.g., (for origins in Roman and Civil Law) Gaius, Institutes 2., at 66-69; Justinian, Institutes 2.1., at 12-19. See, further, e.g., (for origins in Anglo-American Law) Keeble v. Hickeringill, 103 Eng. Rep. 1127 (K.B. 1809); Pierson v. Post, 3 Cai. R. 175 (Sup. Ct. N.Y. 1805); Eads v. Brazelton, 22 Ark. 499, 79 Am. Dec. 88 (1861); Ghen v. Rich, 8 F. 159 (D. Mass. 1881); State ex rel. Scott v. Buzard, 235 Mo. App. 636, 144 S.W. 2d 847 (1940); City of London Corp. v. Appleyard, [1963] 1 W.L.R. 982 (Q.B.); 2 Blackstone, Commentaries *1-4. For a history of the doctrine see, e.g., H. Maine, Ancient Law 258-70, 311-15 (Pollack ed. 1906). For the leading cases on the application of the Law of Capture to oil and gas resources in oil pools under lands owned by surface proprietors, see Walls v. Midland Carbon Co., 254 U.S. 300 (1920); Westmoreland Nat. Gas Co. v. De Witt, 130 Pa. 235, 18 A. 724 (1889). For a classic statement of the Rule of Capture as applied in oil and gas cases, see Bernard v. Monongahela Nat. Gas Co., 216 Pa. 362, 65 A. 801 (1907).

54 Done, December 1, 1959, [1961] 1 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71. The effect referred to in the text was achieved by "freezing" [sic.] claims which existed at the date of signature and by undertakings from the states parties to the agreement, that they would not assert any new ones. See id. art. 4.

and Outer Space,⁵⁵ titles based on this doctrine are not prohibited by international law. And how would the registry office deal with demands to register claims derived from acquisitive prescription or historic title? Thus a registration regime, whose operation is restricted to the passive acceptance and recording of titles, is dependent upon the more general regime existing anterior to it, and from which those titles are ultimately derived. In international law this means the proposed registration regime is to testify to the validity of titles derived from such of the general and traditional doctrines for the acquisition of title as are not outlawed by the United Nations Charter or by any general international legislative convention. On the other hand, the present-day consensus is against the extension of at least one of these doctrines, namely occupation, to new regimes and to new areas of human endeavor.⁵⁶ The trend, indeed, would seem to be towards the limitation of its effectiveness in areas of its traditional application.⁵⁷ This trend would not, however, prevent the doctrine of occupation from being the basis of original titles presented for registration under the regime proposed in both Our Nation and the Sea and 3 Panel Reports. Indeed, the Commission's blueprint would, since no other basis for the establishment or authentication of original titles would appear to be provided, re-invigorate the doctrine, bringing it back into the vogue it enjoyed during the age of colonialism - and especially during the decades of the "grab for Africa."

Secondly, the Commission's blueprint fails to establish even the most general criteria in an area where rules are needed in all registry systems, namely solutions of the difficulty of determining between competing claims presented simultaneously at "the window." Although reliance on the "better title" as established by the relevant rules of general international law might seem to provide an immediate way out of the registering authority's dilemma, in reality it merely postpones the problem. For the general international law to which resort would be had could only provide an answer in terms of occupation or

⁵⁵ Art. 2, Treaty Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, opened for signature, January 27, 1967, T.I.A.S. No. 6347.

⁵⁶ See, e.g., the treaties cited in footnotes 54 and 55 supra.

⁵⁷ For example, three leading earlier cases on territorial acquisition which relied heavily on the doctrine of occupation, namely Legal Status of Eastern Greenland Case, Clipperton Island Case, and Island of Palmas Case cited supra n. 53. These landmark cases should be contrasted with the two relatively recent decisions of the International Court of Justice in this area, in which reliance was upon historic title. See Minquiers and Ecrêhos Case, [1953] I.C.J. 47; Temple at Preah Vihear Case, [1962] I.C.J. 6.

historic title.⁵⁸ Built on this flimsy foundation, a regime of registration, and the priorities which should be at the same time its advantage and its sanctions of compliance, would merely produce additional issues and strains between competing claimants. So constructed, the regime would be in danger of offering either illusory or incomplete answers to the very real problems it should be designed to resolve. The inclusion of allocation rules and procedures in the blueprint would obviate dangers arising from reliance on general international rules for title determinations. It would also avert the possibility of disputes over priorities from arising.

In contradistinction with Our Nation and the Sea's international legal-political framework, the regimes proposed by Senator Pell⁵⁹ and the Commission to Study the Organization of Peace,⁶⁰ do not suffer from these serious flaws. They provide for allocations to be carried out by international authorities in the light of the guidelines which they foreshadow. It is respectfully submitted, however, that these proposals have one great drawback from the point of view of the discussion in this paper and the objects of the Commission's labors. They are projections which focus upon a more distant horizon than that towards which recommendations for a United States policy relevant to the events of this year and the immediate future should be directed.

It is possible, however, to view as practicable a blueprint which includes procedures for the allocation of Zones of Special Jurisdiction among States for exploration and exploitation purposes, and is feasible in terms of present-day international possibilities. This is a system which, instead of seeking to "banish the political," embraces the political element which would necessarily be inherent in any system of allocating Zones of Special Jurisdiction

⁵⁸ For an outline of historic title in international law, see C. DeVisscher, Theory and Reality in Public International Law 209 (revised transl. of 3rd ed. 1968); and Y. Blum, Historic Titles in International Law passim (1965).

⁵⁹ See Senate Resolution 33, 91st Cong. 1st Sess. art. 3 (1969) [hereinafter cited as "S. Res. 33"], and Senate Resolution 263, 90th Cong. 2d Sess. pt. 3, arts. 12-23 (1968) [hereinafter cited as "S. Res. 263"].

⁶⁰ Commission to Study the Organization of Peace, The United Nations and the Bed of the Sea 27-29 (19th Report 1969) [hereinafter cited as "19th Report"]; Commission to Study the Organization of Peace, New Dimensions for the United Nations: The Problems of the Next Decade 39-41, 158-62 (17th Report, 1966) [hereinafter cited as "17th Report"]. For an outline, and some sympathetic criticisms, of the 17th Report see Goldie, "Davy Jones's Locker," supra, n. 19, at 33-34, 37-38, and Goldie, "Geneva Conventions," n. 47, at 280.

over undersea mining. I have suggested that:

[T]he policy goals of secure titles, limited access to resources to ensure the prevention of over crowding and overcapitalization (with consequential increases in costs and prices), and the avoidance of "first come first served" tactics (with ensuing conflicts), may best be gained by drawing upon the provisions of the International Telecommunications Convention which establishes the Plenipotentiary and Administrative Conferences of the International Telecommunications Union (ITU). Clearly, distinctions are also relevant, if only in terms of differences in the nature of the resources to be allocated. In the present context one purpose of the proposed Convention would be to establish effective conference machinery for the allocation of areas - to be designated as "Zones of Special Jurisdiction" - in which states may exercise exclusive authority over explorations for and exploitations of the specific mineral resources for which the authority was originally sought. Secondly, the appropriate conference machinery should be able to provide effective demarcations between different uses. In this way, some areas, whose resources might otherwise subject them to conflicting multiple uses, or to over-use, would be preserved from becoming areas of intractable disputes. The premise here is that since new rights are to be created and their boundaries set, rather than existing ones interpreted, questions of allocation and demarcation call for the "legislative" creativity of a conference, rather than the "administrative" activity of a recording agency, which also has its appropriate function in the scheme proposed in this study.⁶¹

This system, which creates the framework for States to agree upon allocations amongst themselves in conferences especially called for the purpose, not only eliminates the need for the registry to rely on the evidence of titles derived from rules and doctrines outside the regime and from general international law, but also obviates the very possible dangers which could arise from "disputes at the window" under the Commission's proposals.

2. The Need for Full Faith and Credit

While it is true that a recording system's primary function is to give the world effective notice of the rights recorded and a means of ordering priorities, the fact of recordation merely provides a basis of cognition, but not

⁶¹ Goldie, "Davy Jones's Locker" 40-42 (footnotes omitted).

necessarily an obligation of recognition.⁶² It is also true that in domestic legal systems an act of recordation is conclusive, with certain very significant exceptions,⁶³ but its binding quality stems from the position it occupies in its domestic legal system and from the recognition it commands thereby from all parties. In a federal polity, furthermore, full faith and credit rules, together with strong policies of deferring to the lex situs of real property, eliminates what would otherwise be possible - constituent State A rejecting a title from constituent State B in order to further some policy of its own. Such a policy might relate, for example, to the boundaries, inter sese of States A and B.⁶⁴

Lacking an effective and universal equivalent of an international full faith and credit clause, nation States, in the last resort, consult their own policies in recognizing foreign dispositions of property or rights. Such policies include "that of fostering the element of stability and unity essential to an international order in which many aspects of life are not confined within the limits of any single jurisdiction"⁵⁹ - a policy of enlightened economic self-interest. On the other hand, a particular State's local values might well demand deference to a local policy which denies effectiveness to the call of such an internationally-oriented policy. Furthermore, the domestic law rules in which a generous policy of recognition may be embodied, are, from the international point of view, not the particular applications of an international rule of law, but merely the reflection of a propensity of domestic courts and of States - a propensity which might be limited by other claims upon the actor. The exclusive authority of States in this connection was felicitously summed up by Von Savigny in the following brief pair of propositions:

⁶² For an analysis of the distinction between cognition and recognition, the former being merely the cognisance of facts while the latter adds a value judgment thereto, see Brown, "Cognition and Recognition," 47 Am. J. Int'l L. 87 (1953), and Alexandrowicz, "The Quasi-Judicial Function in the Recognition of Status and Governments," 46 Am. J. Int'l L. 109 (1952).

⁶³ For some of those exceptions see Cross, "The Record 'Chain of Title' Hypocrisy," 57 Columbia L. Rev. 787 (1957).

⁶⁴ See, e.g., *Durfee v. Duke*, 375 U.S. 106 (1963). A different outcome would probably have resulted if Nebraska and Missouri had been sovereign states, cf., the conflicting Belgian and Netherlands domestic law situations which provided the Sovereignty over Certain Frontier Land Case, [1959] I.C.J. 209, with its essential issues.

⁶⁵ Von Mehren and Trautman, "Recognition of Foreign Adjudications: A Survey and a Suggested Approach," 81 Harv. L. Rev. 1601 (1968).

(1) Every State is entitled to demand that its own laws only shall be recognized within its bounds;

(2) No State can require the recognition of its laws beyond its bounds.⁶⁶

This Cyclopean⁶⁷ model provides merely a hypothetical starting point. Just as Polyphemus needed his brethren after Ulysses had put out his eye, so no State can operate effectively in "sovereign disregard of all [its] peers." On the other hand, nations' sovereign independence does provide the basis for selective refusals of recognition for strictly local reasons and in vindication of what well may be no better than strictly autochthonous values. For, unfortunately, human beings, and even States, can exhibit a propensity to mumpsimus just as they can to act in the light of enlightened self-interest. In addition, it is possible for States to see their self-interest as calling for the non-recognition of foreign laws, judgments and instruments - since recognition in certain circumstances could well be viewed as supporting an unwanted and burdensome status quo.

When the fragility of the recognition of foreign titles (as well as other foreign law dispositions, including judgments) in the international arena is faced squarely, then the need for the formulation of an international obligation of full faith and credit to replace reliance upon a propensity, or a compromise of the moment, or a possibly transitory sense of national interest, becomes clear.

One may ask how these generalizations about the possibilities of non-recognition could have a practical bearing on proposals of an international registry system. A brief answer is that, like this writer's proposal,⁶² the Commission's "political-legal framework" is a two-step affair. States register the claims they are espousing in the form of their own Zones of Special Jurisdiction⁶⁹ over the activities they are to control, and then will regulate, under their domestic laws, the exploration and exploitation activities they have

⁶⁶ Von Savigny, Private International Law 26 (Guthrie transl. 1869).

⁶⁷ Plato, in his Laws, described the Cyclops as follows:
Mootless are they, and lawless,
On mountains high they dwell in hollow caves,
Where each his own law deals to wife and child
In sovereign disregard of all his peers.

⁶⁸ See Goldie, "Davy Jones's Locker," supra, n. 19, at 45-46; Goldie, "Geneva Conventions," n. 47, at 281-82.

⁶⁹ To adapt the phraseology in the studies cited, supra, n. 62.

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espoused in order to register their own "claims."⁷⁰ When, in the plurality of jurisdictions constituting present-day international society, each State regulates titles taken from its own Zones of Special Jurisdiction, and each other State is entitled to regulate what its domestic law may recognize in the way of foreign titles, then, if the commodities taken from the deep ocean under the proposed regime are to pass into international commerce, transnational assurances that they can be traded under merchantable titles become essential. Otherwise the receiving States of these commodities might substitute their own policies regarding titles for those of the originating States, and no title could be regarded as safely merchantable once it had passed beyond the jurisdiction of its originating domestic legal system, except to the extent that the vagaries of local policies might assure its validity.

This can be seen to be so when it is remembered that a domestic law registry (or recording) system is not only about registration or recordation. Primarily it is defining and vindicating policies about notice, expectations, reliances and bona fide purchasers for value. Similarly, the registration provisions of the International Telecommunications Convention⁷¹ and the Radio Regulations⁷² are also about something more than registration - briefly, the international protection of registered radio frequencies from unjustified interference. On the other hand, the Commission's proposals for an International Registry Authority do not indicate the policies regarding titles that the system is intended to protect, or advance. If there is not to be an international policy equivalent to the domestic law policies just indicated (and I would agree that a writer could well be pressing his private hopes too far and jeopardizing the whole blueprint if he were to press for such policies for the present) which would be supreme over State policies, then there should be a clause vindicating the policies of States within whose jurisdictions titles originated - namely an international Full Faith and Credit Clause.

There is a further point which should be noted in addition to the omissions already discussed. The Commission's suggestions outlining the establishment of the International Registry Authority, and proposing the main rules of substantive law which it would be called upon to administer, did not take up the question of the feasibility (in this present age of computers), and possible desirability, of having regional registries coordinated by a master index or registry.⁷³

⁷⁰ The term in 3 Panel Reports VIII-36-38 which, when asserted by a State, would appear to be more or less homologous with the terms "Zones of Special Jurisdiction" in the text accompanying n. 36 supra.

⁷¹ Art. 13, International Telecommunications Convention, done at Montreux 12 November, 1965, T.I.A.S. No. 6267.

⁷² See, especially, arts. 9-11.

⁷³ Goldie, "Davy Jones's Locker," supra, n. 19, at 43.

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VII: THE COMMISSION'S DOMESTIC BLUEPRINT

1. The Commission's Proposals for Managing the Coastal Zone.

Our Nation and the Sea recommends the establishment of "a major new civilian agency, which might be called the National Oceanic and Atmospheric Agency" (NOAA).⁷⁴ This is timely, and should be enthusiastically welcomed. I am, however, disappointed by the limited scope of powers and purposes which the Commission recommends for NOAA. For, although the Commission designated the Agency as "major," its proposed regulatory powers seem very narrow, and its main intended functions would appear to be little more than educational, data collecting, predictive, and consultative. In addition, it might well become a midwife of oceanographic research conducted by other agencies and institutions. But that would appear to be about all.

In addition to proposing the NOAA, the Commission recommends the establishment of State Coastal Zone Authorities. These are to have primary responsibility for the management of the coastal zone. The Commission also recommends that:

Federal legislation be enacted to encourage and support the creation of State Coastal Zone Authorities to carry out specified national objectives with regard to the zone. The Authorities should have clear powers to plan and regulate land and water uses and to acquire and develop land in the coastal zone.⁷⁵

It further proposes that interstate estuaries or coastal waters "of concern to more than one state"⁷⁶ should be managed by interstate compacts, commissions or ad hoc arrangements such as committees.⁷⁷ The recommendation then continues:

The Commission believes that such interstate arrangements are preferable to coordination through river basin commissions in which the Federal Government is a member. Not having management or enforcement authority, such commissions can only plan and advise.⁷⁸

⁷⁴ Our Nation and the Sea 230-49.

⁷⁵ Id., 8, see also 57-62.

⁷⁶ Id., 60.

⁷⁷ Id.

⁷⁸ Id. One may, however, respectfully question the gloomy prediction about United States federalism this statement assumes. See notes 80-83 and the accompanying text infra.

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On the other hand, Our Nation and the Sea recognizes strong federal interests in the effective management of states' coastal waters:

First, a number of Federal agencies operate in the coastal waters and sometimes profoundly affect their use. As a contributor to the problem, the Federal Government has to share in the responsibility of coastal management. Second, the Federal Government must ensure that such vital Federal interests as navigation and military security are not endangered by State actions and that the general national interest in effective coastal planning is protected.⁷⁹

Thus the Commission envisages an active federal participation in terms of recommendations, coordination, funding and review - funding providing the sanctions.

2. A Constitutional Law Problem and a Constructive Comment.

Since a task of such recommendations as those offered by the Commission should include going beyond what traditional politics and law may allow, I would like to suggest that the hoary monster of dogma, the prohibition of delegations of state and federal powers inter sese, be grappled with and put to flight in order to permit, not only federal funding and guidelines, but also federal participation in the work, if not of the Coastal Zone Authorities, at least in the management of interstate estuaries. Indeed, Professor Grad has pointed out:

The analysis of the constitutionality of the Delaware River Basin Compact leads to some interesting speculations. We have already concluded that the United States can use a compact agency to carry out federal powers, such as, here, the federal power to regulate matters concerning a navigable river.⁸⁰

⁷⁹ Id.

⁸⁰ Grad, "Interstate Commerce and State Power - Revised Version," 63 Columbia L. Rev. 825, 850 (1963) [hereinafter cited as "Grad"].

It is of interest to note that §IV, "constitutionality," of this article (at 840-50), and upon which the conclusion just quoted rests, was "an adaptation of an opinion prepared for the Delaware River Basin Authority by Walter Gellhorn, Betts Professor of Law at Columbia University" and Professor Grad. That opinion was reproduced, S. Rep. No. 854, 87th Cong., 1st Sess. 36 (1961), and Hearings on H.J. Res. 225 Before the Subcommittee No. 1 of the House Committee on the Judiciary, 87th Cong., 1st Sess., ser. 2 at 26 (1961).

The United States is not the only federal polity where the kind of legal dogmatics which are reflected in the paragraph quoted from Our Nation and the Sea,⁸¹ and traversed by Professor Grad's contribution, plague constitutional development. In Canada, for example, a Supreme Court judge, reflecting orthodox opinion there, has said that to permit transfers of jurisdiction between the Confederation and the provinces would be "utterly foreign to the conception of a federal organization."⁸² Subsequently, however, the Supreme Court, while distinguishing (with some apparent difficulty) the Nova Scotia case, unanimously approved the delegation of national legislative power to a provincially constituted and controlled board.⁸³ In Australia, on the other hand, the federal Constitution provides for the referral to the Commonwealth (national) Parliament by states,⁸⁴ but it does not provide for a reciprocal flow of power.⁸⁵ Be that as it may, joint federal-state agencies have been established there for marketing stabilization schemes and the regulation of industry. Probably the two best examples are the Wheat Board and the Coal Industry Board (with its independent Coal Industry Tribunal). My submission is that the Commission should advocate strongly that old dogmas stemming from conceptions of the strict compartmentalization of federal polities should, if recognized as authoritative at all, be restricted in favor of doctrines of a cooperative federalism. Alternatively, a constitutional amendment could be proposed to provide, unlike placitum (xvii) of the Australian Constitution, for the two-way referral of legislative power

81 See, supra, text accompanying n. 78.

82 Per Rand J., Attorney-General of Nova Scotia v. Attorney General of Canada, [1951] S.C.R. 31, 48 [1950] D.L.R. 369, 385.

83 Prince Edward Island Potato Marketing Board v. Willis and Attorney General of Canada, [1952] 4 D.L.R. 146.

84 Aust'l Const. §51 (xvii), enacted by 63 and 64 Vict. c. 12 §9 (1900). That "placitum" (i.e., clause) provides that the Commonwealth Parliament may make laws...with respect to:

Matters referred to the Parliament of the Commonwealth by the Parliament or Parliaments of any State or States, but so as that the law shall extend only to States by whose Parliaments the matter is referred, or which afterwards adopt the law.

85 Note might be made, however, of the fact that Aust'l Const. §71 empowers the federal Parliament to invest state courts with federal "judicial power." §71 introduces "Chapter III - The Judicature."

to enable the establishment of joint federal-state agencies without hindrance by verbal constructions from the past.⁸⁶

In addition to the federal-interstate complex of agencies I have projected in place of the Commission's interstate authorities, I would like to volunteer greater powers and range of jurisdiction for NOAA. This should both orchestrate the local- and regional-level agencies and, in addition to the powers and purposes projected by the Commission, exercise sole administrative authority over all submarine mining enterprises (including mining for oil and gas) below low water mark. It should also be the domestic law regulatory agency to manage this country's Zone of Special Jurisdiction.⁸⁷ This authority should not, however, either conflict with the Department of State's jurisdiction over the aspects of activities in those zones which have international repercussions, nor with that Department's prerogatives regarding negotiations for such zones in the first place.

The whole complex of agencies should be coordinated in terms of a truly national concept in which private, state and national interests, claims, values and goals interact creatively and positively. This should be NOAA's primary task.

3. A New Blueprint.

Unfortunately the Commission's NOAA's jurisdiction does not include offshore mining. Hence it offers no alleviation of the chaos in which federations with valuable offshore resources find themselves as a result of litigation, or of the threat of it. After surveying the attempts by Australia, Canada and

⁸⁶ The following draft is respectfully suggested as a possible formulation of the type of amendment that the problem discussed in the text may call for:

AMENDMENT

The Congress shall have power to establish jointly with any State or States' Commissions to regulate the use of the resources and the environment of the United States.

This amendment might also be viewed as providing a source of authority for active local, state and federal cooperation in the development of the nation's human resources, and offer, if needed, a foundation for national welfare and training policies in addition to that now provided by the existing federal power inherent in the competence to make conditional grants of federal funds.

⁸⁷ For a discussion of Zones of Special Jurisdiction see Goldie, "Davy Jones's Locker," supra n. 19, at 40-41, 43-45.

the Federal Republic of Germany, as well as the United States, to achieve an equitable and a politically and economically effective distribution of jurisdictional competences over submarine mineral resources between the national authority of each and their constituent coastal state's authorities, this writer is convinced that none of those surveyed federal polities have succeeded in achieving an efficient, equitable and lasting solution. Some may seem to promote values of efficiency, and temporarily to conciliate possible causes of friction, but these may not be lasting; others involve a great deal of duplication and misdirection of effort; others again appear to ignore any balance between national and local interests. Rather than seek to make a distribution between a plurality of entities when there seems few, if any, objective bases for ascertaining any functional boundary lines demarcating the various areas of competence, or, alternatively, to allocate to the national government an exclusive competence over the exploration and exploitation of all the submarine resources below low water mark, in total disregard of any equities coastal states may have in terms of geographical, social, or historical facts, this writer proposes an alternative blueprint, both to the haphazard institutional arrangements which have developed so far, and to the framework which the Commission has put forward.

It should not only be feasible, but also provide an equitable solution to the present problems which vex federations in the distribution of competences over exploration and exploitation activities in submarine areas, to establish the NOAA by means of a federal-interstate compact to administer a multitude of purposes - including all forms of mining from the seabed and its subsoil.⁸⁸ The parties should be all the coastal states of the federation and the federal government. (The latter should be viewed as representing both the national interest and the interests of the non-coastal states. These should, furthermore, be treated as separate interests.)

The Compact should also be implemented by a Scheme of Legislation reciprocally enacted by all the coastal states and the federal government. In addition to the tasks and purposes listed in Our Nation and the Sea, the guidelines in the proposed legislation should include the oversight and coordination of the local and regional agencies; they should also require NOAA to ensure the maximum economic efficiency and the minimum depletion of the resources under its jurisdiction consistent with meeting effective demand in winning those resources and with the equal treatment of all states (including landlocked states) and parts of states in the distribution, use and enjoyment of those resources. Parochial and discriminatory practices should be prohibited.

⁸⁸ Since minerals held in suspension in seawater only fall within a coastal nation's jurisdiction if they are won in the territorial sea, jurisdictional rights over the exploitation of these could be recognized as vesting in the coastal states of a federal nation. This might, indeed, be recognized as, in part, a compensation to those states for their loss of possible or potential rights in the seabed and subsoil off their coasts.

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The Agency should, in addition to the powers which Our Nation and the Sea would give it, be invested with the exclusive competence of granting exploration and exploitation licenses with respect to all the mineral resources (including, for example, soil and gravel) of the seabed and subsoil of the nation's offshore regions out from the mean low water mark to the outer limits of the continental shelf as permitted, for the time being, under public international law. It should also be the administrative agency of the Zones of Special Jurisdiction which are, from time to time, allocated to the United States under the proposed international regime. Finally, it should have authority to collect revenues from exploration and exploitation licenses and from bonuses. These revenues should be expended upon the following objects in the following order of priority:

- (a) To defray NOAA's own administrative costs;
- (b) To establish scientific and industrial research laboratories and agencies to operate under NOAA's aegis to investigate new uses of existing resources, new alloys and other mixes of materials developed from seabed and subsoil materials, synthesize or refine new forms of petrochemical products and review the scientific and technological possibilities of bringing new materials and minerals won from the seabed and subsoil into economic consumption;
- (c) To enhance the national capability to use the marine environment and promote the availability of adequate cadres of educated and trained manpower;
- (d) To provide essential maritime services for those who use the sea, including navigation, mapping, charting, safety data, services of testing and standardizing instruments, and other geographical and navigational services;⁸⁹
- (e) To develop and maintain facilities of meteorological and environmental information and prediction for public, and, indeed, world use.
- (f) To make subventions to colleges and universities to support the teaching of courses and the carrying out of academic research activities into maritime affairs (including fisheries and navigation activities) - the fact that some of the projects carried out in universities under this head might possibly overlap with some of the work in (b) and (c) above should be no deterrent to NOAA in deciding to grant subventions for research in colleges

⁸⁹ Such as those listed in Our Nation and the Sea 231.

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and universities. Indeed, it should seek to establish means of exchanging ideas and communicating developments between its laboratories and academic institutions rather than follow a narrow and selfish policy of establishing exclusive scientific bailiwicks in the former;

- (g) To grant scholarships to students engaging in studying in the subject areas indicated in (f) above, and to make funds available to individual teachers and research workers to enable them the more effectively to carry out their projects and teaching interests in maritime matters;
- (h) A proportion of whatever remains should be paid into the consolidated revenue of the federal government; and
- (i) The residue should be paid off into the consolidated revenues of the coastal states.

The Agency should also have regulatory powers over all these topics, and over allied activities and purposes. In addition to NOAA, and parallel to, but independent of it, a court should be established to adjudicate disputes arising out of the administration of NOAA and its Common Scheme of Legislation. It should have jurisdiction over questions of constitutional interpretation arising out of controversies over the powers of the Agency, of the validity of its policies, decisions, grants of exploration and exploitation licenses and payments out of its revenues as proposed in the preceding paragraph. In this regard, all questions of equity, common law, admiralty and workmens' compensation which may be relevant to any questions arising out of issues before the court concerning offshore submarine rights should also be within its jurisdiction. Furthermore, in such federations as the United States and Australia, where the grant of "judicial power" over "cases or controversies" to federal "courts" is viewed as limiting the scope of those courts' competence to adjudicate, the combination of federal and state constitutional competences in the Compact and the Common Legislative Scheme should be viewed as enabling the proposed court to exercise the full range of its constitutional powers.

4. Accountability

This experiment in cooperative federalism should include an additional new element. In addition to being subject to review by a parallel but independent judicial tribunal, the Agency should also be accountable to a Council consisting of the representatives of the national and the coastal states' governments. Not only should the Council play an active part in supervising all NOAA's activities, and especially its budget, but also it should sit in committees, hold hearings and prescribe general policy. Furthermore, it, rather than the Agency, should promulgate regulations, standards and general guidelines.

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The Council should also take an active interest in the allocations of offshore mining rights, the protection of competing activities, the prevention (or at least mitigation) of the pollution of the maritime environment in all its forms, and the active managerial conciliation of the many interests focussing on the uses of the seas.

THE SEAWARD LIMIT OF THE CONTINENTAL SHELF

Roger Denorme
Counselor of the Belgian Mission to the United Nations

I.

Since I am the first speaker to have been connected with the work of the United Nations Sea-bed Committee, I hope you will allow me, before focusing on the continental shelf doctrine which is the subject of this panel discussion, to dwell a short moment on the theme of yesterday's debate: the regimes of the seabed.

In this Committee the view is largely held that even if the Conventions of 1958 were universally accepted as mandatory international law, they would still not offer a secure and adequate legal framework which would be satisfactory for the development and management of the mineral resources of the area beyond the 200-meter isobath.¹

Contrary to the tendency of coastal nations to extend their exclusive jurisdiction by claiming full sovereignty over the areas allotted to them, it is clearly the intention of the Geneva Convention not to equate the legal status of the continental shelf with that of the water column above.² By the same token, the regime applying to the ocean floor does not necessarily coincide with the legal framework established by the law of the sea for the superjacent high seas.

In other words, although there is no absolute legal vacuum, as far as the ocean floor beyond the limits of national jurisdiction is concerned, the existing rules of international law are either irrelevant to this area or, at least, very rudimentary and incomplete.

If, under these circumstances, a free-for-all were to develop, dangerous conflicts are bound to arise. This points to the need for institutional arrangements to insure rational exploitation and fair management of the seabed resources as well as to prevent competing interests from resulting in international disputes and armed conflicts.

The regime which will be set up will have to meet several requirements. Apart from the importance of being endowed with the necessary expertise and effectiveness, it will have to provide economic incentives for exploration and

¹ Report of the Legal Working Group, par. 18 and 34, in Report of the Ad Hoc Committee to Study the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction, UN Doc. A/7230, pp. 44-47.

² Convention on the Continental Shelf, Art. 3.

exploitation of the seabed resources, while assuring that humanity as a whole will benefit from their development, not only through an increase in the world inventory of mineral resources but also through some financial sharing in the benefits resulting from their exploitation.³

At its August, 1969, session, the Sea-bed Committee may be expected to engage in a study of the advantages and disadvantages various types of regimes would have to offer.

II.

Contrary to the question of the seabed regimes, the problem to which I now turn - the seaward limit of the continental shelf - is not dealt with in the UN Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction.⁴ The problem is, however, related with the UN inasmuch as the ILC is an organ of the UN, and the Conference of the Law of the Sea was organized and held under its auspices.

It will be recalled that the legal definition of the continental shelf which appears in the Convention adopted during the UN Conference on the Law of the Sea, held in Geneva from February 24 to April 27, 1958, contains three criteria:

- (1) the distance criterion - submarine areas "adjacent to the coast";
- (2) the depth criterion - 200 meters;
- (3) the exploitability criterion - "or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas."⁵

There exist two main schools of thought with respect to the interpretation of this definition.

One is that the so-called continental shelf, not being restricted to any numerical depth or distance from shore, encompasses the entire continental margin, i.e., the submerged continental land mass adjacent to the coast down to the junction of the submerged continent with the abyssal ocean floor.

³ Interim Report of the Economic and Technical Sub-Committee, Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction, UN Doc. A/AC.138/SC.2/6, par. 33, 39, 79, 85, 89 and passim.

⁴ Report of the Ad Hoc Committee, op.cit., p. 11, par. 49.

⁵ Convention on the Continental Shelf, Art. 1.

In other words, this interpretation places emphasis on geological continuity, irrespective of depth or distance from shore, claiming to be a "reasonable" interpretation of the adjacency criterion, supported by the language of the Truman Proclamation of 1945 which is at the origin of the continental shelf doctrine, by the history of the Convention's drafting, and by the opinion given by the ICJ in the beginning of the year in the North Sea Continental Shelf Cases.

Once this wide interpretation which we will call the "continental margin" theory is admitted, there seems to be reason neither for amending the Convention nor for giving away any legitimate claims a country has under it.

The other school of thought favors a narrow shelf though recognizing that, as defined by the Convention, the question of where the outer limit of the continental shelf occurs and, consequently, where the sovereign rights of the coastal States for the purposes of exploring it and exploiting its natural resources cease to apply, remains open.

It points to the fact that only one criterion is precise: the 200-meter depth; whereas, of the two other criteria, one is ill-defined - the adjacency is not expressed in any concrete distance measurement - and the other would seem to infer the gradual extension unto mid-ocean of the continental shelf as a result of advancing technology. It shows, in the light of the drafting history of the Convention, the compromise character of this text and its inadequacy.

III.

Since both tendencies invoke the drafting history of the Convention, it might be appropriate to recall the highlights of it. In a first draft prepared in 1951, the continental shelf was only delimited by the distance criterion ("submarine areas contiguous" to the coast) and the exploitability criterion ("where the depth of the superjacent waters admits of the exploitation of the natural resources").

In 1953, the Commission abandoned the criterion of exploitability in favor of that of a 200-meter depth, feeling that the text previously adopted "lacked the necessary precision and might give rise to disputes and uncertainty." In case future technical progress would make exploitation possible at a depth greater than 200 meters, the limit would have to be revised, but "meanwhile there was every advantage in having a stable limit."

In 1956, the Commission again reversed its stand under the influence of the Ciudad Trujillo resolution. An Inter-American Conference was held in March, 1956, at Ciudad Trujillo, and it submitted for consideration by the American States the conclusion that:

...the sea-bed and subsoil of the continental shelf, continental and insular terrace, or other submarine areas, adjacent to the coastal State, outside the area of the territorial sea, and to a depth of 200 meters or, beyond that

limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the sea-bed and subsoil, appertain exclusively to that State and are subject to its jurisdiction and control."⁶

In order to take this resolution into account, the Chairman of the ILC, who represented Cuba, introduced amendments to the definition which amounted essentially to substitute the expression "submarine areas" for "continental shelf" and add after the "depth of 200 meters" criterion the alternative "or beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas."

By a vote of seven to five, with three abstentions, the addition of the exploitability alternative was adopted. But it was added to the text of Article 1 without substituting the term "submarine areas" for the term "continental shelf" by nine votes to three, with three abstentions. The Chairman and the British representative explained that an inconsistency had thus been embodied in the Convention.⁷

IV.

Before commenting on the drafting history of the Convention, it should be recalled that President Truman, in his Proclamation of September 28, 1945, which is the source of the doctrine, listed four reasons why it is "reasonable and just" that the natural resources of the subsoil and the seabed of the continental shelf contiguous to the coasts of the U.S. be regarded as subject to its jurisdiction and control:

- (1) the effectiveness of measures to utilize or conserve these resources would be contingent upon cooperation and protection from the shore;
- (2) the continental shelf may be regarded as an extension of the land mass of the coastal nation and thus naturally appertains to it;
- (3) these resources frequently form a seaward extension of a pool or deposit lying within the territory;

⁶ Yearbook of the International Law Commission, 1956, Vol. II, Documents of the Eighth Session including the Report of the Commission to the General Assembly (New York: United Nations, 1957), p. 252.

⁷ Yearbook of the International Law Commission, 1956, Vol. I, Summary Records of the Eighth Session (New York: United Nations, 1957), pp. 130-41.

- (4) self-protection compels the coastal nation to keep close watch over activities off its shores which are of the nature necessary for the utilization of these resources.

The first consideration has become less relevant over the years due to technological progress, whereas the security aspects are now taken care of in another context, both superpowers having recently introduced draft treaties on military activities in this area.

The second and third reasons mentioned in the Truman Proclamation clearly constitute the rationale of the doctrine. Now, the term "continental shelf" was obviously used in its geophysical connotation;⁸ if it were interpreted as referring to the whole continental margin and, therefore, encompassing part of the continental rise, one can hardly see how the third reason would apply.

Again, the ICJ has recently indicated that the concept of the continental shelf as being the natural prolongation of the land domain was more fundamental than the somewhat fluid notion of proximity.⁹ This cannot be construed however as a legitimization of the "continental margin" theory, especially because of two facts that ought to be stressed:

- (1) that the waters of the North Sea are shallow, the whole North Sea bed - except for the Norwegian Trough¹⁰ - consisting of continental shelf at a depth of less than 200 meters,
- (2) the the problem with which the Court was confronted was a delimitation of boundaries between the continental

⁸ Louis Henkin, Law for the Sea's Mineral Resources (Institute for the Study of Science in Human Affairs, Monograph No. 1 [New York: Columbia University Press, 1968]), p. 19, n. 53, and p. 23.

⁹ Judgment in the North Sea Continental Shelf Cases, Federal Republic of Germany/Denmark; Federal Republic of Germany/Netherlands, p. 56, par. 95: "The continental shelf is, by definition, an area physically extending the territory of most coastal States into a species of platform."

¹⁰ The International Court of Justice did not attempt to pronounce on the status of the Norwegian Trough but noted that "the shelf areas in the North Sea separated from the Norwegian coast by the 80-100 kilometers of the Trough cannot in any physical sense be said to be adjacent to it, nor to be its natural prolongation. They are nevertheless considered by the States parties to the relevant delimitations to appertain to Norway up to the median lines." (Judgment in the North Sea Continental Shelf Cases, p. 36, par. 45.)

shelves of adjacent States, not of the boundary seaward of the shelf of a State.

V.

Having recognized that the concept of the continental shelf as a prolongation of the territory of the coastal nation is fundamental, I would hope, in return, that it is understood that the geophysical connotation of the term "continental shelf" cannot be ignored when it comes to the interpretation of the legal term.

An extensive interpretation of the definition cannot be reconciled with the statement that the Commission was "adopting, to a certain extent" the geographical test for the "continental shelf" as the basis of the juridical definition of the term. To clarify this point, the Commission stressed that the depth of 200 meters coincided with that "at which the continental shelf in the geological sense generally comes to an end and the continental slope begins."¹¹

It should also be recalled that the Commission rejected the term "submarine areas" which would have broadened the scope of the Convention (in spite of the fact that its Chairman circulated a list of geological definitions). The Commission noted in its report that "the majority of the Commission decided to retain the term 'continental shelf' because...the term 'submarine areas' used without further explanation would not give a sufficient indication of the nature of the areas in question."¹²

It was also mentioned that the exploitation of the subsoil of the high seas by a coastal State by means of tunnels, cuttings or wells dug from terra firma is "not subject to any legal limitation by reference to the depth of the superjacent waters."¹³ It might be argued, a contrario, that exploitation of the subsoil by other means is subject to limitation by reference to such depth.

Therefore, one has to acknowledge that the famous exploitability test, on which all extensive interpretations of the definition are necessarily based, is linked in the Convention with the depth criterion.

Looking at some interpretations of the Convention's definition, one has to ask oneself what is the point of mentioning a 200-meter depth limit at all if States are to have sovereign rights of exploitation to any depth at which such exploitation is possible. One can hardly see the logic of such a position, unless the exploitability alternative was not intended to be of any major significance. It is quite clear that the rapid progress of offshore drilling had

¹¹ ILC Yearbook, Vol. II, op.cit., pp. 296-97.

¹² Id.

¹³ Id.

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not been foreseen. The U.S. representative in the ILC, for example, almost discarded the question of extension beyond the 200-meter limit as not "of great momentum, since exploitation beyond that limit was improbable in the foreseeable future."¹⁴ Even the 200-meter limit made considerable allowance for future technological developments.

But it appears to have been the view of at least some members of the Commission that the alternative would not make a considerable difference. When the question of terminology was raised in the ILC, the Chairman pointed out that the already-adopted addition on "exploitability" referred to areas beyond the continental shelf, whereupon the Soviet representative said that on the principle "maxima pars pro toto" the term "continental shelf" could appropriately cover these areas.

Now, if one accepts the theory that the continental shelf encompasses, in fact, the entire continental margin, this would mean that its scope is broadened four times. Indeed, the continental shelf stricto sensu, i.e., to a depth of 100 fathoms, is equivalent in area to approximately one-quarter of the area of the so-called submerged continental land mass.

Replacing the term "continental shelf" by "continental margin," or interpreting it as if it were to include all of the submerged continental land mass would hardly be consistent with the "maxima pars pro toto" idea.

The exploitability test is not only combined as an alternative with a numerical depth limit, it is also restricted by the adjacency criterion. For the addition of the exploitability alternative, the Cuban Chairman enjoyed the support of his three Latin American and of his U.S. colleagues, as well as of the representative of the United Kingdom, who saw no reason why a State's activity should be confined to the continental shelf, provided the areas to be exploited were "within reasonable proximity to the coastal State."¹⁵

The addition of the exploitability provision was also voted upon favorably by the representative of China, although he "had some doubts" about it and would have preferred (without pressing his proposal) that a "coastal State may enjoy exclusive rights of exploration and exploitation of the natural resources of the seabed and subsoil of the contiguous high seas to a distance of, say, 24 miles."

But, most important of all, the Cuban Chairman himself, who was the author of the amendments, pointed out explicitly "that the words 'adjacent to

¹⁴ ILC Yearbook, Vol. I, op.cit., p. 138.

¹⁵ Id., p. 135.

the coastal State' in his proposal placed a very clear limitation on the submarine areas covered by the article." The adjacent area," he added, "ended at the point where the slope down to the ocean bed began, which was not more than 25 miles from the coast."

VI.

On the other hand, adjacency is no geological concept. One cannot read in the records any indication that geology was a major factor in defining the area. Quite to the contrary, the Commission took great pains in emphasizing¹⁶ that the sense in which the term "continental shelf" was used departed "to some extent" from the geological concept of the term, and, even, that the varied use of the term by scientists was "in itself an obstacle to the adoption of the geological concept as a basis for legal regulation of this problem."

These quotations from the Report of the ILC covering its Eighth Session, i.e., when the Cuban amendment was adopted, make it difficult to invoke geology for the interpretation of the adjacency criterion.

In introducing his amendments, Dr. Garcia-Amador also insisted on Paragraph 66 of the IOC Report covering its Fifth Session: the Cuban Chairman explained that his proposal involved in reality "not the introduction of a new principle, but a mere change in presentation of ideas," since the Commission had, earlier already, like the Ciudad Trujillo Conference, recognized the "criterion of equality." "The Commission was aware that the concept of the continental shelf had been criticized because there were several States, such as the countries on the Pacific coast of Latin America and the Dominican Republic, off whose coasts there was no continental shelf, which exploited other adjacent submarine areas....To a certain extent the element of arbitrariness in the provisions had been mitigated in Paragraph 66 which recognized the principle of equality, to which effect was given in the Ciudad Trujillo resolution, for it envisaged the possibility of reasonable modifications of the 200-meter figure. His proposal amounted to explicit recognition of that principle in the text of the article."¹⁷ It was, in his words, "a matter of elementary justice."

Also, the Brazilian representative emphasized this point: "Jurists from the American continent appreciated the problems of those countries which had no continental shelf, and he felt that the Commission could not prevent such countries exploiting the natural resources of the seabed at a greater depth than 200 meters if exploitation were possible."

It would be ironic, indeed, to use this Latin American concern for "equality" in order to justify a geological interpretation of the "adjacency"

¹⁶ ILC Yearbook, Vol. II, op.cit., p. 297.

¹⁷ ILC Yearbook, Vol. I, op.cit., p. 131.

criterion which would in effect only increase the discrimination against States which have no shelf, their coasts dropping steeply to great depths.

VII.

At this point, it might be useful to look into the position taken by the supporters of the "continental margin."

The National Petroleum Council Report stresses that the base of the continental slope is "the reflection of a far more fundamental feature than is the edge of the geological continental shelf."¹⁸ To recognize it, however, is already to accept the fundamental difference between these two features. Now, the first has been envisaged in the Convention (although there was admittedly some departure from the strictly geophysical meaning of the term), whereas the second was not. Just to say that "the outer edge of the continent is a far more logical choice than the outer edge of the geological continental shelf as the limit of coastal nation exclusive jurisdiction" - as does the NPC Report - may be a criticism addressed to the drafters of the Convention; it cannot be an interpretation. Indeed, the language they adopted - even if fuzzy - points exactly to the contrary.

Although supporting the "continental margin" theory, Dr. Hollis D. Hedberg, in a recent article, recognized that "distinctive as is the base of the slope, yet it is far from being a sharp enough feature to serve as a political or economic boundary line. Moreover, in some parts of the world, there is no well-developed slope, and some nations have no slope at all adjacent to their coast lines."¹⁹ He added: "In my personal opinion, neither a technological definition, nor a fixed water depth, nor a fixed distance from shore, nor a geomorphologic boundary, will ever in itself provide a satisfactorily precise boundary for coastal State jurisdiction."

Finally, drawing some guidelines which might be used for a precise definition of the boundary, he suggested i.a. that it be "drawn on straight lines connecting geographic coordinates of latitude and longitude, lying somewhere within a zone between the base of the slope and, say, 200 meters oceanward from the base of the slope."

Also, the NPC Report emphasizes that the base of the slope cannot be defined sharply enough to serve as a boundary and that, moreover, where continental rises are developed, adjacent to the continental slope, the sediments of

¹⁸ Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, 1969), p. 66 and passim.

¹⁹ Hollis D. Hedberg, "Some Matters of Concern to the Petroleum Industry with Respect to Public Policy on Mineral Resources of the World Ocean," Mineral Resources of the World Ocean, ed. E. Keiffer, Occasional Publication No. 4 (Kingston: Graduate School of Oceanography, University of Rhode Island, 1969), p. 91.

these rises will overlap the lower part of the slope so that the true boundary must be drawn to include also the landward portion of the rise. It would, therefore, be my conclusion that no natural boundary is possible in this respect. The "continental margin" theory claims to provide a logical and reasonable answer to the question where the seaward limit of the continental shelf should be drawn; in the final analysis, the suggested methods are nonetheless arbitrary.

VIII.

There is no doubt that the development of technological know-how might give rise to an extensive interpretation of the definition, eventually dividing the ocean floors between the coastal States of the world.²⁰ It is obvious that such theory although legally sustainable would be politically unacceptable to many coastal States and, therefore, not realistic. It would also be contrary to the general principles which govern the law of the sea. Indeed, the regime of the high seas is based on the principle of free use by all nations.

It has first been recognized that the sovereignty of a State extends to a belt of sea adjacent to its coast: this so-called "territorial sea" is clearly a restriction of the domain of the high seas and an exception on the general rule that these are open to all nations.²¹

The continental shelf doctrine is yet another encroachment on the general rule,²² which became important only when the mineral resources offshore became exploitable. To accept the exploitability test for limiting the shelf would be tantamount to a rejection of any limitation. As Professor Henkin puts

²⁰ Shigeru Oda, International Control of Sea Resources (Leyden: A. W. Sythoff, 1963), p. 167: "...all submarine areas of the world have been theoretically divided among the coastal States by this Geneva Convention."

²¹ In "Whose is the Bed of the Sea?", British Yearbook of International Law, Vol. IV, 1923-4, Sir Cecil J. B. Hurst stated that "the ownership of the bed of the sea within the three-mile limit is the survival of more extensive claims to the ownership of and sovereignty over the bed of the sea." (p. 43) "The rights and prerogatives of the Crown date from the earliest periods of national history. The three-mile limit as the measure of the marginal jurisdiction of the Crown is of quite modern growth. It has developed out of Bynkershoek's rule that terrae potestas finitur ubi finitur armorum vis, and Bynkershoek's De Dominio Maris, in which the rule was enunciated, was only published in 1702." (page 36).

²² Judgment in the North Sea Continental Shelf Cases, p. 57, par. 96: "The doctrine of the continental shelf is a recent instance of encroachment on maritime expanses which, during the greater part of history, appertained to no one. The contiguous zone and the continental shelf are in this respect concepts of the same kind."

it, "if indeed the seas now 'admit of exploitation' everywhere, the 1958 definition has ceased to be a 'definition' because technology has removed the outer limit."²³

Even the NPC admits that the exploitability test is no longer a valid limitation of the continental shelf: "As seems apparent, in light of technological advances to date, there will be an eventual capability to exploit any submarine area. Thus the test of adjacency alone determines the ultimate limit of national jurisdiction of coastal nations...."²⁴ Adjacency is, however, interpreted in terms of geological continuity in an effort to carry national jurisdiction seaward to encompass the entire continental margin, one more illustration of the trend, which has been noted by Craven,²⁵ "leading to an extension of the rights of coastal States seaward with increasingly restrictive rights in the ever-widening territorial sea."

The interpretation of the exploitability test is in itself a controversial one. Is it selective with respect to particular minerals or does the exploitation of one mineral extend ipso facto the rights over all others? Does it imply technical capacity alone or economic feasibility as well? Does it depend on the technical ability of a particular coastal nation or on the "state of the art"?

Northcutt Ely, for example, put the question: "If exploitation proves possible off State A at a depth exceeding 200 meters, does this extend the jurisdiction of all coastal States around the world, somewhat like lowering the water in a bathtub? This scarcely seems a result to be deliberately sought."²⁶ He added, "Personally, I like the suggestion of Drs. Christy and Brooks that Article 1 be amended to define the boundary of the continental shelf at the isobath of 200 meters or a stated lateral distance, measured in miles from the base line from which territorial waters are measured, whichever of the two

²³ Law for the Sea's Mineral Resources, op.cit., p. 21.

²⁴ Petroleum Resources Under the Ocean Floor, op.cit., p. 57.

²⁵ In "Technology and the Law of the Sea," John Craven has noted that "the trend of international agreement and unilateral legislation leads to an extension of the rights of coastal States seaward with increasingly restrictive rights in the ever-widening territorial sea." (The Ohio State University Mer-shon-Carnegie Endowment Conference on Law, Organization and Security in the Use of the Ocean, March 17-18, 1967).

²⁶ Northcutt Ely, "The Administration of Mineral Resources Underlying the High Seas," paper given at the American Bar Association National Institute on Marine Resources, Long Beach, California, June 8, 1967.

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measurements gives the coastal State the greater submarine area."²⁷ This sounds like a logical conclusion.

IX.

Summarizing my remarks, I wish to make the following points:

- (1) The definition of the continental shelf as couched in the Convention not only lacks precision, but it is clearly open-ended, providing no seaward boundary. The criterion of exploitability has been overtaken by unforeseen technological progress.
- (2) In order to avoid chaos in this field a revision of the present definition is necessary. It is urgent to proceed to such a delimitation. This is very much in line with the position of the U.S. and of Western countries in the Sea-bed Committee, who have drafted a principle to the effect that "taking into account relevant dispositions of international law there should be agreed a precise boundary for this area."
- (3) The "adjacency" criterion mentioned could usefully serve as a basis for determining a seaward limit of the shelf which would be fair - even to countries whose coasts drop steeply to great depths - and precise - so long as this limit included a measurement of lateral distance as an alternative to the depth criterion explicitly mentioned in the Convention.
- (4) The merit of the Marine Science Commission Report is that it put forward such a proposal coupled with a compromise formula (the intermediate zone) which should make the narrow definition of the shelf politically acceptable.²⁸

²⁷ It appears that Northcutt Ely has since reversed his position. At the May 18-21, 1969, Offshore Technology Conference in Houston, Texas, he declared "we should resist, not encourage, the revision of the Convention on the Continental Shelf."

²⁸ Marine Resources and Legal-Political Arrangements for Their Development (Washington: U.S. Government Printing Office, 1969), p. VIII-34.

REMARKS

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It is good to be with old friends and meet new ones. I never dreamed that being a member of the Marine Sciences Commission would be such a hazardous enterprise. I feel like this truck driver I shall tell you about. This is also my favorite generation gap story. A truck driver stopped at a road cafe; he was tired and hungry. He came in, ordered some food. As he was about to eat, two young motorcyclists came in, dressed in traditional Hell's Angels costume. One of them seized the plate on which his meat and potatoes were set, another grabbed his cup of coffee and his pie, and both proceeded vigorously to consume his food. The truck driver got up meekly, went to the cashier and said, "How much." He was told, paid the full bill and left. One of the motorcyclists turned to the waitress and said, "He wasn't much of a man was he," and she said, "No, he wasn't." Just then she looked out of the window and added: "I don't think he is much of a truck driver either; he just ran over two motorcycles."

I am tempted to run over some motorcycles, but I am going to resist the temptation because I don't think that is our purpose here this afternoon. I shall try to meet some of the criticisms which have been directed at the basic recommendations we made. The Chairman has given me only twenty minutes and I intend to abide by that time limit.

I was impressed by the presentations of the visitors from Great Britain and Belgium. I refuse to believe that Roger Denorme is not a lawyer. And I am pleased to learn that English lawyers are in as much disagreement as we are about basic issues. And they are all coastal State lawyers too.

I was also impressed by the fact that the Commission's recommendations have been attacked from completely opposite directions. Professor Henkin, you will recall, thought our intermediate zone was too wide. And, of course, Dr. Hedberg and Mr. Brown and some others criticized the idea of an intermediate zone because they would include it in the continental shelf. Some of the commentators in the last two days thought our recommendations were too nationalistic; others that they were too internationalistic. This does not necessarily mean that we have struck a happy middle; our recommendations may be undesirable from every point of view. But, of course, I do not really think so. I should hasten to add, also, that the Commission was not seeking a compromise for the sake of compromise. So I would like to indicate for a moment by what process of thought we arrived at the recommendations which are now attacked from opposite sides.

We thought the development of the mineral resources of the seabed was at too early a stage to make it sensible for the nations of the world to agree

upon a framework for their exploration and exploitation which would have even the air of permanency. We tried to recommend a framework which would enable the community of nations to take the next necessary step toward the development of the ocean's mineral resources and yet which would be sufficiently flexible so that it could be modified in the light of experience without too much difficulty. At the same time, we wanted a framework that would get State entrepreneurs and private entrepreneurs into the oceans and give them the minimum security and incentive which they must have in order to undertake the necessary tasks. These aims account for the accommodations that we made between more nationalistic and more internationalistic views.

I will have time to deal only with some of the basic criticisms which have been made of our recommendations. First, to the very appealing common sense analogy which Dr. Gaskell drew, you may recall, concerning the Cliffs of Dover, i.e., that nobody would fix the limits of the territory of Great Britain on the top of the Cliffs but would extend them to the base. This analogy epitomizes all the arguments we have heard in the last two days about the great influence which geological factors should play in determining the legal limits of the continental shelf. I think that Mr. Denorme adequately answered that particular argument and we have also heard from others that if anything is clear it is that geological concepts did not dominate the discussions in 1958 nor should they now. No geological concept forces a conclusion that particular mineral resources of the oceans ought to belong to the coastal State.

Certainly Dr. Gaskell would not insist that we should follow land analogies in every respect. For example, nobody would argue that because a nation owns the waters superjacent to its land territory and the air above, the same principle ought to follow at sea. We have long since abandoned the notion that there are "natural" boundaries on land. Are we now going to revive that notion for the sea? The continent of the United States is one single land mass yet in our history it was occupied by a number of foreign powers at one time. From the fact that geologically the continent of the United States is one it does not follow that Britain, France, Spain, Russia, or a new nation called the United States, should extend its territory over that whole continent. And it is precisely because sovereignty over land is acquired either by prior occupation or by conquest that we wish to avoid this method of acquiring sovereignty or sovereign rights in the oceans. If we were satisfied with applying the method of acquiring sovereignty on land to the oceans, none of us would be here, nor would the United Nations be so concerned with the problem. In other words, given the geology, and I have no intention of disputing Dr. Hedberg's or Dr. Emery's geology (I am not competent to do so and I have complete faith in their competence), all I can say as a lawyer and as a politician - which are the viewpoints from which we must regard these problems - is that the geological considerations will not and should not be determinative.

I should add that I agree completely with Mr. Denorme's analysis of the legislative history of the Convention on the Continental Shelf. The

Commission had an independent study made of the legislative history of that Convention. It was done by the then Lt. Bernard Oxman (who is now an Assistant Legal Advisor in the State Department) but the Commission did not have sufficient funds to publish it as an Appendix to our Report. I am sorry about that. It is, however, available through the Federal Clearinghouse Technical Service and is worth reading. Its conclusions are remarkably similar to that Mr. Denorme reached, to those which I reached on the basis of my own study of the legislative history, and to those which Professor Henkin reached in his study. I think it is reasonable to conclude, modestly, that the minimum these studies show is that it cannot be said with any certainty that the Convention on the Continental Shelf - as presently drawn - makes appropriate the interpretation that the National Petroleum Council puts upon it.

I also agree completely with Mr. Denorme's emphasis on one aspect of the recent ICJ decision in the North Sea matter. It is elemental, I should think, that no court decision should be read without fixing constantly on the issues which the court was called upon to decide. And Mr. Denorme very eloquently, very aptly and very correctly - in my opinion - called attention to the fact that the ICJ was concentrating on the question of how an admitted geological continental shelf, all under less than 200 meters of water, should be divided among the adjacent coastal States. The language of the ICJ about natural prolongation therefore cannot reasonably be read as expressing its opinion about how far seaward a coastal State's sovereign rights extend. Furthermore, if you read the context in which the words "natural prolongation" appear, you will see that the ICJ had in mind the concept of a continental platform. The word prolongation itself implies a sense of flatness, and cannot reasonably be said to have been used with the intention of including the continental slope in the continental shelf.

I want to pass to another important and most troublesome criticism. This is the criticism that I believe Professor Sohn voiced this morning, and which Mr. Miron articulated so well yesterday afternoon. That is that the first come-first registered principle for registration of claims beyond the re-defined continental shelf is not workable or desirable. We stated in our Report the criteria that the International Registry Authority should follow in deciding among conflicting claimants, if conflicting claimants should appear. In the Report of the Commission's International Panel, we made a number of alternative suggestions as to how this might be done. Anybody who has tried to formulate proposals to handle this problem knows it is very easy to criticize every alternative that can be imagined. But as practical men, we should evaluate the merits and the shortcomings of one alternative as compared with the merits and shortcomings of all other alternatives, and then choose the best one. We do not expect simultaneous claims covering the same areas to be made for some time to come because the technical and cost problems are serious and a rush into the oceans will not be forthcoming. In any case, the International Registry Authority would require that the exploration process result in a discovery within a fixed period of time, so that exploration claims would not be registered

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merely for the purpose of sitting on them and preempting some area of the seabed for the use of a particular nation. Once an exploration permit is granted we also provided that exploitation must follow in accordance with the work schedule. These are not original suggestions; this is the way concessions for the exploitation of mineral resources generally work all over the world. Under our recommendations, too, exploitation would have to proceed according to a schedule which would assure actual production. But it is possible that this system will fail if there are many conflicting claims. We will then have to think of a better allocation mechanism.

DISCUSSION

Young: Before opening the floor to questions, I will first recognize Mr. Luke Finlay on a point of order.

Finlay: Dr. García-Amador, as everyone who knows him is aware, is a highly distinguished international lawyer. He was the Chairman of the Eighth Session of the ILC at which the Geneva Convention was drafted and was one of the principal architects of that Convention. I think he was treated in a rather cavalier manner this morning and I would like, if I may, to set the record straight. In the letter that he wrote me he did not content himself with saying that the statement about a 25-mile distance that was attributed to him in the ILC Report was inaccurate.* He went on to say that the important statement of his was the one which he made at the time that the exploitability clause was put before the International Law Commission for consideration, and that statement is reported in the ILC Yearbook, 1956, Volume 1, p. 136, and I would like to read it: "He did not wish to press the part of his amendment introducing the concept of the continental terrace, since the adoption of the second point relating to the depth at which exploitation was practical would automatically bring that area within the general concept. He would, however, request the Commission to take a decision on the right of States to exploit the natural resources of the seabed in adjacent waters to whatever depth was practicable. With that addition, the article could be referred to the Drafting Committee." He further states in his letter, "It seems that it was with this unrestrictive, flexible criteria, most favorable to the coastal state's special interest in the exploitation of the resources of its adjacent submarine areas, that both the ILC and later the first Geneva Conference on the Law of the Sea approved the definition that appears in Article 1 of the Continental Shelf Convention of 1958." He has written in his textbook (The Exploitation and Conservation of the Resources of the Sea, 2nd ed. [1959], at pp. 108, 130), that he is in harmony with that thinking and not with the 25-mile thinking. Actually, while you would not have known it from what Professor Henkin said this morning, he recognized in his own paper that the 25-mile statement was of no real significance. He mentions it in a footnote but in the text of his paper he says, "Even under the guidelines, moreover, it would be difficult to argue the illegality of leases in waters of any depth if they are still 'adjacent' to the coast, and for this purpose adjacent waters may include those 25, 50, 100, or even more miles from shore." (Law for the Sea's Mineral Resources, pp. 26-27, n. 72)

I would like also to add that both Mr. Denorme and the Commission are inaccurate in their statement that the United States requested a revision of the Continental Shelf Convention in the United Nations Proceedings. The actual request, and I am quoting from the statement of principles, was this: "Taking into account the Geneva Convention of 1958 on the Continental Shelf, there shall be established, as soon as practicable, an internationally agreed precise boundary for the deep ocean floor - the sea-bed and subsoil beyond that over which

* EDITOR'S NOTE: For the text of this letter see p.170.

coastal States may exercise sovereign rights for the purpose of exploration and exploitation of its natural resources."

Griffin: I would like to ask Professor Goldie or Mr. Denorme or Professor Auerbach, or for that matter Mr. Brown or Mr. Brownlie, since they have all made extensive studies into the legislative history of the Convention, their opinions on whether adjacency is a function of horizontal distance from shore, or depth, or both.

Denorme: I would like to make a few comments on this question and also on the statement just made by Mr. Finlay. I did not say at all that a revision of the Continental Shelf Convention was asked for by the United States or by anybody else. I stated as my view that in order to avoid chaos in this field a revision of the present definition was necessary. I added that this had been very much in keeping with the position of Western countries - and, in particular, of the United States - who drafted a principle, to the effect that, "Taking into account relevant dispositions of international law, there should be agreed a precise boundary of this area." I concur completely with what has been said by Mr. Finlay on this point. I also concur with the statements he read out of Mr. Garcia-Amador, which I know. This does not take away that there was also another statement in the record and I think all statements have the same importance.

As far as the interpretation of adjacency is concerned, I must say that in the same meeting where the question was discussed at the Eighth Session of the International Law Commission and where Dr. Garcia-Amador expressed himself, the idea of a distance criterion for the adjacency was considered. At that time, however, the representative of the Netherlands who was the special rapporteur of the Commission, said that by including in the definition the concept of adjacency it could not be the intention to establish a horizontal instead of a vertical limit for the submarine areas. So there exists a doubt in this respect: I wanted to refer to it, in all fairness, since it is very much against what I consider to be a correct interpretation of adjacency, i.e., in my view, a horizontal distance criterion.

Goldie: Briefly to respond to the adjacency point, I think it is clear that as the International Court of Justice interpreted it last March, adjacency may be viewed as continuous lateral prolongation, no matter what the distance may be of the shelf. There are problems, of course, relating to offshore banks beyond the 200-meter line depth; such problems, for example, as the Cortez Bank off the coast of California and other, similar, problems created by the Norwegian trench. My own recollection, speaking from memory, is that there was an intention to add to the idea of lateral continuity some general rough approximation of contiguity, of slight separation but general continuity. Admittedly, the International Court of Justice does talk about the issue of adjacency of fifty miles and so on as being not adjacent but this - to echo Professor Auerbach's earlier statement - must be taken in the light of the issues of the North Sea

Cases, and the question of a demarcation of boundaries on a common and fairly level shallow submarine plateau. I hope I have answered your question. My own view is that I am struggling with the feeling that adjacency really does not seem to me to add very much to the other criteria as I have stated in public print, namely in my "Davy Jones's Locker" article. For example, Canada - even the distant parts of Canada - is all adjacent to the United States, and yet some parts of Canada are a long, long way away.

Herrington: During the past two days I have heard many references to the origin of the term exploitability, as used in the Continental Shelf Convention. I was a U.S. delegate at the conference in Ciudad Trujillo, where to the best of my knowledge this term originated. Now, Mr. Chairman, you have mentioned that some times things happen between the lines and what happened between the lines might be of some interest.

When the conference at Ciudad Trujillo got into the question of the extent of jurisdiction over the shelf, one of the delegates from Latin America, or maybe several of them, brought up certain situations, one was a mine extending off from the shore of Chile, I believe. They pointed out that this mine extended out to 200 meters depth and beyond; to them it did not make much sense that suddenly the jurisdiction of Chile should stop and the resources beyond that point should belong to somebody else. They argued that the continental pedestal was made up geologically much the same as the continent above the water line and, therefore, it should be treated as one unit. At that time no one was exploiting (from the surface) the seabed beyond 200 meters and I expect they did not think anybody would go much beyond this for a long time to come. The concept of exploitability would give the coastal State jurisdiction over this as man learned how to exploit the resources beyond the 200-meter line. The thesis was acceptable and it became part of the report of the Trujillo Conference.

Members from Latin America on the International Law Commission then took the same concept to the Law Commission and it was incorporated in their report. I can't quote you particular parts, but I believe it was brought to the 1958 Geneva Conference. When the jurisdiction question came up for discussion there were some countries that argued against 200 meters on the ground that 200 meters did not uniformly represent the break between the shelf and the slope. Dr. Emery has referred to this, the fact that the break occurs at different depths in different parts of the world. Canada, for one, strongly objected to 200 meters as the limit to the shelf. The concept of exploitability then came in and at Geneva - as here at present - there were some who favored the continued extension of jurisdiction of the coastal State and some who opposed it. But exploitability was a compromise concept. The coastal States who wished to extend their jurisdiction hoped this would provide them with a basis to continue to go out as they learned how to exploit the resources beyond that point. The proponents of limited jurisdiction hoped this would be enough to stop the extension of jurisdiction.

I would guess that at present around the world you still have those two groups. Some who would like to see jurisdiction extended and who would interpret the term as it was originally intended by the Latin Americans to provide them with a basis for continuous extension, and those who hope to stop at this point. I would guess from what I have heard in the last two days that in the Commission Report the term "intermediate zone" has been substituted for exploitability. It is a compromise term. It is the hope of some that this will stop the extension of jurisdiction of the coastal State at 200 meters. It is the hope of some that as time goes on the influence of the adjacent State will increase so that it has de facto if not de jure control. I would guess from what I have seen happen over the years since the Geneva Conference and preceding that Conference, that if more jurisdiction by the coastal State lends itself to better exploitation of the resources then this intermediate zone would come more and more into control of the coastal State. However, if this clearly is against the interest of the family of nations then more and more it will be handled as part of the international zone. In the meantime, it serves as a transition from one to the other and perhaps in the course of time the evolution of international law will determine which way it goes.

Goldie: I would like to suggest to the last speaker that the exploitability test was introduced in the 1951 draft of the International Law Commission's draft treaty on the continental shelf and draft convention on the continental shelf and related subjects. On the other hand, the Ciudad Trujillo Conference was not until March, 1956. With respect, I would just like to put this simple historical perspective before you.

Blake: This is partly a question and partly a comment. Ambassador Herrington just remarked that both today and yesterday we have heard many learned, scholarly discussions about the history of the Convention on the Continental Shelf, about how it means one thing to one group of people and another thing to another group of people. As an ignorant, frustrated technologist, to me this is an exercise in futility. I really don't care, with all due respect to Mr. García-Amador and all the other distinguished gentlemen, what they thought "adjacency" was ten or twenty years ago, when we knew a great deal less about the potential of the oceans for commercial development than we do today. I strongly suspect as well that the Commission decided that it was not going to base its recommendations upon the history of the conventions, because it came up with this recommendation for an intermediate zone, which I believe cannot be derived from the history of the Convention on the Continental Shelf. My question is, what then should be the basis for our choice of a regime? Should it include the intermediate zone or the deep ocean?

To help us decide, we should list our goals in the development, and one of these goals has been to encourage the development of the resources by entrepreneurs. I don't think it really makes a good deal of difference whether these entrepreneurs are capitalists or socialists. They both have to get more out of it than they put into it or they are not going to do it.

Acceptability is also an important criterion that we have heard about. I would like to raise the question, however, acceptability to whom? We have heard "acceptability" mentioned many times, without saying who is going to "accept" it. Now, obviously, one group that has to accept it is the community of nations, whatever that may mean. I have heard many discussions about the LDC's want this and the LDC's want that, and they would reject this and they would not reject that, and the developed nations want this or that, and so on, but I don't see anybody calling for a show of hands. That is not really the point that I wanted to get to, however. What I would like to emphasize is the importance of acceptability to entrepreneurs, quite aside from the community of nations. The regime has to be acceptable to both or it won't fly, in other words.

All right, now what are the conditions of acceptability on entrepreneurs. We have heard about security of tenure - this is undoubtedly an important one - and we have heard it discussed at considerable length. I have no argument with it. I would like to suggest another type of security which was alluded to in the Commission Report, and was briefly mentioned by Mr. Flipse in slightly different words. I would like to call this security of access. You can have your concession out there, but if you can't get at it in a practical, economic way, it is of no damn good to you at all. I would suggest - not on the basis of theory, but on the basis of actual, practical experience - that if a lease were to be awarded in the intermediate zone, from which the economic rent, however measured or collected - in whatever form, went to some international body rather than to the coastal State, the coastal State would feel that it has less incentive to be cooperative with the entrepreneur than if it derived this economic rent directly. This is not just a hypothetical case, because we have a parallel example of this very much alive and well today in the state of California. The local communities in the state are very much opposed to cooperating in the development of mineral resources which are in federal lands rather than state lands. I suggest that this possibility may also arise in regard to development in an intermediate zone as opposed to a territorial zone, because of the remoteness of a reward to the coastal States. They may not feel they are being adequately compensated for the social costs that they encounter, whether real or imaginary. What I am saying is that there is a real danger in the intermediate zone of causing the rising of a situation which will make it impossible for the entrepreneur to have his close-by land bases; in other words, it will make it unacceptable economically for him to try to operate in the intermediate zone if he cannot get these close-by bases that he needs. He has to bring his product ashore, he has to have warehouses, all the rest of it that Mr. Flipse spoke about, and this is a very real danger, I think.

You have already anticipated the question that I had, that is, do you believe, as I suppose you do, that acceptability to an entrepreneur is an equally important criterion as acceptability to the community of nations?

Auerbach: Of course, Dr. Blake, and our Commission Report says so. Let me say a word about the last comment you made. The incentive that a coastal State would have to encourage development in the intermediate zone is great and is of three kinds. I will speak from the point of view of the United States because the relationship between the entrepreneur or the business entity developing the intermediate zone and the coastal State will be solely a matter for the coastal State to decide. The United States, under our recommendations, would register claims in the intermediate zone on behalf of those who bid highest for that privilege. So the income from competitive bidding for registered claims in the intermediate zone is the first incentive the United States would have to develop the zone. Secondly, the United States and U.S. industry would have access to the minerals themselves which would relieve shortages or tight situations. Thirdly, of course, activities in the intermediate zone would provide employment opportunities and additional tax sources. The only incentive that the United States would not have, which it has on the continental shelf, is that it would not get royalties on the value of production in the intermediate zone. But the other incentives I mentioned are great indeed.

Blake: The point is practical. Experience today tells us that these incentives - the taxes and local employment - are not always sufficient to permit development of the resources. I am thinking of the California example of state versus federal conflicts, where the state does not get any of the bonus money.

Atwood Wolf: I would like to make a comment with respect to Professor Goldie's paper this afternoon in the hopes that he will be gracious enough to treat it as a question.

If I understood Professor Goldie correctly, he was suggesting that a rational interpretation of the exploitability clause of the Convention on the Continental Shelf could lead to the conclusion that a coastal State's exclusive jurisdiction would extend varying distances with respect to varying mineral resources. I would suggest, if I may, that if this interpretation should be generally acceptable it is probably as convincing an argument for treating the exploitability clause of the Convention as insignificant as anyone can possibly imagine. I do not know whether or not Professor Goldie intended this conclusion when he offered this interpretation. However, I would point out that if we assume that at one stage or another in the future there will be an international regime governing activities in what is to be accepted as the deep-seabed beyond the limits of national jurisdiction, the exploitability test, at its simplest, suggests an elastic boundary to the limits of the international regime. I would suggest that if there be more than one limit or more than one boundary, confusion would be compounded by even further confusion. I would suggest that if under the exploitability test, the exclusive jurisdiction of a coastal State extended, shall we say, to a depth of 1,000 meters for purposes of exploitation of oil and gas resources, while it extended to one-half that depth for purposes of exploiting, shall we say, sulphur, the activities of an international regime or its licensees in the portion of the seabed between the two limits would lead to even more confusion than we presently have. At that point, the coastal State would

find itself potentially in conflict, not merely with other States, but even more so with the administrators of an international regime.

Goldie: I would accept that as a question.

My first answer is, if I may make my responses to the questions that have been put to me in series, that it would certainly be bizarre to interpret a legal principle here and now in the light of potential possible, and we hope, probable, future developments which have not yet even been foreshadowed, except in meetings of this kind. Secondly, what I would advocate - what I am advocating - in an understanding of the exploitability test, is that we try and get away from the idea of seeing areas with boundaries as being allocated to States by means of the exploitability test. After all, this is not the wording of Article 1. Article 1 tells us that coastal States have sovereign rights over activities that are conducted in certain areas - not sovereign rights over areas with boundaries but over activities, exploitation and exploration, conducted in continental shelf areas, that is, areas above the 200-meter bathymetric contour line, or other activities which become possible by means of exploitability, which I suggest involves an economic as well as an engineering contingency.

Now, I will come back to the question: What affect will this have - this thesis - on the establishment of an international regime? My answer is this, that I have always advocated that a set line should be fixed; my original advocacy was a set line of 200 meters. This may be far too narrow a shelf, one can think of 550 meters, as advocated by the late Admiral Mouton and Miss Guttridge at the Law of the Sea Conference, Geneva, 1958; one can think of various other kinds of lines, including lines based on an equation of population and coastline length of the coastal State. Beyond such a line there would exist the international regime's area of competence over activities. Now, what would happen under the exploitability test to activities begun and governed and regulated under the sovereign rights of coastal States under the aegis of the exploitability test? Well, I have even put this in public print, let's have a grandfather clause. Why can't we preserve both State jurisdictional rights or have a phasing out of State jurisdictional rights and a preservation of the actual rights that have been acquired via coastal State law, a preservation of these prior-existing proprietary rights. Such a provision is common in domestic law - when legislative change alters property rights within a State. I, therefore, cannot accept that the difficulties which have been posed would, in reality, exist. What I am trying really to emphasize is that we are thinking in terms of misleading analogies when we talk of exploitability as providing boundaries. A misleading analogy quite obviously is that of the home paddock of a parcel of farmland, or maybe the area of a miner's rights on dry land; but we are not talking of those things in the deep-ocean, we are talking simply of kinds of activity which people hope to be able to conduct to make money. No one wants to become the landlord of let us say a 1,000 square miles of seabed; one just wants an exclusive right to get whatever is there and whatever has been asked for out of it. I hope I am making this point clear.

MARINE SCIENCE COMMISSION RECOMMENDATIONS ON
INTERNATIONAL FISHERIES ORGANIZATIONS

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I have been asked to talk for a few minutes on the Commission's recommendations with respect to international fisheries organizations, and to comment briefly on specific recommendations concerning national catch quotas and limited entry to a fishery as presented in Our Nation and the Sea.¹ I can't agree in detail with some of the Commission's most important recommendations for reasons which I hope to point out, and yet I think that some workable formula along the lines recommended or perhaps even among some of the alternatives that were rejected are desperately needed. Certainly the Commission has correctly diagnosed some of the problems that have to be overcome if we are to achieve maximum net economic yield from our fisheries even if, in my opinion, the prescribed cures are not always very practical.

I think the best way to proceed is for me to comment on the Commission's review and recommendations as they are presented and then summarize what I think the impact of their recommendations will have on the domestic and international fisheries.

International Fishery Management

The Commission's Report opens this aspect of its study by stating at the outset that the "legal-political" objectives which an international fishery management organization or "framework for exploiting the living resources of the sea" must achieve to be effective are:

It must encourage the development of the vast food reserves of the sea at the lowest possible cost in order to combat world hunger and malnutrition.

It must promote the orderly and economically efficient exploitation of these living resources, with adequate regard for their conservation.

It must not provoke international conflict but rather contribute positively to international order, welfare, and equity.²

¹ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969).

² Ibid., p. 104.

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The Report then concludes that if these three criteria for a successful international fisheries management unit are indeed correct then, "the existing framework is seriously deficient when judged by these standards."

I don't think that anyone can really quarrel with "development of the vast food reserves," or with "efficiency" or with "conservation" or with lack of "international conflict" so that we are in general agreement so far, if in fact these criteria are the right ones, and they appear pretty good to me. I do think, however, that the "development of the vast food resources of the sea at the lowest possible cost" and combatting "world hunger and malnutrition," though both important, are quite distinct subjects and in this context should be treated separately.

Existing Framework

The Report here points out that the basic conditions for fishing are that each coastal State has the right of permanent, exclusive access to the living resources found in its internal waters and in its territorial waters and contiguous fishing zone "as recognized in international law." The Report does not state whether a unilaterally declared exclusive fishery zone broader than the countries accepted territorial sea is recognized by international law or not.

On the high seas, on the other hand, the freedom for nationals of all countries to fish where they please has been accepted as one of the "freedoms" of the seas almost as an article of faith for generations, and this general principle was reaffirmed in the High Seas Fisheries Convention of 1958. The Report also points out that this widely accepted "freedom to fish" has, in recent years, been hedged with many exceptions brought about by recent numerous unilateral declarations claiming an exclusive fishery zone (usually up to twelve miles) beyond the existing territorial sea, by bilateral and multilateral agreements, by unilateral extensions of the territorial sea, by the exclusive right of access of the coastal State to living sedentary species on its continental shelf, and by similar actions.

The Commission's Report then continues to show that the U.S. has compromised her complete freedom to fish on the high seas by being party to the UN Convention on Fishing and Conservation of the Living Resources of the High Seas, to five multilateral fishery treaties, to three bilateral treaties and by having entered into bilateral temporary agreements with Japan and the USSR regarding king crabs in the North Pacific and other fisheries adjacent to the U.S. coasts, and with Mexico regarding a number of fishery matters of common concern. The U.S. also belongs to FAO and is very active in the policies and programs of its Fisheries Department and to UNESCO and the Intergovernmental Oceanographic Commission which operates under its auspices, and to the World Bank and the United Nations Development Program, all of which deal in one way or another with commercial fishery management or development in many parts of the world.

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Evaluation of Existing Framework

Under this heading the Commission, having already found according to its own criteria that the "existing framework is seriously deficient," further states that:

The Commission has considered and rejected the following principal alternatives to the existing framework which have been proposed to govern exploitation of the living resources of the high seas:

To give each coastal nation permanent exclusive access to the living resources of the waters superjacent to its continental shelf.

To give the United Nations, in the name of the international community, title to the living resources of the high seas beyond the 12-mile fisheries limit so that it may either operate the high seas fisheries itself or auction to the highest bidders exclusive rights to exploit specified stocks of fish or specified areas of the high seas.³

The Commission dismisses both of these alternatives, one at least of which in my view should be given more serious consideration, by simply stating that:

...U.S. objectives regarding the living resources of the high seas can best be attained by improving and extending existing international arrangements, in the development of which the United States has participated for more than 50 years.⁴

This latter proud statement is a little the more surprising since the Commission by criteria it set up, has already branded the existing framework as "seriously deficient."

The rejection of the first alternative, namely, that the coastal State be given permanent exclusive access to the fish in superjacent waters of its continental shelf is understandable since it violates more than one of the Commission's own criteria. Conservation, for instance, cannot be effectively carried out in most instances, since migratory fish that have been conserved

³ Ibid., p. 105. It might be pointed out that not all countries (e.g., Japan) subscribe to the 12-mile fishery limit nor was it accepted at either of the 1958 or 1960 Conferences.

⁴ Ibid., p. 105.

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by country A cannot be guaranteed not to swim into some neighboring countries superjacent waters and be caught. Neither can the criteria for efficiency be guaranteed by a coastal State under this alternative any more than it can now. And it appears to me that the opportunity for conflict, which the Commission's criteria requires be avoided, is quite good, especially with countries like Chile, Ecuador and Peru, who have very little and in some cases practically no continental shelf and hence no superjacent waters.

But why the second alternative, that is, to give title to the United Nations, was categorically rejected is not so clear. This alternative, it appears to me, contains the possibility of satisfying all the Commission's criteria. In this case the resource would have a single or sole owner (the international community) and a single board of directions (the UN or preferably a representative knowledgeable group of "Commissioners" appointed with suitable safeguards by the Secretary-General). It would be to the owners' (the international community) advantage to keep the resource at a level that would maximize the net economic return. Full and wise use for the good of mankind (the owner) would be a primary objective. Selected and limited entry (by license perhaps) into a fishery could be controlled to satisfy the criterion of economy of production. Conflict should be minimized so long as all have an opportunity to enter the fishery if they so desire and have the money to buy a license, and enforcement of conservation measures would be uniform and centralized.

This idea of sole ownership (by the international community) is not new. It has been seriously proposed over many years by responsible scholars and organizations originating independently in many parts of the world. The concept has also been implied for generations in such terms as "common property" or "shared" resource or "common wealth in ocean fisheries" and even by the broader terms of "freedom of the seas" and "freedom to fish." Also, it is the only proposal recorded by the Commission in the international fisheries management section of the Report (even though rejected) that in my view could fulfill the Commission's own criteria of what a successful "legal-political framework for exploiting the living resources of the oceans" should accomplish.

The fact that there is considerable and highly vocal opposition to international community ownership in many parts of the world, including the U.S., is not reason enough to abandon the idea entirely. There was heated opposition and debate when thirteen colonies proposed living together some 200 years ago. This small struggling beginning has grown in the meantime to a lusty fifty under a strong central authority and is still prospering while thumbing its nose at its detractors.

In my view, the international community ownership idea merits more study. The Commission owes us this. Positive recommendations should at least be so tailored as to allow the accomplishment of the Commission's own criteria for success. Perhaps ultimate international community ownership could be achieved by degrees.

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In a later paragraph of this Report the Commission itself recommends that existing regional fishery organizations in the Northwest Atlantic (ICNAF) and the Northeast Atlantic (NEAFC) pool their competence, their geographical area of operation and their regulations for what it considers practical conservation and economic reasons. This pooling already involves eighteen to twenty important countries, a substantial fraction of the full international community. It may be that such an "acceptable" suggestion by the Commission itself may have a "spilling over" value that could lead to even greater consolidation.

At least it appears to me that the idea of international community ownership of an acknowledged international resource, which occurs in an acknowledged international common should not be rejected out of hand, especially if it also holds some promise of success as measured by the Commission's own criteria.

National Catch Quotas for the North Atlantic Cod and Haddock Fisheries

Under this heading the Commission's Report outlines how in its view an international fishery management unit can more nearly achieve the objectives or criteria that have been laid down. The section starts out with a definition and a redefinition of the objectives of conservation.

The dominant objective of practically all the fishery conventions is to maintain the maximum sustainable yield of the fish stocks under their governance.⁵

I think that what the authors here intend to say is that the principal objectives of conservation as practiced at present by most national and international fishery organizations is to attempt to maintain stocks of fish at a level that will allow the maximum equilibrium catch year after year. If this is indeed what is meant, and it is not quite the same as that postulated, then the statement is correct. The Report continues:

We have previously stressed the inadvisability of regarding this biological result as the only aim of international fisheries management and urged that, at the least, such management should not make it impossible for fishing nations to conduct profitable operations.⁶

No one can disagree with that. If fisheries weren't profitable no one would remain in the business. Most fishing countries are conducting profitable (though often wasteful) fisheries now. That the harvesting of fish can be made more efficient by carefully gauging the number and kind of operating or

⁵ Ibid., p. 105.

⁶ Ibid.

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catching units to the size of the resource (i.e., to maximize the net economic yield) I think is pretty universally admitted; even by biologists. But just how this can be done in a multination, multispecies high seas fishery (or most single domestic fisheries for that matter) has not yet, in my view, been fully resolved. The Commission, however, believes it has a solution and goes on to say:

The Commission concludes that fixing national catch quotas is a promising way to make it possible for participating nations to improve the profitability of their operations in certain important fishing areas of the world.

It further adds:

The cod and haddock fisheries of the Northwest Atlantic are ripe for such an attempt.⁷

To give further evidence of this ripeness the Report points out that fourteen nations (including the U.S.) belong to the International Convention for the Northwest Atlantic Fisheries (ICNAF), and thirteen nations (but not the U.S.) belong to the Northeast Atlantic Fisheries Convention (NEAFC) and that nine nations that fish all over the North Atlantic belong to both Conventions. If catch quotas were applied to the ICNAF area only, the report continues, it would result in transferring additional effort to the NEAFC area where important species are already fully or even overexploited,

...and vice versa, nullifying any potential economic gain from national catch quotas for fleets operating in both areas. For this reason, the proposed quota system must embrace the cod and haddock fisheries of the entire North Atlantic.⁸

It continues:

If total effort in these fisheries is reduced 10 to 20 per cent, it is estimated that aggregate annual savings of \$50 to \$100 million can be realized by all participants.⁹

The Report does not detail how this desirable reduction is to be accomplished but it does say that if something is not done to stop more boats from entering the fishery,

⁷ Ibid.

⁸ Ibid.

⁹ Ibid., p. 106.

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...fishing effort in the North Atlantic may further increase by as much as 15 to 30 per cent by 1970. This probably will result in a decrease in the total catch, as well as reduction in the catch per unit of effort.¹⁰

Thus, the Report points out, and rightly, that the number of boats employed in the North Atlantic are already in excess of those needed to fully exploit the stocks of demersal fish (i.e., cod, haddock) of that extensive area, and, if no curbs to entry are soon applied, this situation would be further aggravated by the addition of still more fishing power. The fishery already wasteful, would become increasingly so. The key question then becomes how can this uncontrolled entry be curtailed and regulated so that the desired maximization of the net economic yield can be attained. The Commission's answer to this is that in its view this can be accomplished by assigning national quotas of "cod and haddock" to present participants. The Report goes on to say that an ICNAF Working Group had studied this matter of national catch quotas since 1965 and by 1967 this Group was able to say, "a system of national quotas was feasible and enforceable."

So far nothing has been done. To insure early and more effective implementation of national quotas the Commission recommends:

...that the United States seek agreement in ICNAF to collaborate with NEAFC in fixing a single annual over-all catch limit for the cod and haddock fisheries of the North Atlantic,...designed to maintain the maximum sustainable yield of the fishery and, in turn, should be divided into annual national catch quotas....

Every participating nation should be authorized to transfer all or part of its quota to any other nation.¹¹
(emphasis added)

Now this sounds pretty good, but there are a number of questions, some very pertinent and practical questions, that remain unanswered.

Apart from the fact that the authors have returned to the biologists' suspect "maximum sustainable yield" on which to base a total quota, I would like to know first how this new improved and extended "existing international arrangement" fits the Commission's own criteria for effective international fishery management. That is, does it "encourage development of the vast food

¹⁰ Ibid., p. 107.

¹¹ Ibid., pp. 105-6.

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reserves of the sea" does it insure "economically efficient exploitation" and provide "adequate regard for conservation" and does it "contribute positively to international order, welfare and equity." Let's take a look.

First, if the two "existing frameworks," that is, ICNAF and NEAFC, adopt the same conservation measures and exploitation policies throughout their extent they really become one. This - with eighteen participating nations in a large region (half an ocean) - is already a firm step, as we have noted before, toward international community control of these important species, a concept which in a larger sphere has already been rejected. Secondly, curtailment of effort in existing fisheries to increase the net economic return not development "of the vast food reserves of the sea" seems to be the main objective. Thirdly, conservation of two species of unequal unit value together, especially over such a vast area, just cannot be effectively carried out, as experience with Antarctic whales has abundantly demonstrated. Separate species and often separate stocks or population units within a species have to be considered separately if there is to be effective "maximum sustainable yield" management. And, finally, on what basis are the sizes of country quotas to be determined? There are eighteen countries members of ICNAF and NEAFC who are now fishing in the North Atlantic and there are at least two countries, Japan and Cuba, not members of either Convention whose boats fish there as well. How do you divide the total available "cod and haddock" in all of the North Atlantic among twenty nation candidates spread out over the whole area?

And almost certainly there will be others who will want to enter the fishery. How big a quota do you give a new entrant? And who do you take this amount away from? And if the new entrant freely elects "to transfer" (for a price) his quota "to any other nation" how do you keep this sort of thing from getting out of hand? And how is this free "transfer" to be reconciled with the proposed Commission requirement that "the coastal nation catch its quota with vessels carrying its flag." Would national allocation be on the basis of previous performance, historic rights, preferences to a coastal State, demonstrable need of animal protein or foreign exchange, length of coastline or extent of national continental shelf?

And where are countries to fish their quota? The U.S. fleet, for instance, which is designed to fish on Georges Bank (U.S. continental shelf) and the Nova Scotia Banks (Canadian continental shelf) will have to compete for its quota with fleets able to fish anywhere in the North Atlantic or the world. If this situation and others reviewed will "contribute positively to international order, welfare and equity" then I have misread my experience in the fish business.

In fact, I don't think that the above scheme fits any of the criteria set out for a successful "framework for exploiting the living resources of the sea." Perhaps the Commission has some thoughts on the matter that I have missed or that weren't recorded in the Report.

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The next two recommendations of the Commission are:

The Commission recommends that the United States take advantage of the opportunity presented by a quota system to rationalize its fishing effort in the North Atlantic.¹²

I don't know exactly what "rationalize," a very general term, means in this context, but as there is no quota system in the North Atlantic yet perhaps we can let this one pass. And next:

The Commission recommends that early consideration be given to instituting national catch quotas for the high seas fisheries of the North Pacific.¹³

Perhaps this recommendation should be left for the moment, too, at least until the Commission gives us some hint as to whether we should set a universal quota on all five species of Pacific salmon or whether halibut and herring should be included. All species occur and are fished right around the North Pacific and the two Commissions covering the Western and Eastern Pacific with one common partner could be asked to cooperate with one another toward bringing about the desired end.

I have been a little facetious here but only to make a point. Perhaps country quotas are the answer or partial answer to "orderly and economically efficient exploitation" but certainly not as so far presented in the Commission's formal Report.

Preferential Treatment of the Coastal Nation

In stating its views on special considerations that might be given coastal States to keep them happy, the Commission:

...urges that serious consideration be given to assuring coastal nations a reasonable opportunity to participate in the exploitation of fish stocks nearest their coasts. ...The quotas should be allotted to guarantee the coastal nation a minimum amount or percentage of the catch.¹⁴

This all seems very generous at first glance, provided, of course, that a satisfactory "minimum amount" can be arrived at, and that the nation has the capability and desire to catch this amount. The expressed hope, however, that

¹² Ibid., p. 108.

¹³ Ibid.

¹⁴ Ibid., p. 110.

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these assurances and programs would suffice to induce the Latin American countries in question not to seize U.S. fishing vessels outside the 12-mile limit¹⁵

is perhaps a little optimistic since levying fines and selling licenses to foreign vessels provides (and has provided over a number of years) a ready source of much-needed income. Latin Americans are not traditionally high seas fishermen in the sense that Norwegians, Japanese and even some U.S. fishermen are. Although the Latins have always caught a few fish near shore, they do not appear at this time to be inclined to engage seriously in high seas fishing. At least they have had plenty of opportunity over the years to do this and they haven't so far, and it is doubtful whether a special coastal quota, no matter how generous, would do much to change this rather basic characteristic.

The remaining recommendations under this section of the Report deal with international fishery matters: such as, trying to reach international agreement on a maximum breadth of the territorial sea; the review of existing international fishery organizations and the need for new ones; efforts to get more important fishing countries to ratify the 1958 High Seas Fisheries Convention so that the useful parts of the Convention could become more generally applicable and that existing conventions and any new ones that might come along be adequately financed so that competent international staff could be employed to carry out the intent of the treaty; that treaty waters be extended to include all waters in which the resources in question are to be found; that implementation and enforcement of recommendations be strengthened and that disputes be subject to compulsory arbitration as provided by the High Seas Fisheries Convention or by referral to the International Court of Justice. All these appear well considered and sound, even if they are almost axiomatic.

That some order or formula not at present available is needed for the efficient and full exploitation of the living renewable common property resources of the high seas is becoming increasingly obvious. It should be becoming equally obvious that to obtain this order and efficiency in a great continuous common which extends over two-thirds of the world, and which is competitively exploited by the fishermen of a great and a constantly-increasing number of nations, some central authority is required. This, in turn, means that some national sovereignty in the pursuit of these resources will have to be forfeited for the common good.

Argument

The Commission has done the country and the world a signal service by pointing out again that most commercial fisheries are international in character and scope and that they do not lend themselves readily to effective national, far less to State or provincial, management. An even greater service

¹⁵ Ibid.

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is the emphasis placed on tailoring fishing effort to the size of the resource so that the harvest can be controlled and a high level of efficiency (maximum net economic return) could be assured. It has been pointed out that the specific means suggested by the Commission to achieve this happy end might be given more thought.

Although the Report, as its name implies, was about Our Nation and the Sea and control of high seas fisheries by a body representing the international community was rejected, practically everything in this section of the Report, including the criteria set out as requirements for a successful international fisheries management unit, seemed to point to some centralized international management arrangement.

There is nothing wrong with this section of the Report that a little broader consultation by the Commission's task force could not have remedied. A needed balanced team to deal with this complex subject it appears cannot be easily achieved except by this Law of the Sea Conference. It is a good thing for all of us that an opportunity for a "sober second look" exists. The Commission, it appears, did not take full advantage of all the experience that already exists in the international fisheries management community, otherwise an already good Report on this section could have been made outstanding.

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CRITIQUE: FISHERIES MANAGEMENT PROVISIONS
IN THE COMMISSION REPORT

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As my homework for this commentary I began by reading the appropriate section of the Commission Report, and, as an antidote, rereading Oda's International Control of Sea Resources,¹ and The Common Wealth in Ocean Fisheries, by Christy and Scott.² Having then decided that the Commission Report was fuzzy, inconsistent, lopsided and unimaginative, I began to write a commentary. I then received a copy of Dr. Kask's comments on the same chapter and found that he had said all of the things that might be said about fuzziness, inconsistency and lack of balance. He also couched his criticisms in constructive terms and delivered them with diplomacy. It remains only to speak of the lack of imagination in the report; its preoccupation with embellishing what the Commission itself describes as a seriously deficient framework.

The Problem Stylized

First, it is convenient to stylize the problem of international fisheries management so that it can be visualized easily for discussion. In reading about the various views that have been held on the subject, it is often difficult to sort out the essential substance of the problem from the large mass of material that mixes the fish question with other issues.

The fish problem can be rendered down, for simplicity's sake, into the situation shown in Figure 1. Three countries, A, B and C, border a circular sea. Each has on its shores a species W which each harvests within its narrow territorial sea. Provided the territorial sea is wide enough to enclose the area occupied by W there is no international problem, except perhaps where the territorial seas adjoin those of another country. Presumably, boundaries can be negotiated between any two countries on a very simple basis.

In the circular sea there are three species of fish that range beyond the territorial sea, species X, Y and Z. Species X spends part of its life in the lakes and streams of country A, and part of its life in the waters beyond the territorial sea. Because A must make a sacrifice in its economy by maintaining the lakes and streams to support species A, it is held by A that countries B and C should not harvest any X unless they are surplus to A's needs.

¹ Shigeru Oda, International Control of Sea Resources (Leyden: A. W. Sythoff, 1963).

² Francis T. Christy, Jr., and Anthony Scott, The Common Wealth in Ocean Fisheries (Baltimore: John Hopkins Press, 1965).

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The question of surplus may be defined biologically or economically, and if the latter, then A is likely to declare there is never any surplus, especially if there is a market for X in countries B and C. In a word, because X comes to country A and A must make a sacrifice, A feels the fish are his. On the other hand, B and C feel that the fish use the ocean which is owned by no country; going further, they state that because it is owned by none, each has an equal share in its ownership. Thus, B and C, although acknowledging A's special investment, nevertheless feel that collectively they are entitled to some fraction, say-two thirds, of whatever is the high seas portion of the production of each individual of species X.

In essence, this is the abstention argument - special privilege by virtue of investment, countered by freedom of the seas.

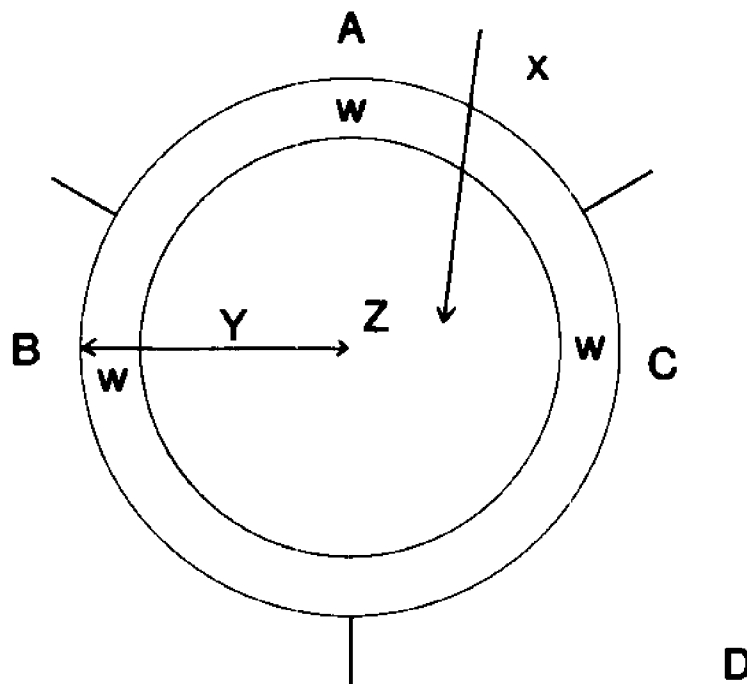


Figure 1

Species Y spends some of its life on the high seas and some within the territorial sea of country B. Because a fishery in the territorial sea has been developed by B as a "natural sort of process," he feels he should have some special consideration in division of any catch of species Y, a division which has become necessary since A and C have become very expert at catching Y on the high seas. Of course, A and C are reluctant to accept this argument of special privilege for B. They argue that fishing in a territorial sea has no special connotations. In any event, that part of the production which takes place on the high seas belongs as much to them as to B. They might agree to a three-way split, if their current take is less than one-third each, but B would not agree to a three-way split unless the current take of A and C is more than one-third

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each. Additionally, recognizing the advantage of his geographic position, B is reluctant to embark on any long-term agreement that will stifle his development toward the goal of a bigger share than one-third.

In essence, this is the coastal State privilege argument, countered by freedom of the seas.

Species Z spends all of its life span on the high seas. C has been an aggressive fishing nation, pioneering fishing for species Z. This historic development C feels should be recognized in the new situations of heavy fishing by C and increasing fishing by B and the newest comer, A. The situation doesn't look the same way at all to B and A. They feel that the high seas are available for fishing by all, that they have part ownership, and who came first is irrelevant. In some ways, they argue, C was only being allowed to take the shares of B and A until they, B and A, were ready to take the fish themselves. Accordingly, they advocate a free-for-all, or perhaps a negotiated equal share.

This is the essence of the historic right argument, countered by freedom of the seas.

Because each of the countries borders on the ocean, each feels it can interpret freedom of the seas to imply that it owns a legitimate share. But by espousing that principle to gain concessions from two others, each country must acknowledge the equal right of the other two countries to use the same argument in return.³

Even cast in the simplest terms the problem begins to look difficult of a solution. A three-way treaty might be arranged to mutual satisfaction, but not without some attempts to gain advantage. It might occur to B, for instance, to declare itself to be two States, thus getting one-half shares in the aggregate rather than one-third. If each country has some of each of species X, Y and Z, there might be three different treaties covering different kinds of fish. Each treaty might well be drafted in a way that reflected the other treaties, not so much as far as principles are concerned, but as the horsetrading went.

If it is now conceived that species X, Y and Z are ecologically related and that a fishery for one influences the abundance of the others, and if it is further conceived that the vessels which fish for X also catch Y, and if

³ Country D, which is a non-coastal, non-fishing nation, doesn't see why bordering on the sea or fishing should necessarily establish a right. Being a country that consumes fish, it too has an interest in the ocean and demands a like share of the ocean's resource.

This is an exaggerated form of the non-coastal, non-fishing argument, based on freedom of the seas, which hasn't yet been taken seriously.

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it is still further conceived that there are inadequacies in reporting catches which border on fraud; if one makes all these conceptions, the total picture becomes a simplified version of what actually happens.

The Commission Report

Clearly, the basic structure of any form of agreement between the countries must be built carefully, otherwise it will rapidly become hopelessly complex and hopelessly irrational. Least wise would be to build on the anachronisms of precedent, because existing devices for solving these problems are so outdated by technology that they might as well have been invented for another planet. In a word, A, B and C would not be well advised to solve their problem using current world rules.

Nevertheless, this building on poor foundations is exactly the approach of the Report of the Commission on Marine Science, Engineering and Resources. Rather obviously, it is a scheme designed to protect the United States' national interest in the short-term, but in the long-term it may prove to be a disservice. As Dr. Kask points out, the Commission seems to see the desirability of making the big break to a centralized international management arrangement, most of its arguments point in that direction, but the concept of centralized international management is dismissed virtually without discussion.

To be more explicit, the Report recommends or endorses, among many things:

- (1) National catch quotas of cod and haddock in the ICNAF area and region 1 of the NEAFC areas.
- (2) National catch quotas for the high seas fisheries of the North Pacific.
- (3) Preferential "access" for coastal nations to resources "nearest" their coasts.
- (4) The concept of a territorial sea (the Commission being concerned only with its width and a few minor details).
- (5) Regulation be on the basis of "ecological units" rather than species.
- (6) The establishment of new conventions, preferably before depletion.
- (7) Encouragement of everyone to adhere to the Convention on Fishing and Conservation of Living Resources of the High Seas.

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(8) Agreement that commissions should get more money, and enforcement should be strengthened.

My reaction to all this is thank goodness they are also in favor of aquaculture! Points (1) and (2) acknowledge a principle of right of nations to products of the sea, but only those currently in the business. (Did the Commission think that the U.S. share is falling, or that is the immediate prospect, so now is the time to set quotas?) Points (3) and (4) are embellishments on the weak points of the existing framework. Nobody yet knows how to accomplish the objective of point (5), and point (6) threatens to create new conventions on top of the whole mess. Point (7) strongly recommends building on precedent and point (8) expresses the pious hope that more of the same will help solve our problems. It would be hard to imagine a less imaginative but still acceptable set of proposals.

In stylized form, the Commission's report proposes that A, B and C should negotiate national quotas for existing fisheries using whatever arguments they can muster on the basis of the principles of abstention, or coastal or historic privilege. Otherwise, they should pursue a course similar to what got them into the present situation.

The foregoing, of course, is prelude to alternatives that the Commission might have considered. The two alternatives "considered" and rejected by the Commission were:

(1) To give each coastal nation permanent exclusive access to the living resources of the waters superjacent to its continental shelf.

(2) To give the United Nations, in the name of the international community, title to the living resources of the high seas beyond the 12-mile fisheries limit so that it may either operate the high seas fisheries itself or auction to the highest bidders exclusive rights to exploit specified stocks of fish or specified areas of the high seas.⁴

It is most unfortunate that the Commission did not consider these and similar proposals at great length, even if only to shoot them down as impractical. In my view, there are variants of these schemes that might lead to a successful pattern in management of marine fisheries resources.

Let's return to A, B and C, and species W, X, Y and Z, and see what forms of agreement they could reach, taking variations of the two suggested by the Commission to begin with.

⁴ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 105.

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(1) Division of the area of the sea on the basis of:

- (a) the relative lengths of coastline,
- (b) the population,
- (c) a formula which included weighting for poverty, or deficiency in proteins, or the momentum of capital investment - in short, for anything that had bargaining potential.

This kind of scheme wouldn't do a good job on fish because the fish don't observe boundaries drawn by humans, but the schemes would have merit in otherwise making bad management a nation's own business. In general, this is a poor solution, even if you could see how to do it.

(2) Form an international agency to harvest and sell species X, Y and Z:

- (a) operating the high seas fisheries itself,
 - (i) distributing the proceeds to the various countries on the basis of length of coastline, population, and so forth,
 - (ii) using the proceeds for its good works everywhere;
- (b) auctioning rights to harvest X, Y and Z to the highest bidder distributing the proceeds as in (2)(a)(i) or (ii) above.

This is a fine altruistic scheme, but there is no existing machinery for the job. It has so much novelty it would make everyone unsure of what the consequences would be to established practices. Probably, for this reason more than any other, the scheme is dismissed out of hand. It can be conceived that it would lead to practices that would make the rich richer and the poor poorer.

Now, let us turn to other possibilities.

(3) Form an international agency only to regulate fisheries on X, Y and Z. By a system of closed areas, closed seasons and closed times and gear restrictions, to so regulate the catch of all species as to ensure maximum sustained yield. This is a simple extension of the way most countries have tried to control fishing within territorial limits. It could lead to economic inefficiency for the reason that every country would subscribe to the view that to be in the fish business you have to catch fish, and in consequence everyone would over-invest. To protect those already in the business from further loss each country would advise against the use of more efficient gear. The pattern is sufficiently familiar as to be discouraging to economists. Nevertheless, this scheme has much in its favor for it could accomplish conservation without usurping national and international free enterprise.

(4) Handle the problems of species W, X, Y and Z differently:

- (a) For species W set a fishing zone.
- (b) For species X, which spawns in country A, countries B and C pay a tax to A based on the number of fish caught.
- (c) For species Y establish national quotas that recognize special privileges of coastal States.
- (d) For species Z auction fishing rights through an international agency as in (2) above.

This scheme has the merit of using a set of methods appropriate to the different biology of the fish species. It acknowledges a small adjacent zone of sea as within the domain of each country. It also acknowledges the sacrifice of a nation which protects the habitat of fishes which use fresh water. It provides a realistic interim device for regulating demersal fisheries until an international agency can take over management of the kind envisaged in (2) above. Finally, it acknowledges the common property nature of marine resources. With this scheme as an objective, a good starter for the international agency of (d) would be world-wide management of tuna and whales.

(5) Remove all restrictions on fishing outside of the territorial seas. Implied in most approaches to the conservation of marine resources is the notion that maximum yield from the ocean is associated with maximum yield of each species. Aside from the compromise that must be made because one kind of gear catches many kinds of fish, it is very doubtful that maximum yield in total is associated with maximum yield from each species. To put it another way, if we could catch each kind of fish selectively, the maximum yield of each could be achieved but the maximum yield from the system could well be higher. Our knowledge on this subject is limited, such studies as have been done suggest that greater yields may be obtained when some species are eliminated commercially.

It may be a long time before this scientific problem is solved, but strictly speaking, the only way to find out is to try. Adopting this attitude we should fish the world's oceans as a wide open system until there is evidence of a decline in total production. The gross statistics of world catch do not indicate that in the aggregate the system has yet been pushed to a limit of protein production.

Admittedly, this kind of approach could involve irreversible changes, could require major changes in marketing of fish products, and would restore the chaos of unrestricted freedom of fishing on the seas with all that it implies. Nevertheless, a searching examination of the political, economic and scientific merits of the proposals would be well worthwhile.

The foregoing is admittedly wild and speculative, but in my view it is warranted as a reaction to the Commission's Report. At a time in world

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affairs when imagination is much needed, it is distressing that a review which could have been so encompassing should have been confined to considering only a few timid extensions from an inadequate base. Perhaps the Commission's recommendations are the practical next steps in the eventual development of mankind's rational use of the products of the sea. But they should be justified as such by a clear statement of goals and a closely argued case that rejects what seem to be a multitude of quicker ways of getting there.

This is especially the case in the modern context of burgeoning international investment, which is to a great extent accomplished through the instrument of multinational companies. "Modern business is moving towards a concept of global economy so inter-related in its parts that it transcends political boundaries." Yet the growth of multinational companies is today threatened by increasing nationalism rather than fostered by gaining internationalism. What does the Commission Report offer for fishing companies that wish to do business on a world-wide basis?

In my view, an imaginative solution would have squarely aimed at the objective of improving the world-wide fishing business. What would be the best way of fostering the growth of a Canadian company that obtained a loan in the United States to build a fishing plant in Ireland, that would use a Norwegian process on herring for a product to sell in Germany? With obviously mixed motives, what policies would multinational companies develop? What kinds of multinational companies are developing? Not being the owner of a multinational fishing company, nor an inspired economist, I don't know the answers to these kinds of questions, but I expect that they comprise a profitable line of study. Meanwhile, it looks as though A, B and C will muddle along in their futile efforts to properly manage X, Y and Z.

REMARKS

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Before opening these papers and the Commission Report itself to discussion, I have a few additional comments to make on my own behalf. Many people have been quite harsh on this international fisheries section of the Commission Report. Although I have some additional criticisms, I do want to congratulate the Commissioners on one aspect, their adoption as an objective of the international legal and political framework "that it must promote the orderly and economically efficient exploitation of these living resources with adequate regard for their conservation." I congratulate them on this, because they have here treated the economic aspect, in my view, in the proper fashion. This disagrees with their treatment of the economics of the national fisheries, where they went back to the device of some economists of treating it as an "extremum" problem, in other words, wanting to maximize something, in this case the net economic yield. The Commission recommends that fisheries management have as a major objective production of the largest net economic return consistent with the biological capabilities of the exploited stock.¹ Further, the Commission recommends that voluntary steps be taken and, if necessary, forceful government action to reduce excess fishing effort in order to make it possible for fishermen to improve their net economic return and thereby rehabilitate the harvesting segment of the U.S. industry. Some economists disagree with this. I disagree with it, because I believe that we should try to increase economic return, but not necessarily to maximize the net economic yield. There may be other social factors, particularly in the international realm, that will make something different from the maximum net economic yield most desirable.

I recall that we discussed this topic fairly thoroughly in the California Advisory Commission on Marine and Coastal Resources, where Professor S. V. Wantrup is a member of the Committee on Fisheries. The Committee agreed, in commentary on this aspect of the Commission Report that, in the management of a flow resource such as a fishery, the absolute minimum objective of management should be the protection of the resource against being so depleted that it is incapable of recovery when the exploitation rate is decreased. This is what Professor Wantrup calls the "minimum standard of conservation," that is, to avoid completely irreversible changes, so that we are foreclosing options for the future. This is the minimum requirement of conservation. However, in the case of most fisheries, the socially and economically desirable level of fish population (and consequent average catch) is well above this minimum level. In most fisheries, the fishermen go broke before the fish do, so that, in reality, we seldom are confronted with the problems of maintaining the minimum standard,

¹ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 92.

in a high seas fishery at least, as we know from our experience with tuna, halibut, and with quite a number of other species.

If fisheries resources were private property, the automatic operation of the market system would presumably cause the fishery to arrive at the economically and socially desirable level. But, since most fisheries resources are not private property, that would allow this condition to be determined by the automatic operation of the market system, it needs to be operationally determined under constraints imposed by governments. Our California committee believes that, in most cases, the appropriate constraint is the maximum sustainable physical yield. That, of course, is exactly what the Marine Science Commission has recommended in the case of the North Pacific fisheries quota. It recommends imposing the constraint of maximum yield, but handling the whack-up of the catch in such a fashion that national entrepreneurs then can attempt to maximize their economic return within this constraint. This can provide some net economic return, but not the maximum net economic return; however, I believe that the maximum sustained physical yield, with some net economic return within that constraint, is the better criterion.

In some cases, however, temporarily or even on a longer term basis, there may be social objectives that dictate some decrease in net economic return. This has been the case in Japan at a time some years ago when there were a great many people to support. It was better to have everybody employed than necessarily to get the maximum net economic return.

The next point I want to comment on is the material in the Commission Report and the Panel Report dealing with international fisheries management.² There seems to be a degree of inconsistency in the recommendations, since it is suggested that there are implications of a recommended quota system for other fisheries, with the need for a world-wide system of regional fisheries conventions each tailored to its own particular biological and environmental conditions and economic situation. It seems obvious that we require some kind of fisheries management on a basis of ecological units, rather than species. The quotas for the North Atlantic cod and haddock cut across several ecological and biogeographical units, and deal specifically with two separate species that are considered, for the purpose of the quota, as if they were the same species. This is a bit inconsistent with treating problems by ecological units and is the same sort of biological oversimplification that led to all whales caught in the Antarctic being counted as "blue whale units," which was disastrous.

I would like to comment next on the manner in which the Commissioners deal with the matter of preferential treatment of coastal nations. They advocate an agreement to allocate national quotas whenever coastal States are ready

² Our Nation and the Sea. A Plan for Action, *ibid.*, pp. 104-108; see also the Panel Report, Marine Resources and Legal-Political Arrangements for Their Development (Washington: U.S. Government Printing Office, 1969), pp. VIII-57/65.

and willing to enter the fishery and request such quotas, and it is further suggested that the coastal State should be required to take its catch-quota with its own vessels, or at least vessels carrying its flag.³ This seems inconsistent with the Panel recommendation for the North Atlantic fisheries, for cod and haddock, that advocated, "Every participating nation should be authorized to transfer all or part of its quota to any other nation."⁴ It seems in the one case they are recommending that a nation has to catch its own fish, and in the other case they are recommending the quota should be a freely-marketable right.

It is also indicated, amplifying a bit further on something Dr. Kask mentioned, that the programs advocated are designed to induce South American States not to seize United States vessels fishing outside the twelve-mile limit, and the Commission also says it is difficult for it, at least, to see what else the United States can be reasonably expected to offer. It seems to me that a reasonable alternative is to offer to handle the dispute either in the International Court of Justice, or through the kind of arbitration procedures that are provided for in the 1958 Convention on Fishing and the Conservation of the Living Resources of the High Seas, and, if the Latin American countries refuse this, the United States can offer the protection of our vessels on the high seas by our armed forces. This procedure would seem to me to be entirely consistent with all of the objectives of the Commission,⁵ including "contribut[ing] positively to international order, welfare, and equity."

Finally, with respect to the territorial sea, the Commission indicates that the suggested means of giving some preference to the coastal nations would remove the impetus to a wide extension of the territorial sea, which derives from concern over access to fisheries resources. This seems to me to be very naive, because many coastal States are much less concerned with having access to the fisheries resources than with deriving revenue from them, whether they catch the fish themselves or not. Under these circumstances, I find it very difficult to see why a coastal State that doesn't have much current capacity to carry on its own fisheries would prefer to be guaranteed access to the resource at some future date, when it achieves the capability, rather than being able to extract revenue from other people that use the resource now, still retaining the right to exclude others when it gets around to doing the fishing.

These last two points underline remarks that Dr. Kask made earlier. They do need emphasis, because I don't believe we can handle these problems of the extended territorial sea by granting some special fishing rights to the coastal State.

³ Our Nation and the Sea, op.cit., pp. 109-11.

⁴ Marine Resources and Legal-Political Arrangements for Their Development, op.cit., p. VIII-59.

⁵ Our Nation and the Sea, op.cit., p. 104.

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Schaefer: The papers and the Commission's Report are now open for questions and discussion; whenever Dr. Kask or I can't answer, I will try to pick out somebody in the audience who might be able to do so.

Question: With great diffidence, why should it be described as unimaginative to propose the next practical step to the limit of what is presently practical?

Kask: Well, I would like to start by saying that neither of the two speakers here present labeled the Commission's Report unimaginative. That thrust was implied in the contribution that was sent in by Dr. Larkin, who was unable to be here. I think that perhaps what Larkin had in mind was that the fisheries situation is a very complex one and that solutions that the Commission offered were possibly not sufficiently thought through and that there was more existing knowledge on some of the subjects dealt with and on which precise recommendations have been made, than appeared in the Commission Report.

Schaefer: I tend to agree. I think that Dr. Larkin felt, and I believe Dr. Kask also indicated, perhaps somewhat more diplomatically, that the kind of solution proposed may not be adequate, and, if it isn't adequate, the next step, although it may appear practical, may not be effective. Both authors, it seemed to me, would have preferred a more explicit statement of why the Commission thought all that could be done was this modest next step. A lack of analysis of possibly more imaginative alternatives would be my interpretation of Dr. Larkin's position.

Larkin:* I agree with this interpretation that was made for me. The Commission failed to indicate what might be done as variants of the schemes that had been put forward. In consequence, the reader wonders if the solutions proposed are the most appropriate in the long term. These problems are so complex that it is very useful to consider several alternatives in detail. This may have been done, but it doesn't show in the Commission's Report.

McKernan: I am going to say more about this in the afternoon session but I wish to remark that I am delighted with the approach taken by Dr. Larkin. I also tend to agree with him. I notice in the Commission Report on page 104, on the subject of fisheries management (which Dr. Kask referred to), the statement is made that "The Commission concludes that the existing framework is seriously deficient when judged by these standards." The standards referred to are a "legal-political framework," which tend to summarize the legal standards set forth in the Panel Report. On page 105, under "Evaluation of Existing Framework and Recommendations," it is noted, "The Commission concludes that U.S. objectives regarding the living resources of the high seas can best be attained by improving and extending existing international arrangements, in the development of which the United States has participated for more than 50 years." As Dr. Kask pointed

* EDITOR'S NOTE: Professor Larkin was not present at the Conference but agreed to read the discussion notes and make comments where applicable.

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out, these tend to be conflicting statements, especially when read with the Panel Report. The recommendations in the Panel Report essentially are those things that are now going on under existing practice here in the United States and throughout the world. There is, in my judgement, and I would say that Dr. Larkin has obviously noticed this, nothing very much new or imaginative in the recommendations of the Commission Report and especially the recommendations concerning cod and haddock.

Schaefer: Dr. Larkin did ask some questions toward the end of his paper about how companies that are international and operate in a number of countries are concerned with these arrangements. Dr. Chapman represents one such company, and there may be others here similarly employed. Would you care to comment on these, Dr. Chapman? How do you view a system of regulations that would enable you to do business most conveniently in a number of countries?

Chapman: Well, I have commented on this in various papers and various places. I wasn't going to say anything particularly about it this morning. What I didn't like about this aspect of the Commission Report was not only what I thought was a lack of imagination in the approach but rather an attitude that was condemnatory of how things were going along in this field. Like Ambassador McKernan and Dr. Kask, I have been in this field for a generation and am of the opinion that considering the perversity of human nature we have probably made as good progress in the development of international cooperation for the management of fisheries lying on the high seas as the sovereign nations will permit us to do. The problem is so solidly a political one that it cannot be solved entirely simply by writing out a new formula.

The formula that is to be used must be accepted by the sovereign nations and this ordinarily means, at least in the Western world, agreement among the industrial elements within the sovereign nation. Where I have been acquainted with this fisheries treaty matter, the nations ordinarily seek the advice and consent of their industries inside their countries in the formulation of the attitude they take toward any particular international fisheries regulation problem. So, one has a selling job to do in each instance, and a complex one, within countries, and as among countries. This, in my observation, has never been successfully done excepting where a large element of the natural history knowledge has been gained and understood. First, to get an agreement, you must have a pretty fair knowledge of the natural history elements - the reaction of the fish stock to the fishing pressure and so forth, and the relationship of the fish stock to the changing environmental conditions, and so forth. Without a very solid base in natural history inquiry it cannot move forward to the necessary political agreement steps. Ambassador McKernan is the one who is vigorously dealing with these matters in the international field and I very much like the general attitude he is taking towards the problems he is dealing with; he simply takes one problem at a time and gets agreement on that and moves on to a new one, without tremendous emphasis on underlying principles, although he does have underlying principles and within the context of these principles these agreements are made.

We are moving now into the field of this business which has not been attempted too much in the past and that is the rationalization of the economic aspects of the division of benefit from conservation practices. What we have done fairly successfully up to this date is to establish the concept of maximizing the physical yield from particular resources. The nations are in agreement that this is not only a necessary thing to do but a desirable thing to do. The problem now becomes more than that of conservation. The problem becomes that of dividing the profits of conservation among the nations. It is an exceedingly complex and difficult problem, and we have not found any general formula for it yet. I doubt very much whether we will, in my generation anyway, and so the only practical way to move into these problems that I know of is as Ambassador McKernan is doing for the United States - make the best deals you can of a temporary nature from time to time with the countries involved, keeping in mind the necessity of keeping the conservation objectives working.

Well, this is not much of a contribution at all. I just don't think that the Commission Report in this aspect added anything materially to what is already in prospect and is already being worked on, and what they did add I did not think was very useful.

Schaefer: One thing that Dr. Kask pointed out is that we need to be a little careful about the criterion of maximum sustainable yield. As I understand it, the objective of conservation is not to obtain the maximum sustainable yield; it is to maintain the stocks in that condition where they are capable of yielding the maximum sustainable yield. In other words, you must not overfish them; but you can underfish them if it turns out to be economically, or otherwise, desirable. I believe you would agree to that.

Chapman: That is right.

Larkin: The trouble is that various nations have various economies. Should a nation that can make money at the maximum sustained yield level hesitate to fish because it puts other nations out of business?

Sohn: I would like to come back to something you said before, Dr. Schaefer, about the necessity of distinguishing between access and revenue. I suppose that we have been talking about three different things. Perhaps we will get further if we try to separate them actually and try to see what interests are involved in each of them and how best they can be solved. It doesn't mean necessarily that something good for one purpose is good for the other. The first one, of course, is the question of access and, in particular, the claim that the countries which supposedly depend on fisheries should be given exclusive access to certain areas. We have the problem between Iceland and the United Kingdom, we have the problem with Peru which is now developing one of the largest fleets in the world and, having developed it, would like to have an exclusive access for them to an important area in the Pacific. How do you deal with this kind of a problem? To what extent, on the other hand, should countries on the other

side of the world, for instance, the Soviet fleet or the Japanese fleet, be entitled to fish all over the world rather than in some more limited geographical area. It seems to me it is problem number one.

Problem number two is, I think, the one on which the Commission spent the most effort. Dr. Chapman refers to it as the problem of conservation and it is connected with the problem of regulation. To what extent would it be reasonable in order to protect certain species or the ecology of certain areas to have the coastal States simply decide it or to what extent the other fishing nations should come into it or some international organization - either the FAO or some regional one. Here you have the problem of various possible types of regulations, including the one that was discussed a few minutes ago about limiting the catch and how you limit it; there are, of course, many ways of doing it.

The third problem - and this is one on which I don't really think we have enough data, at least I have not seen much written about it - is to what extent really the various types of revenue from fishing are relevant. There are several different types: revenue from your own fleets that are fishing somewhere else, revenue from licenses from other people fishing near your shores, revenue from fishermen from all over the world coming and having to utilize your port facilities for shore leaves and for replenishment of supplies, and so forth. How are all those things affected by various methods of regulation and various methods of extracting revenue for the coastal countries. If we can get more data on that subject we might be able to abolish some bogies, some things that people think are very important but, in fact, are not.

Larkin: This is the sort of thing the Commission might have attempted.

Schaefer: I will respond with one comment in regard to this matter of access and revenue. I believe that simply guaranteeing access of the coastal State may not solve the problem, because many countries want the exclusive right to the fisheries near their shores. They may want it so they can catch the fish themselves, or they may want it only for getting revenue from fishermen of other nations, and the same country may want both things at the same time for different species. A most notable example is Peru. As you correctly stated, it now has the largest fish production in the world, of anchovies; at the same time, its own tuna production has dropped, and it now catches very little tuna. The foreign fishermen, over whom there is a bit of controversy at the present time, don't catch anchovies, they catch tuna. In the case of tuna, you see, Peru is interested in the revenue, and in the case of anchovies they are interested in catching the fish. It may very well be, therefore, that we have to adopt one of the alternatives Dr. Larkin has advocated, where we take a different approach for different kinds of fish, depending on their behavior. The anchovy is a fish such that most of the stock is within a twelve-mile contiguous fishing zone, although some are caught offshore to about fifty miles. It remains in the territorial sea and the closely adjacent high seas. On the other hand, the tuna - particularly the skipjack tuna which is very abundant off Peru - spawns way out

in the central Pacific, migrates all over the tropical Pacific Ocean, and only passes through the oceanic waters off Peru, almost entirely beyond twelve miles, during a brief part of its life. Perhaps we have to develop some set of formulae where the criteria one uses depend on the nature of the fish. Thus, we may not be able to handle the problem of access, and the problem of revenue, by some simple thing like allocation of catch quotas for one species. Ambassador McKernan might have something to say to that since he is involved in this problem in Peru.

Christy: I have a question which is more in the nature of a suggestion for a research project. Where are we going with respect to the several ad hoc bilateral negotiations that we have been arranging with the Soviets and the Japanese? Under these arrangements, we let them fish in certain areas within our contiguous zone or use certain areas within our contiguous zone or twelve-mile limit and they, in turn, give up fishing in areas perhaps 100 to 150 miles from our coast for certain kinds of stock. It seems to me that the proliferation of this kind of ad hoc bilateral agreements may be leading us into difficulties. I am not sure but I would like to find out and get some responses from Ambassador McKernan and from others with respect to this.

First, I don't know that we really know what we are trading when we are giving up certain rights in certain areas and receiving rights in other areas or receiving some abstention in other areas. I don't know whether we have been able to evaluate this. Second, I don't know what the implications of these are likely to be for other kinds of stocks that may become important in the future. Are we going to have to move these areas around somewhat? Are we going to have to renegotiate them each year? Another kind of implication is with respect to other uses of the sea. This again is something that is not very clear. Finally, I don't know what the implications are with respect to eventual establishment of a more comprehensive kind of authority. If we have a plethora of the ad hoc bilateral negotiations does this impede an eventual regional authority or some more international kind of authority.

Schaefer: Perhaps Ambassador McKernan would like to speak to that. However, we may be stealing the thunder from his own speech this afternoon, so I will leave it up to him whether he wishes to respond now, or to work this into his speech this afternoon.

McKernan: I don't have any speech this afternoon other than to comment on what is being said. I would be very happy to comment on this very interesting question raised by Dr. Christy now, if we have just a little time. I will try not to take very much.

It seems to me that in thinking about this problem that for the first time in the history of the world nations have developed very efficient high seas distant water fleets that have great mobility, they are moving around the world and are moving from their own country to the coasts and oceans of the world, we do have a new set of problems. There are a number of ways that this problem

can be solved, and it seems to me that a nation such as the United States that has interests in both developing distant water fisheries (and I pause for just a moment to parenthetically point out that perhaps the most profitable fishery at the present time, and I use the word profitable with some trepidation in view of the economists in the audience, the most profitable fishery in the United States now is probably the tuna fishery, and the next most profitable is the shrimp fishery, both of which fish off the coast of other countries and are in a very true sense distant water fisheries), and coastal fisheries (80 to 85 per cent of fishing poundage-wise and probably 70 per cent or so value-wise comes from our coastal fisheries) and with one of the greatest continental shelves and one of the longest coastlines of any of the nations in the world, should have a real interest in this change that is occurring in the world and in the ways that it is being dealt with. It seems to me that this nation certainly should keep open its alternatives, and this is a point that I continuously make. The United States in its own interest ought to keep its options open at the present time to the extent that such a course is consistent with developing international law and foreign policies.

It seems to me that one can say that we have talked about the ways that these developing problems, these confrontations, can be dealt with. One way is through, of course, some super agency - an expanded FAO or a UN organization, the IOC or some new agency. One can handle the problem through the Law of the Sea Conventions and we made some progress in 1958 in this area; a little more progress in 1960. Some of us individually believe that it will be increasingly difficult to get two-thirds of the nations to agree on an additional major step in fishery law of the sea at another conference, although I don't think it is any secret to the people in this room that such a possibility is being considered by all the nations of the world and that the U.S. has been considering this since 1960. Another way to deal with these problems is by regional conventions and this, again, is not new to this group of knowledgeable people. Another possibility, where regional conventions are not possible or not in the United States' interest at this time, is to handle the problem through bilateral or multilateral conventions - executive-type agreements of the sort that we have been negotiating with a number of countries.

If one accepts that it is in the United States interest, at least for the moment, to try a variety of ways of dealing with international fishery disputes without focusing on one method, then when one deals with a variety of disputes, one must be pretty careful. One cannot, on one hand, deal with FAO fisheries or the Committee on Fisheries of FAO and take one position and in a different context advocate a conflicting policy. It is, I believe, fair to say we are trying to be consistent. This essentially is what the United States is doing at the present time; we are juggling three or four balls or problems in the air at one time, and we are doing our very best to keep them in order, the direction consistent. We are trying to accomplish two things - first, we are trying to solve problems and confrontations in the field of international fisheries that are urgent and that do affect the foreign policy of this country. To this extent we are doing what Dr. Chapman mentioned. When we had a problem

with the Polish fishing fleet, coming in the mid-Atlantic area north of Cape Hatteras and south of Cape Cod, we met with them after consulting with U.S. industry leaders and we successfully negotiated an agreement that largely solved the current problem while not adversely affecting our long-range goals in the field.

At the present time, it seems to me, two more important things are happening. In the first place, we are getting these countries to realize their responsibility towards coastal resources and fishermen and we, ourselves, are accepting responsibility for joint conservation programs on species found off our coast but not fished by our fishermen at the moment. For example, the Polish agreement calls for a basic program of joint research on the conservation of stocks of concern to either country fishing in the mid-Atlantic area off the U.S. coast. We are not fishing herring to any great extent - to be more specific - in this area but the Polish fishermen are. They caught perhaps 60,000 or 70,000 tons of herring in the mid-Atlantic last year, which is a lot of herring by anybody's standards, and we have reached agreement on the exchange of basic data which will be comparable to and can be added to our own data on this species. We are only fishing herring to a small extent now, but there are plans by some of our fishermen to expand this fishery. Thus, we have started a basic conservation program with the Polish on this species. We have the same consistent program with the Soviet Union in this area, so that all three countries, fishing in the mid-Atlantic area, have established a scientific basis for conservation of resources that was not in existence before these two bilaterals with the two foreign nations fishing most heavily in the area. We have solved our immediate problem of conflict between the Polish and the Soviets, the problem that involves the economics of our fishery, we have made progress towards the conservation of fish of direct concern to us; and, in addition, we have gone further an established a basis for a broad conservation program in the area by means of these two executive agreements.

More than that, the United States at the present time is attempting to establish this general concept that the present practice of fishing the high seas gives the advantage to the distant water State. We are attempting to reestablish a balance in a small microcosm of world ocean. It seems to me to be a pretty good test to do this in the mid-Atlantic. We are testing what I think will be a new direction in developing international fisheries relations. The principles that are embodied in this concept are views that many of us would like to see embodied in international law of fisheries. The conflicts between the United States and the Soviet Union and Japan on the Pacific coast and in Alaska have declined immeasurably by using some of these ideas. You will find people who are very knowledgeable about North Pacific fisheries, such as Lowell Wakefield and Chuck Meacham, will agree that these agreements have accomplished the purpose of reducing friction. They, therefore, are tending to promote the foreign policy of our country in general and some of the policies, I might add, that are enunciated in the Commission Report. These ideas are developing on an experimental basis the possibility of a better balance between the distant water fishermen and the coastal fishermen and, besides that, they are establishing what

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the 1958 Convention on Living Resources sought to accomplish - to conserve resources and provide that the responsibility for such conservation is shared by all, distant water fishermen as well as coastal fishermen.

Herrington: I gather that this morning there is a place for comment as well as questions. I thought that in the report of Professor Larkin he was a little rough on the Commission. I think his ideas are excellent but I believe he was expecting something from the Commission that was a little beyond what one should expect from a body of this kind.

Of the Commission Report itself my chief difficulty is that it suggests a number of things that are good but it gives no idea as to how to achieve them. The things that they suggest have been known for some time but how do you get nations to agree to them. That is your basic problem. They urged countries to ratify the 1958 Fisheries Convention. Well, at the time it was negotiated I believe the Convention was a great step ahead in fisheries, but only a limited number of countries ratified it and now even though more countries have ratified, I don't think the Convention is adequate any longer. Its good points are being applied in other negotiations, as has just been indicated by Ambassador McKernan, but you would have to change it further to accomplish some things that are badly needed; like getting rid of the veto powers of individual countries, getting joint enforcement, cutting down the amount of red tape when you have to deal with a large number of countries. I think these concepts are being worked on in some of our present conventions but I don't believe the world is yet ready to write these into a world convention that all countries would agree to. The recommendations about financing international staffs for international commissions I agree with also, but there are some problems here, too. If you have an international staff that is well financed it means that all the member countries must contribute. If any one of the member countries does not like the way the scientific findings are pointing, they can hold back the staff by refusing to appropriate adequate sums of money. So, to an extent then the international staff becomes a prisoner of the individual countries that are contributing to its financing. This is something that must be considered when you set up an international convention.

One thing very important to keep in mind is that international law in fisheries at least has been developing step by step. In 1958 the Fisheries Convention was a big step ahead but the concepts included were not something new. The world did not jump in quantum leaps from one level to the next. What was done there was based to a large extent on the experience we gained in the operation of many bilateral and multilateral conventions. In 1958 it was possible to move ahead and get conference agreement on a code based on the experience of small international bodies. I think that what we are in now is again a step by step working out of methods for handling international problems. I completely agree with Ambassador McKernan when he said that we must learn to handle them, and that sometime the world will be ready to accept the solutions on a world-wide scale. At that time we might have a world conference; we then might

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take another step ahead by drafting a world agreement which incorporates them. What bothers me particularly when people lay out these beautiful regimes in the sky is that they don't tell us how to get there. They have to be worked out by hard drudging work - step by step - by men such as Ambassador McKernan and his advisors.

Larkin: I would like to insert here that I would hate to have the job of trying to implement some of the alternative schemes I was flying as kites. Certainly, the day-to-day drudgery is the real key to progress, and it obviously has to be done in a very limiting context. Similarly, the Commission couldn't irresponsibly free wheel in recommending an overnight major shift in U.S. policy. But, on the other hand, there needs to be a background of wide-open speculation to ensure that the day-to-day drudgery isn't painting you into a corner. Perhaps that is what discussions of this type are for. I nevertheless missed the reassurance I sought in the Commission's Report that they had at least considered some way-out ideas in arriving at their eventual judgment.

Kask: One of the questions I was asked and wasn't able to answer at the coffee break was, if I had my way would I put the world fisheries under the United Nations and let them work out the problems? My quick answer to that was I wouldn't let the United Nations run a hot dog stand, because under the organizational pattern they are suffering under they are not in a position to do a good job. This has nothing to do with the quality of the people who are involved. Some of them are the smartest that we have. What is required, in my view, is some sort of an overall fishery commission in the area of a specific problem. For instance, as I tried to convey in my talk, the international community of nations and the United Nations are not synonymous terms. One reason for this, of course, is that about one-fourth of the world's people - who are certainly part of the international community - are not in the United Nations, and I think they would be a little reluctant not to be included as part of the world community. Further, the United Nations is not an organization designed to be operational; for instance, in its system of voting one vote, one country is neither a democratic or an effective way of conducting business. When a country like Iceland, with 200,000 people, has the same vote as the two super powers and as India, with 450 million people, then you know that an organization of this kind cannot take any very substantive action. It is something like giving the States the job of running high seas fisheries when they are not designed organizationally to do this. I don't think that this is anybody's particular fault, but it is a fault of organization.

Another reason why the United Nations is not a good place for operational responsibilities is its system of financing. We have all been suffering, at least those of us who have been working in the international field have, because we are entirely dependent (as Ambassador McKernan pointed out) on the contributions of the member governments. If they don't make these contributions and in adequate amount, no matter how hard you want to do a good job you are not able to do it. The United Nations is in exactly this position. One member pays one-third of all the costs, two or maybe three countries together pay half, and

two of those who pay half are in mortal combat. They don't like each other, so they are not going to support each other's ideas. You have, therefore, got an organization that has really no operational basis.

When I say, "Don't turn this over to the United Nation," it doesn't, in my view, mean that it shouldn't be turned over to some international agency that is organizationally suited and competent in this area. We already have a world commission on whales which unfortunately is not one of our most prideful operations. We certainly will in the not too distant future (in my view) have an international (world) commission on tunas, not because this is a do-good type of operation but because the tunas require it. As we learn more about tuna we know that they not only travel across an ocean but some travel from one ocean to another and so do the fishermen that fish them, so it is becoming a global problem. And if these problems are global then we must attack them globally. This is one of the reasons that I considered this report a little unimaginative since the authors rejected out of hand one of the possible formulas that might work in the high seas fisheries situation.

Chapman: I have been sitting here mulling over in my mind that I did not make a very good response to your original question. You asked me to comment as a representative of a large international company in this field and I never think very much in those terms. The reason why is that I have never had any directive from the management of my company about the things I do, and I have even stopped asking them whether I am doing the proper things or not. I did ask a few times in the past and they always said keep right on doing what I was doing, but I thought it was because they did not understand what I was doing. I have been active in this field and I think that my activities have been consonant with the welfare of the company. I will give you my thinking on this but I wouldn't represent this as the thinking of the Ralston Purina Company because it may or may not be.

To begin with, our major interest in the ocean, as a company, is in tuna. We produce about 25 per cent of the canned tuna eaten in the United States. In doing this we use about 12 per cent of all the tuna that is caught in the world by everybody. We collect tuna from all over the world and have done so for a good many years. We take tuna from all the fisheries in all the oceans of the world producing the sorts of tuna we use. It seems to me that our best shot is to keep the production of tuna increasing on a world-wide basis steadily. Believing as I do that the market can be made to continue to grow providing the price is kept right, what one wants to do then is to keep the cost per ton of producing tuna to the fishermen as low as is possible. That will increase the profit margin of the fishermen and permit more tuna to be taken out of the ocean. There are two serious aspects of this. There are a number of subsidiary ones, but two serious ones.

One such serious aspect is that when a population of tuna is overfished (now I will use it in that broad term) from the physical standpoint, the cost per ton of production goes up rather sharply as the amount of effort

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required to catch a ton of tuna increases. So, therefore, what we would like as a company is to see no stock of tuna anywhere in the world overfished in the physical sense. When it is required to limit fishing effort in respect of a particular stock of fish we would like to have the international mechanism prepared to be able to initiate those regulations rather quickly, because fishing effort, as Dr. Kask says, is very mobile in this business. It moves from one ocean to another very quickly; by months, even, there can be a major shift from the Indian Ocean into the Atlantic Ocean or into the central Pacific Ocean of the same vessels.

Secondly, the other major half of the problem is to keep it so that all tuna fishermen have access to all tuna resources of the world as fully as is possible. And there we come into the problem of jurisdiction by coastal States over fisheries lying in the high seas, and the attempt of some of them to limit the operations of fishermen of other nationalities in the areas off their coast.

So, I have labored diligently over the years not only to provide conservation machinery but also to prevent the establishment of rules that would impede this free circulation of fishermen to follow the fish.

There is another very large element of this problem of cost reduction which relates to the major effects of environmental changes on the abundance and availability of the tuna. I won't go into it here because it is more a scientific than a political question but it is a major one, too, and why we are much interested in pushing for the development of international cooperation in marine and atmospheric sciences - the establishment of the World Weather Watch, the global atmospheric research programs, the cooperation between the Intergovernmental Oceanographic Commission and the FAO Department of Fisheries, the World Meteorological Organization, and so forth. It is too complex to comment on here this morning but I did want to mention them as being elements of the problem. They are all involved in the cost factor that the fisherman has in producing the fish. If we can keep his costs down and his profits up, he increases the production of the fish.

Schaefer: I would like to comment on one of the things that you mentioned. The Commission Report deals very much with institutional mechanisms for achieving fisheries management. You stated that, from your viewpoint, you would like to see all fish stocks - tuna stocks - everywhere in the world maintained so that they were not overfished. One of the things that isn't very well covered in the Report, in my view, is the matter of how one obtains the necessary information to do this. If one is going to prevent the overfishing of tuna stocks, or if one is going to allocate quotas within a maximum yield, one has to know what the fisheries scientists call the equilibrium catch-effort relationship, or what the economists call the production function. In other words, just what is the average steady-state relationship between amount of fishing effort, amount of catch, and size of population? This is fundamental for the manager, otherwise he never knows whether he is allowing overfishing or underfishing until the fish stock

has been overfished so far that a blind man could see it with his cane, and that is already too far. This is really what Dr. Kask referred to. If one is going to manage a fishery, there has to be a mechanism not only for applying regulations rapidly, but for getting rapidly the information you need so you can apply intelligent regulations. The Commission Report doesn't deal with this in much detail.

Chapman: I will put it once more and then be quiet, not to stimulate you again. The only way I have known to get at this problem is through an international specialized agency. I know you and I don't quite view this the same way but I will state you my views. The only agency we have of this nature presently is the Fisheries Department of FAO; it is a poor one but it is the best one we have. In fact, it is the only one we have. I felt, when looking into this seriously in the period directly after 1959-60, that it was a very poor organization at that time in relationship to the serious problems which were arising. It was so poor that it was a bit of a handicap in some respects and the question was whether to do away with it and get something in its place or fix it up so it would work better. A number of us undertook the task of reorganizing FAO's fisheries work at that time and improving its activities. I don't think any of us are horribly proud of the result, but it is a much more competent body in this field now than it was before and it is improving, in my view, steadily all the time. That is the only place we are able to bring the whole world community interested in tuna together, for instance, to work on the problem which you brought up and which is the key problem. You can't manage anything unless you know the parameters that go into the management picture. We haven't done well on this yet but at any rate that is the mechanism that is prepared for this function.

One of the things Dr. Kask alluded to, but which hasn't been developed very much, is that our experience in these international fisheries regulatory patterns has been that the fewer countries involved the more smoothly the arrangements go. If you get countries involved that really don't have an active interest they often pontificate and confuse the issue but are not really able to contribute to the solution. And so one wishes, as a pragmatic matter, to keep individual regulatory mechanisms confined to the least number of nations possible, and to keep each such mechanism confined to the nations who are actually involved. Those are my views on the situation.

This is why I don't think that an international organization which comes from the political arm - the United Nations arm - is really going to be useful in this field at all in this generation. It might be useful in a future generation but what one needs is strong inputs on the scientific and technical side of international cooperation. This can be handled by the specialized agencies and is not expected at all from the political arm of the United Nations.

Schaefer: I would like to ask Dr. Kask whether, in his view, his proposed International Tuna Commission would operate most effectively as an arm of the FAO or as an independent international agency?

Kask: I think that an organization should be organized to do a specific job and in any organization where you have more than is required, the more becomes a burden. For instance, in the tuna business all countries put together catch about a million short tons of tuna a year, but two countries - Japan and the U.S. - catch 80 per cent of this million tons. If FAO were to run the tuna business with 120 members, then in my view the other 118 would be a detriment. I think that if and when we do get a world tuna commission it should be made up principally of those countries that are actively fishing the species, as Dr. Chapman indicated, and also that they should be the only ones that have a vote on substantive matters.

Laing: I represent practical trawling entrepreneurs from the other side of the Atlantic. I must say that I was greatly relieved to hear Dr. Kask get rid of the United Nations from the high seas and I would like to endorse everything that Dr. Chapman has said about the pragmatic approach to problems of this kind. Apart from the additional difficulties that are created by the multiplication of numbers in international organizations and agencies, I don't really see what substantive problems are solved by passing these matters to a supranational agency. You are merely transferring the basic problems from one set of people to another; you haven't solved any problems, you are merely adding to the difficulties in the process of transfer. So, I am all for the Commission in its basic, pragmatic approach and for building upon the foundations which have been laid by international commissions, such as ICNAF and NEAFC, in not too despairing a fashion. I think that Ambassador McKernan was quite right in pointing to the valuable work that has been done by them so far and, indeed, to the great promise that they hold for the future. At least, this is how I see it from within the industry.

I think the important thing about the North Atlantic, and that is the only area I can speak about, the important thing about ICNAF and NEAFC, is the greatly changed spirit or attitude towards problems that now appears to exist in these two commissions. Consequently, I do not despair merely because neither the biological solution nor the economist's solution has so far been achieved anywhere. I think a great deal will be achieved because the nature of the biological and economic issues are generally understood by fishery administrators - the people with heavy responsibilities in reaching international fishery agreements.

That brings me to the point I really got up to make, about the aim of fisheries management. Like you yourself, Mr. Chairman, I think that all talk of economic optima is a snare and a delusion because, apart from the fact that there is no unique economic optimum in an international fishery, it is not necessarily the right thing to aim at anyway. The right thing to aim at, in my view, is merely economic improvement in which all members can share. Now, I agree that the notion of maximum sustainable yield is a convenient shorthand way of describing what one is after; but, unfortunately, with many stocks at least, maximum sustainable yield does not give us a unique solution either, because of the flat-topped nature of the long-term yield/effort curve. As a

consequence, one really wants to be as far back along that flat-topped part as one can get so as to minimize the effort that is required to produce approximately the maximum sustainable yield or, in other words, roughly to maximize the catch per unit of effort. But, in order to get back to that point of highest CPE, one has got to move back along a short-term yield/effort curve which is almost a straight line to the origin. In other words, in the first year at least, your cutback in effort results in an almost proportional decrease in total catch, which is an enormous sacrifice for anybody to make; unless you can coincide the cutback with the entry of a very good year-class into the fishery you could be in very deep trouble indeed. So, it is not just a simple matter of saying maximum sustainable yield; it is which point on the flat-topped portion of the yield/effort curve you want to be in order to minimize the effort. For a long time, in order to get a really good economic position, you would have to be prescribing cutbacks which no nation would want to undertake. But there you are; these surely are the elements of the horse-trading that has got to be undertaken to determine each year the total allowable catch, on the one hand, and the share of the loot, on the other. I think that the pragmatic approach that Dr. Chapman and Ambassador McKernan describe is the only way we can get any sort of answer to both those problems.

Schaefer: Thank you for your very illuminating remarks.

Zeni: I wonder if we could tie in today's discussion with the previous two days' discussion a bit better. Would some of the problems I heard here this morning be solved if the tendency toward a closed ocean or closed sea were sustained, as the mineral industry seems to want? The other question I would like to ask is are there any lessons to be learned from the regional agreements that the fisheries industry has been able to make for the oil industry or for the mining industry to get the same safeguards they seem to think they need in the ocean in order to go forward?

Schaefer: I will attempt a brief answer. One of the things, of course, that you can't do with many of the fish stocks, that you can do with oil and gas and minerals, is whack them up into ownerships by location, because they are fugitive resources, they swim around. For example, albacore tuna migrate from California to Japan, and the Anglo-Norwegian herring travel around a considerable part of the North Atlantic. Thus, any property right, or allocation of this sort, has to be coextensive with the particular fish stock, and different stocks move different ways. So, I don't think you can use a mechanism, such as an area of jurisdiction, the way you can with the minerals and such things that are fixed. It requires some other process of allocation, if we are to create some sort of property rights in the fish resources.

Zeni: Suppose, using Professor Larkin's diagram, that inner narrow circle was actually a point right in the center. Would that help, for example? You have not answered the first question about the closed sea concept which we have been heading toward in the last couple of days.

Schaefer: Well, if it were a sea with only three contiguous countries, and you allocated it so that it was all territorial sea, then, of course, you have the problem that "Z," who is moving around in there, would be moving among these three territorial seas, and the three countries would then have to arrange who catches how much. So you would be right back where you are.

Zeni: In other words, the fishery industry goes along with Dr. Chapman in as little regulation as possible off our shores and other shores. Perhaps I should say jurisdiction instead of regulation.

Chapman: What I think is good for the tuna industry, and for the United States, and for the world, is a three-mile territorial sea. I am one of the few people in the United States, or in the world, who still believes in this. We will deal with this subject rather carefully tomorrow afternoon and I don't think your assumption that we have been trending in the direction of dividing up the ocean in these last few days is a correct one. My question yesterday didn't get answered properly: What are the number of nations that would vote for such nonsense? I can assure you that there is a blocking third, I think probably about a half. I think we can talk here as much as we want to, but when it comes to the sovereign nations voting in a conference of plenipotentiaries there isn't going to be a two-thirds vote for a lot of the nonsense we have been tossing around here for the last couple of days.

Schaefer: Captain Zeni, if I understand your question correctly, if we simply made the diagram all territorial sea, with three adjacent nations, then if this spot I put in sector C is a manganese deposit, or oil, it isn't going to go away. If it is a school of tuna, it may be in sector C today and over in sector A next week, so the allocation problem is different for the two types of resources in general, so that the closed sea really doesn't help much if there are a number of countries adjacent to it.

Sohn: I would like to clarify two misunderstandings this morning. One was that the United Nations could not even run a hot dog stand. I would like to say that there are a least three good restaurants and that on at least one day a year - Election Day in New York - one of those restaurants is the most popular restaurant in town because it can serve liquor.

Secondly, I think there is a misunderstanding about when people say something should be run by the United Nations. Nobody really means that the political organs of the United Nations are going to run anything; everybody assumes it is going to be done by some kind of a specialized authority, a specialized agency, which can be tailored specially for that purpose. We have been doing that in practically every area; if you look more closely at any specialized agency you soon discover that it is not the general body that runs the whole business but a special executive council or even a special committee, as in the International Maritime Consultative Organization, which is carefully balanced between the big powers and others in order to ensure that all interests are properly represented. These things don't run amuck and I am sure that once you

decided you wanted an organization in this area a structure for one could be devised that would be acceptable to the big powers and the small powers alike.

Herrington: On the question of the concept of property rights in dealing with the fish problem, I would agree with your reply that this, as such, will not handle the problem. However, I think this is an area that needs a lot more exploring. One example here is the salmon. In the North Pacific the salmon are fished by only a few countries. In the Atlantic they are fished by many countries. If you compare the management of the two areas you will find that the Atlantic salmon is not much of a factor in the economy while in the Pacific it is still quite important. Another case is the fur seal. Four countries share in the harvest of fur seals, yet under international law presumably any country could take fur seals on the high seas. For various reasons they don't, but the way it is run the fur seals provide one of the best examples of successful international management of a resource that spends much of its life on the high seas. So, I think there is a lot of room to explore concepts involving some sort of a property right to stocks of fish but not to an area of the sea or seabed, such as has been suggested for petroleum.

Schaefer: Well, that was my point. What has been done in the case of the fur seal, and it is one of the reasons it is successfully managed, is to recognize a de facto property right to those seals, so that they belong jointly to the U.S., Canada, Japan, and the U.S.S.R. These four nations share the proceeds of the fishery on an agreed-on basis. Since these are fugitive resources, the property right has to be in the seals not in an area of the ocean.

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Laing

Chairman - Giulio Pontecorvo, Graduate School of Business, Columbia University

Members of the Panel - Austen Laing, Donald E. Bevan, Virgil J. Norton, and Donald M. McKernan

Remarks - James A. Crutchfield

Austen Laing
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I want to begin by saying that I make no apology for declaring my interest in exclusive fishery limits embracing the smallest possible area. For this reason I am an advocate of purpose-differentiated limits. I could bring various technical and economic considerations in support of such differentiation but I would be merely rationalizing my own prejudices and interests in the matter. Moreover, in this connection we are dealing with what ought to be and, accordingly, we should remember John Stuart Mill's dictum that an analysis of the "is" can never yield an "ought." I would, of course, be happy if territorial and fishery limits were made coterminous but I accept that this is a non-starter if, as is probable, territorial limits are to remain of narrow breadth. My position in this respect can, therefore, be summarized in which I might now christen as Laing's Saw: Craven's Law is for Craven Hearts. Well, having said that I need say no more on fisheries limits for we can safely assume that, whatever these may be, there will remain a substantial amount of fishing to be undertaken beyond the exclusive fishery limits, that more and more of the fish stocks will be subject to an intensity of fishing effort around or beyond the range of maximum sustainable yield and that, therefore, there will be a continuing and growing need for international fisheries management. That leads me to my first point.

I believe, with great respect, that economists are in danger of doing a grave disservice to the cause of international fisheries management. In the first place, they are inclined to suggest that all problems of management stem from the fact that we are dealing with a common property resource. In fact, the major part of the difficulty lies in the lack of sovereignty. Generally speaking, quite enough is known about the dynamics of fish populations to permit effective management provided there are means of ensuring that the appropriate action is taken. I say this despite the difficulty of evaluating precisely all the variables in the functional relationship involved. But where stocks are seen to be in need of management such precision is rarely, if ever, needed to effect an improvement. And an improvement is all that one need aim for to ensure that one is moving in the right direction.

My second charge against economists is that all talk about aiming at some economic optimum is a load of dangerous codswallop. As the Commission's Report points out, the economic conditions required for the achievement of a maximum net economic return cannot usually, if ever, be made to exist. Even if they could, there would remain the problem of sharing the economic rent arising out of it. Any suggestion about charging rent, or otherwise bringing the cash nexus into the arena of management, is not merely unrealistic but dangerous in that it provokes antagonism towards the very idea of management. (I am afraid that too many economists fail to appreciate that, in this as in many other spheres, the best is the enemy of the good, always supposing that economists really know what the best is!) In any event, an economic optimum is not always the proper aim of policy.

I believe more is achieved by evolution than by revolution. Accordingly, I reject as a counsel of despair the frequently-expressed view that you cannot do anything in fisheries management unless you do everything. I make no complaint about the absence of a blueprint from the Commission's Report. I accept that where there are no sovereign rights over the exploitation of the resources, each step forward in the management of that resource is the outcome of either a horse deal or the application of power politics or a combination of both. My next point is the development of this point. Because of the need for a step-by-step horse trading process nothing larger than regional arrangements are practicable.

As should now be obvious, I stand foursquare behind the spirit of the Commission's Report and I regard their apparent fuzziness and seeming lack of imagination to be positive virtues because realism, in my view, demands such an approach to the matter. Moreover, I believe that things are beginning to move in the North Atlantic, and I am not qualified to speak of any other region. I believe that things are beginning to move in the North Atlantic through ICNAF and NEAFC (at long last, it might be added). The general framework that is now being examined within these two bodies is, to me at least, commendably constructive. For obvious reasons, I object to the emphasis which is being given to preferences to coastal States. In my view the preferences should be for dependent fleets, if any preferences at all are to be given. But I recognize that nothing will get off the ground without giving some preferences to the coastal States. The reservation of a percentage of the total catch for developing fleets and for newcomers would both prevent the ossification of entrenched interests and maintain an open door. I believe, and I trust not naively, that in this edifice an open door is the best means of keeping out burglars. But the bulk of the loot would be shared on past performance in any fisheries management deal. In my view, this kind of regime would need to be given safeguards against ossification by providing for penalties - in the form of reduced quotas - for countries that either exceed or fail to catch the quotas allotted to them. It is for this reason that I disagree with this small detail of the Commission's Report that unused portions of quotas should be transferable as between countries. I think not. That leads to more deeply entrenching existing interests.

I agree with the Commission that in the North Atlantic only cod and haddock quotas should be fixed and that these should not initially be broken down into individual stock quotas except where you have highly sensitive stocks on which particular fleets are heavily dependent, as is the case, for example, with Georges Bank haddock. But the introduction of both the individual stock quotas for cod and haddock and the extension of the system to other varieties also in need of management could certainly come at a later stage. That is why I agree with the general approach of the Commission in merely looking in the right direction and leaving it to the negotiators of the countries involved to determine the individual steps that may be taken in that direction. I can quite easily envisage greater sophistication in systems of management: for example, using a price mechanism without, however, the use of cash. To suggest using a points system, as one did in rationing during wartime in certain countries, alarms many people when merely mentioned. I agree that this horse is unlikely to ever reach the starting post, let alone win any race, but giving it a run out might have the value of showing that it is quite easy to think up very sophisticated forms of management but that is not the real problem. We do not need a Rolls Royce, but merely something on wheels that can be made to roll forward and I think we do have these because at least in the North Atlantic you do have the right attitude of mind now being engendered within the two commissions to get something started. And something has started, as Ambassador McKernan has told you this morning, on this side of the Atlantic and, on the other side of the Atlantic, Russia and the United Kingdom and Norway are getting together in order to do something about the critical state of the Northeast Arctic cod stock. All this is extremely valuable indeed. The United Kingdom has offered to discuss the regulation of the total catch taken from Icelandic waters. That, too, in due time will I hope produce something effective.

All around, the countries concerned are thinking in more or less the same terms and I think we owe a debt of gratitude to the United States for the contributions its officials have made towards the creation of this healthy attitude. Finally, I should say that while I have by implication rejected the notion of any supranational body exercising sovereignty over the exploitation of fish stocks, I think that there is a valuable role to be played by the FAO as a general coordinator, advisor, and provider of information and prodder of the regional management bodies, but quite frankly I think that is the limit of the role it can play in this particular field. To some, all this will spell muddling along; maybe, but this at least means movement and I, for one, will settle for that!

Donald E. Bevan
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In addressing the conference, I find that I share somewhat the same emotions that Professor K. O. Emery expressed yesterday when he found that there were few oceanographers in the audience. I have difficulty in finding very many of my colleagues, even though I consider as biologists a number of those present engaged in the honorable profession of biopolitics. Therefore, I have some concern in thinking, acting, and speaking as a biologist and still being able to hold the attention of those of you in other fields.

I should like to begin by enumerating the four points I wish to make in relation to the biology of fishing on international waters.

(1) It is often difficult, if not impossible, to separate the activities in international waters from those within the contiguous zone, or even the territorial sea, as they relate to the biology and management of an exploited species.

(2) This point leads to the corollary that any management must gather information concerning, and maintain control over, the geographical range of the species it seeks to manage. Perhaps I should qualify this statement a bit to allow for that condition in which the species has a geographical range that is larger than the range that must be investigated for the provision of sufficient information for the maintenance of the stock at some level of abundance. This conference is not the appropriate time and location for any discussion as to what that level should be.

(3) It follows that either the coastal State should have major responsibility for research and management outside its territorial sea and fishing zone, or an international agency should take some responsibility for fishery research and management within the waters beneath the jurisdiction of the coastal State.

(4) We should be able to separate the problems of fishing and those arising from the exploitation of other natural resources, specifically minerals, oil, and gas.

Now, I should like to dwell a moment on the subject of the biologist and his field of endeavor since it has to do with the subject of this conference. I think that for many of you, as economists, political scientists,

lawyers and others, a brief description of the biologist and his business may be useful if you feel the need to develop appropriate seductive language to lead him into some scheme that requires modification of his science or his customs. I believe that it is important to understand that the tools of the fishery biologist, though imperfect, have stood the test of time. Techniques and devices introduced by the American W. F. Thompson, the Englishman Michael Graham, and the Russian F. I. Baranov have been improved and new tools have been devised by the present generation of fishery scientists and these in turn will be supplemented by a new generation of scientists capable of generating new theory. The biologist measures the reproduction of the species of concern and recruitment to the stock. He measures also the natural mortality rate in the population and the fishing effort and its effect on the stock. Finally, he must measure the rate of growth and changes in growth rate brought about by changes in the parameters I have mentioned before.

It is clear that if management and research rest in the hands of either the coastal State or an international body, either will have to provide for these responsibilities. Therefore, I applaud the recommendation of the Commission for the formation of the National Oceanic and Atmospheric Agency. If we expect to play an effective role in the international regime we must first have our own house in order, and we can do this at present by defining responsibility for management in that part of the sea that lies within the outer boundary of the contiguous zone. That this is a major problem for the U.S. fishing industry was clearly recognized by the Conference on the Future of the Fishing Industry of the United States, held in Seattle, in the Spring, 1968. I should like to quote the precepts and principles that the conference believed the United States must apply in dealing with, and attempting to rectify, the problems of its fishing industry.

Effective means for managing most domestic and foreign fisheries in waters adjacent to the United States do not exist and the mechanisms for such control must be rapidly evolved....

The present diverse and fractionated jurisdictional system with regard to managing fisheries resources in the United States is impractical and must be corrected....

These considerations led the General Committee of the conference to recommend:

Areas of authority for management of resources of importance to United States fisheries must be better defined. At present, the management of these resources is spread among towns, counties, states, federal agencies, and fishery commissions. Diversified and poorly defined responsibility has prevented effective use of available scientific knowledge of management of resources, and has inhibited development of research to investigate the condition of

fish and shellfish stocks. New legal bases are needed for management of the living resources of the sea which will permit the flexibility necessary to meet local problems but provide minimum uniform standards to be established at the national level.

The difficulties with national regulation should not give rise to feelings of smug satisfaction among those who propose international regulation. No international management agency is completely satisfactory as a model. It is my personal view that successful international management has been obtained only in the case of one multilateral commission and a few bilateral commissions where the division of catch has been decided on by prior agreement, either actual or implied. I have no argument with Ambassador McKernan's assertions this morning that regional, bilateral, and multilateral commissions show considerable promise in the solution of fishery management problems, but they have yet to stand the test of time. In situations where the catch has not been agreed upon and where new fishing power continues to enter, I do not believe we can take satisfaction in the solution of our problems.

I am impressed with the suggestion presented recently at the Marine Technology Society meeting by Professor Burke that our nation might profit by considering separately from mining and drilling such more irrational activities as war and fishing.

In my view, too much has been made of the difficulties of multipurpose use and the need for joint considerations of the problems of national defense, mining, and drilling. As an example, may I cite the recent happening in the Santa Barbara Channel. I believe there is not much question that the incident should and could have been avoided, but I would classify some of the initial comments as they are related to commercial fishing as near hysteria. The first warnings of vast damage to fisheries have not been followed by documentation of any substantive damage, and I do not expect them to be. Pollution is not the concern of this panel, but I do not wish to leave any impression that I am without deep concern. However, my concern is for the serious filling and destruction of our estuaries under the euphemistic practice of sea walling, for the agricultural use of chlorinated hydrocarbons that drain to the sea, for deleterious change in the run-off patterns of river basins, and for either the discharge or spills of refined petroleum products. These are all problems that require study and responsible legislation. Legislation must be aimed not only at discouraging such activities but at the more important task of defining responsibility and providing the means and methods for confinement and abatement of accidental discharges.

As a biologist, I should like to take issue with one of the objectives that the Commission's Panel listed as necessary for the establishment of a legal, political framework for exploiting the living resources of the high seas. The Panel said that any framework for exploring the living resources of the oceans "must encourage the development of the vast food reserves of the sea at

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the lowest possible cost in order to help end the tragic cycles of famine and despair." Food and famine can be related, but I submit that the solution of famine and despair must depend upon alteration of either birth or death rates of the world human population.

I question also whether the proposed national catch quota for the North Atlantic cod and haddock fisheries is in our nation's long-term best interest. The Panel carefully considered problems that might arise; I refer you to their rather full explanation. My personal view is that our past experience with national quotas gives little hope of success. I believe the cod and haddock fisheries come closer in analogy to Antarctic whaling than they do to the Fraser River sockeye salmon fishery. National quotas have been imposed in the case of these two fisheries. The International Pacific Salmon Fisheries Convention has been almost unbelievably successful in dividing the catch between the United States and Canada, whereas the International Whaling Commission quota has been a dismal failure.

I think it important to stress that our remarks may seem to be too critical of the Commission's report because the deliberations of the International Panel and specifically the chapter on "An International Legal-Political Framework for Exploiting the Living Resources of the High Seas" have been separated in our discussions from those of the Panel on Marine Resources. While we may have some differences in detail, I believe we should vigorously support the plan for national action and express our concern in the event that delay in its implementation continues.

Finally, I am not content to listen to the geologists provide geological boundaries and lawyers discuss legal boundaries, or perhaps next the economists discuss economic boundaries for the seas without providing a response as a biologist. I should like to suggest the establishment of a natural boundary based on biological considerations to settle the question of the width of the territorial sea. Such a boundary has the advantage also that it nicely complements the three-mile limit, which was based upon the range of a cannon and has served so well for so many centuries. I suggest for your consideration that the boundary be based on the distance that a dove can fly.

Bibliography

- Burke, W. T. "A View of the Ocean Decade, 1970-80," speech delivered before the Marine Technology Society, Miami, Florida, June 16, 1969.
- Gilbert, De Witt (ed.). The Future of the Fishing Industry of the United States. (Publications in Fisheries - New Series, Volume IV.) Seattle: University of Washington, 1968.
- Marine Resources and Legal-Political Arrangements for Their Development. (Volume 3, Panel Reports of the Commission on Marine Science, Engineering and Resources.) Washington: U.S. Government Printing Office, 1969.
- Our Nation and the Sea. A Plan for National Action. (Report of the Commission on Marine Science, Engineering and Resources.) Washington: U.S. Government Printing Office, 1969.

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It does not seem necessary to linger on the need for and the benefits to be gained from limited entry fishery management programs. Crutchfield,¹ Van Meir,² and others have documented the potential economic gains for U.S. fisheries from limited entry schemes. Limited entry is an effective conservation technique and an economically efficient technique of exploiting public fisheries. The lack of controlled entry generates economic waste under current harvesting techniques and dissipates long run entrepreneurial gains from technology advances. Thus, for this discussion the basis for evaluation of the Commission's recommendation is in large part whether or not they provide for a satisfactory move toward limited entry in fisheries exploited by United States fishermen.

Within this context, the Panel Report of the Commission³ does provide a useful framework for developing a workable, fishery management system. Country quotas are the first reasonable and necessary step if limited entry is to be initiated. However, the Panel did not seem to go far enough in their recommendation for country quotas.

Coming now to specific recommendations of the Panel, there are some points which should be brought out. First, because countries have various fishing methods, as well as differing economic and social conditions, the Panel recommends that the overall quota on the North Atlantic be based on maximum sustainable yield rather than maximum economic yield.⁴ This recommendation is justifiable, because it would be difficult to deal with maximum net economic yield on an international fishery. A recent study at the University of Rhode Island⁵

¹ James Crutchfield and Arnold Zellner, "Economic Aspects of the Pacific Hali- but Fishery," U.S. Fish & Wildlife Service, Fishery Industrial Review, Vol. 1, No. 1, April, 1962.

² L. W. Van Meir, "An Economic Analysis of Policy Alternatives for Managing the Georges Bank Haddock Fishery," (Ph.D. thesis, University of Kansas, 1969).

³ Marine Resources and Legal-Political Arrangements for Their Development (Wash- ington: U.S. Government Printing Office, 1969), Part VIII.

⁴ Ibid., VIII-62.

⁵ R. W. Callen, "An Economic Evaluation of the Effects of Changing Demand on Two Interacting Fish Populations," (Master's thesis, University of Rhode Is- land, 1969).

dealing with a simulation model based on a bio-economic analysis of the Georges Bank haddock and cod fishery indicates that even in the United States, changes in imports of fish products, income, and the prices of substitute goods, would result in significant fluctuations in maximum net economic yield. Efforts to achieve maximum net economic yield internationally would serve only to delay management agreements. Once agreements on sustainable yield and country quotas are reached and implemented, however, it would be desirable to develop bio-economic schemes for U.S. quotas that would take into account maximum net economic yield.

In the discussion of country quotas, the Panel Report points out that such a system could be jeopardized by nations attempting to fish their quotas in the shortest possible time. Such a situation would be particularly adverse to the system in cases where mobile fleets fish out relatively productive areas, leaving coastal States with short-range vessels, to fish in the less productive areas. A possible remedy might be to specify that no country be allowed to take more than a certain per cent of its quota in any three-month period. This would impose certain diseconomies on some countries, but it would prevent them from imposing detrimental externality effects on other countries. Along this same line, the Panel proposes that nations overfishing their quotas should be required to give up 110 per cent of the overfishing for the following year and that they should pay the other nations the average market value of the amount of their overfishing. The reference to paying other nations should be dropped from the proposal since efforts to establish an average market value for all nations could be so complicated that acceptance of the overall plan could be hindered.

Another recommendation by the Panel calls for special preferential treatment for some coastal States. They indicate, however, that no coastal State should be allowed to sell its quota to other countries.⁶ The logic of this is questionable. First, it may be that the sale of the quota would be initially needed by the coastal State in order to build its capital to a level that would allow the establishment of its own fishing industry and, second, forcing coastal States to develop their fishing capability in order to reap benefits from their resources may be undesirable in terms of the law of comparative advantage. Such States might be better off, economically, selling their quotas rather than exploiting the fishery themselves.

The Panel has suggested that before country quotas are established in other fisheries, the effect in the North Atlantic fishery should be carefully evaluated. Such an arrangement would require considerable time, since it would

⁶ Marine Resources and Legal-Political Arrangements for Their Development, *op. cit.*, p. VIII-68. But see, also, the statement with regard specifically to the North Atlantic cod and haddock fisheries, "Every participating nation should be authorized to transfer all or part of its quota to any other nation." (p. VIII-59).

take a few years to fully establish a quota system in the North Atlantic, and still more time to adequately assess the results. This will result in needless delays of the quota system in other fisheries. Accordingly, the Panel should recommend a time schedule, by which country quotas would be established at the earliest possible opportunity in other fisheries, such as the North Pacific and the Tropical Pacific. These measures would allow for appropriate planning by U.S. industries, and would provide a framework by which economic efficiency in U.S. fisheries would be enhanced by limited entry.

In reference to the serious shortcomings of the existing management framework and the lack of a world-wide overview by an international organization, the Panel has recommended that FAO take over this task, but that other organizations, such as the Organization of American States, be responsible for new conventions or for specific regions. This idea is basically a good one, but such an arrangement could easily become conducive to gross inefficiencies in overall management. What is needed is one international agency to oversee, encourage, and work directly with the conventions. In this respect, it might be well to consider some ideas brought out by Douglas Johnston,⁷ who proposes what he refers to as a "split-level" authority for management. Such a plan would involve subregional agreements oriented towards individual fisheries.

The subregional system would be overseen by a regional agreement or convention which would in turn be under the authority of an international organization vested with the responsibility of overseeing the activities of all of the lower level organizations. The "split-level" concept, incidentally, agrees nicely with the recommendations of Professor Larkin, who in an earlier paper in this session suggested alternative approaches for different types of fisheries would be appropriate. In addition, the recommendations of Dr. Chapman in a previous paper that the number of nations involved be kept to a minimum, would be realized since only those nations interested in a specific fishery would be involved in subregional agreements.

In concluding these remarks, something should be said concerning the management proposals rejected by the Panel. The proposal that coastal States be given exclusive access to the living resources over their continental shelves was rejected as unnecessary, on the basis that fisheries are distinct from minerals in that they do not require a permanent installation on the shelf. Whether or not there is a case for exclusive access, this attitude is rather shortsighted, for two reasons. First, while fisheries do not require permanent installations on the seabed, they do require substantial investment - investment which might not take place when inefficiencies are imposed on the exploitation of fishery resources because of the lack of exclusive access. Secondly, while permanent installations are not utilized now, it is not unlikely that they will

⁷ Douglas Johnston, "New Uses of International Law in the North Pacific," Washington Law Review, October, 1967.

be utilized in the future. Such installations may be simply for monitoring environmental conditions, or they may be actual entrapment installations. Were they in existence today, proposals of this nature would probably receive more serious consideration.

The second proposal rejected by the Panel was to give a United Nation agency title to the living resources of the sea. Under one alternative of the proposal, the UN agencies would operate the fisheries. This was understandably rejected. However, the alternative that the UN agency auction off fishery rights to countries willing and able to exploit the fisheries should have been given more serious consideration. In the Panel's final recommendation for country quotas in North America, they found it quite easy to move away from the concept of maximum net economic return. But in their consideration of the UN agency alternative, this was the sole criterion allowed, thereby biasing the approach. The UN control need not necessarily imply UN determination of a complex and costly system for obtaining maximum net economic yield. To the contrary, the UN could also allocate on a maximum sustainable yield basis, allowing each nation to exploit its quotas in whatever manner it desired, thereby allowing each State to fulfill its particular objectives. Moreover, the Panel states, "Because nations have different cost structures, market preferences and non-economic goals, it is doubtful that auction bidding...would result in an allocation of living resources that would be regarded as fair by all nations, or would necessarily be economically efficient."⁸ However, it would seem that if nations do have different cost structures, market preferences, and non-economic goals - which they do - the most efficient method of accounting for these would be through a bidding system.

⁸ Marine Resources and Legal-Political Arrangements for Their Development, op.cit, VIII-153.

INTERNATIONAL FISHERY REGIMES - CURRENT AND FUTURE

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In the field of fisheries, this country has had more experience debating and ultimately settling international disputes than in any other phase of ocean affairs. Fishery disputes between the United States and other nations have occurred since the origin of our nation and we are currently participating actively in nine international fishery conventions. For the most part, these conventions successfully accomplish the objectives of resolving disputes occurring between the fishermen of two or more nations and, in addition, they have successfully addressed themselves to the complex problem of conservation of the resources.

The purpose of this paper is to review very briefly existing arrangements for dealing with international fishery problems and to predict that there will be rather profound changes in the approach to international fisheries problems in the future brought about because of the rapid increase and radical alterations taking place in world fisheries.

In recent decades we have used a number of different methods to deal with the conservation of fishery resources being fished by two or more nations and the attendant conflict associated with these international fisheries. The most familiar methods of dealing with these problems has been the bilateral or multilateral conservation conventions. Such conventions as the International Halibut Commission and the International Pacific Salmon Fisheries Commission are examples of perhaps the most simple and straightforward type of conservation treaty. In more recent times, we have settled international fishery disputes between countries by means of executive agreements. The executive agreement is less formal than the fishery convention and does not require Senate ratification. It is intended to resolve special and, for the most part, urgent disagreements between our fishermen and fishermen of other countries where these disputes involve critical overfishing or conflict over fishing gear or fishing grounds.

Since the 1958 Law of the Sea Conference, the United States has utilized the four Conventions agreed to at that Conference to try to bring order into international fishing disputes and arrangements. We have also used the United Nations specialized agencies, in particular the Fisheries Department of FAO and the Intergovernmental Oceanographic Commission of UNESCO, as useful institutions in which to discuss international fisheries development and the problems associated with the rational use of world fishery resources.

Some nations, following World War II, have depended upon extreme unilateral extensions of jurisdiction in an attempt to control the use of fishery resources lying off their coast. Perhaps the best example of this extreme extension of jurisdiction, and one that continues to cause the United States severe problems, arises from the Declaration of Santiago by Chile, Ecuador and Peru. In this Declaration, the three countries assert broad jurisdiction over the ocean lying off their coast as far as 200 miles. The claims by these countries, however, vary. For example, Chile claims fishery jurisdiction out to 200 miles while Ecuadorian law quite clearly asserts full territorial sovereignty over the waters 200 miles off the coast of Ecuador. Peru's claim lies somewhere in between Chile and Ecuador. Peru describes her claim as something less than full territorial jurisdiction, yet recent Peruvian law asserts control of the air space out to 200 miles off their coast which, for all practical purposes, makes Peru's unilateral claim close to a territorial claim.

Without question, the arrangements that have been most successful in terms of resolving disputes and achieving conservation have been the bilateral and multilateral fishery conventions. These conventions have the rather limited objective of conserving the resources and, for the most part, do not attempt to deal with the more complicated question of the allocation of the allowable catch or jurisdiction over resources or access to the ocean. There are some notable exceptions to this. In the case of the International North Pacific Fishery Convention between Canada, Japan and the United States, the objectives go beyond conservation, although the thread of conservation of the salmon and halibut resources is woven very tightly into the fabric of this convention. The same is true of the Fur Seal and International Pacific Salmon Convention. These conventions have been very successful in achieving their conservation objectives and, in addition, go beyond in an attempt to deal with the question of the allocation of the allowable harvest either directly or indirectly. In the case of the North Pacific Fisheries Convention, the principle of abstention provides for the allowable harvest of salmon to be caught only by Canada and the United States. It calls for those countries who have not traditionally taken salmon of North American origin to abstain from fishing these stocks if certain conditions are met. The Fur Seal Convention between Canada, Japan, the U.S.S.R. and the United States provides for an allocation of the allowable harvest of fur seals among the parties to the Convention. In addition, the International Pacific Salmon Fisheries Commission equally divides pink and sockeye salmon of the Fraser River and northern Puget Sound between Canada and the United States.

Regional fisheries conventions, such as the Northeast Atlantic Fishery Convention, composed of nations of Northern Europe, and the International Convention for Northwest Atlantic Fisheries, which include Canada and the United States as well as high seas fishing nations of Northern Europe, are examples of large complex regional fisheries conventions. These multilateral conservation conventions have met with limited success. They provide for cooperative arrangements for research and analyses of the fishery stocks under exploitation, but they have been less successful in achieving the kind of limitations on the catch necessary to achieve the conservation of the resources. In

the case of both of these large multination conventions, where fishermen from close to twenty nations fish common stocks of fish, the Commissions are at this moment attempting to formulate regulatory measures more responsive to the conservation needs of the resources. These conventions have been useful in the development of broad and unique cooperative scientific programs for the fisheries of the North Atlantic. On the other hand, the increase in fishing effort in recent years has been so great as to largely nullify the beneficial effect of the limited mesh regulations which have been in effect for conservation purposes. These two Commissions are now seized with the question of the division of the allowable catch of the various stocks of fish of the North Atlantic among those nations fishing these stocks. Ultimately some form of limitation of effort will be necessary to achieve rational use of the resources.

The several bilateral executive agreements between the United States and a number of nations fishing common stocks of fish or common fishing grounds with the United States fishermen have been useful and successful in a limited sense. In recent years we have signed such agreements with Japan, Mexico, Poland and the U.S.S.R. In addition, we have been discussing such a bilateral agreement with Canada, and we expect to reach agreement with that country as well. The executive agreements have been successful in temporarily resolving differences in jurisdiction between nations and have provided a means of developing cooperation in research and conservation on species being fished by U.S. and foreign fishermen off our coasts. For example, when the United States extended its fishery limits to twelve miles, forming a nine-mile contiguous fishery zone, Japan, in view of its traditional three-mile territorial sea claim, would not recognize the extended jurisdiction of the United States. Our bilateral executive agreement with Japan provides for a practical solution to this problem, and as a result in certain areas of the United States coast - in particular, those areas of the Alaskan peninsula and Aleutian Islands where United States fisheries had not expanded to any large extent - Japanese fishing was allowed to continue within the nine-mile contiguous zone. In other parts of the U.S. coast where fishing by U.S. fishermen was intense, the Japanese agreed to refrain from fishing in the contiguous zone and even beyond to areas of the high seas. Cooperative research programs also have been developed as a result of this executive agreement and they are providing a basis of scientific data for the conservation of resources lying close to the coast of the United States and fished by Japanese fishermen. The executive agreements have also dealt with gear conflicts where small coastal fishermen, fishing with small vessels or in some instances with fixed gear, have been handicapped by the presence of fleets of large foreign vessels. In addition to the above advantages, the executive agreements, as a form of international fishery agreement, have given the United States an opportunity to test new and untried hypotheses going beyond the terms and conditions of previous international fisheries conventions.

There are distinct limitations to the bilateral executive agreements in fisheries because for the most part they are short-term, and they do not reflect a broad public consensus in the same way that the international conventions do since they do not require Senate ratification. Furthermore,

they are narrow in scope, and more often than not do not take into account the full range of problems that arise from truly international fisheries. On the other hand, they tend to be experimental in nature and as such can provide for concessions on both sides of a greater degree than can the more formal conservation conventions.

Many of our international fisheries conventions have accomplished more than was anticipated when they were developed. For example, the Inter-American Tropical Tuna Commission with its independent research staff has developed a very large and comprehensive oceanographic research program on the high seas off the coast of Central and South America. It has stimulated the research activities of several of the smaller countries which, before their involvement with this convention, had done little or no scientific research on fisheries or on the oceans. Some of these nations have developed sophisticated laboratories and well-trained marine scientists partially as a result of their involvement with the Tuna Commission. The scientists in these national laboratories have expanded their research and are studying national fishery problems of special concern to those nations.

The Tuna Convention is an example of a very successful international convention. While it is true that the United States continues to take the largest share of the harvest, the management of the resources has been very successful and the yield of yellowfin tuna at the present time is near an all-time high.

TABLE 1 - Catch of Yellowfin and Skipjack Tuna in the Eastern Tropical Pacific for the Years 1962 to 1968 (short tons)

Year	United States		Total	
	YF	SJ	YF	SJ
1962	69,818	61,000	87,051	77,994
1963	60,624	81,581	72,674	106,042
1964	90,511	51,452	101,941	65,313
1965	81,476	64,981	90,043	86,122
1966	82,446	50,622	91,147	66,537
1967	80,673	103,694	89,601	132,562
1968*	100,010	57,819	111,994	79,349

*Preliminary

The assertion of fishery jurisdiction to extreme distances off the coast of certain countries such as the 200 mile assertion of jurisdiction by Chile, Ecuador and Peru may have certain advantages to the coastal countries but it seems quite clear that at the present time these unilateral claims are not accepted by a majority of the world community of nations. In addition, from the standpoint of further expansion of world fish catch, extensive and

wide unilateral control by coastal States over resources far out to sea acts as a serious deterrent to such expansion. Coastal nations are reluctant to allow fishermen from foreign countries to fish in waters under their control even though the resources are renewable and might not fully be used by coastal fishermen. In the case of the United States, for example, it is politically difficult to allow fishermen from foreign countries to fish in waters under United States jurisdiction even though our fishermen are not using the stocks in question. The same appears to be true among those few nations who have claimed jurisdiction out as far as 200 miles. For the most part the fisheries of these countries claiming broad extensions of jurisdiction are very small or almost non-existent.

Turning for a moment to the Convention on Fishing and Conservation of the Living Resources of the High Seas, agreed to in Geneva in 1958, the acceptance of this Convention has been relatively poor.

It is true that the four Conventions that have arisen from the 1958 Geneva Law of the Sea Conference - the Continental Shelf, the High Seas, the Territorial Sea, and Fisheries - have been useful guidelines for many nations interested in developing the further use of the sea, but it is unfortunate that these Conventions have not been more widely accepted. Table 2 lists the Conventions and the ratifications received through December, 1969.

TABLE 2 - Parties to 1958 Geneva Law of the Sea Conventions
(Information Received as of 1/1/70)

CONTINENTAL SHELF CONVENTION - Total 39
Entered into force 6/10/64

Albania	Israel	Senegal
Australia	Jamaica	South Africa
Bulgaria	Kenya	Sweden
Byelorussian SSR	Malagasy Republic	Switzerland
Cambodia	Malawi	Thailand
Colombia	Malaysia	Trinidad & Tobago
Czechoslovakia	Malta	Uganda
Denmark	Mexico	Ukrainian SSR
Dominican Republic	Netherlands	United Kingdom
Finland	New Zealand	United States
France	Poland	U.S.S.R.
Guatemala	Portugal	Venezuela
Haiti	Romania	Yugoslavia

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TABLE 2 (continued) - Parties to 1958 Geneva Law of the Sea ConventionsHIGH SEAS CONVENTION - Total 43
Entered into force 9/30/62

Albania	Israel	Senegal
Afghanistan	Italy	Sierre Leone
Australia	Jamaica	South Africa
Bulgaria	Japan	Switzerland
Byelorussian SSR	Kenya	Thailand
Cambodia	Malagasy Republic	Trinidad & Tobago
Central African Republic	Malawi	Uganda
Czechoslovakia	Malaysia	Ukrainian SSR
Dominican Republic	Mexico	United Kingdom
Finland	Nepal	United States
Guatemala	Netherlands	Upper Volta
Haiti	Nigeria	U.S.S.R.
Hungary	Poland	Venezuela
Indonesia	Portugal	Yugoslavia
	Romania	

FISHERIES CONVENTION - Total 26
Entered into froce 3/20/66

Australia	Malawi	Thailand
Cambodia	Mexico	Trinidad & Tobago
Colombia	Netherlands	Uganda
Dominican Republic	Nigeria	United Kingdom
Finland	Portugal	United States
Haiti	Senegal	Upper Volta
Jamaica	Sierra Leone	Venezuela
Kenya	South Africa	Yugoslavia
Malagasy Republic	Switzerland	

TERRITORIAL SEA CONVENTION - Total 36
Entered into force 9/10/64

Australia	Japan	Sierra Leone
Bulgaria	Kenya	South Africa
Byelorussian SSR	Malagasy Republic	Switzerland
Cambodia	Malawi	Thailand
Czechoslovakia	Malaysia	Trinidad & Tobago
Dominican Republic	Malta	Uganda
Finland	Mexico	Ukrainian SSR
Haiti	Netherlands	United Kingdom
Hungary	Nigeria	United States
Israel	Portugal	U.S.S.R.
Italy	Romania	Venezuela
Jamaica	Senegal	Yugoslavia

Only twenty-six nations have ratified the Fisheries Convention, and many who have ratified that Convention are not important maritime or fisheries nations; that is, most of the nations who are members of the Fisheries Convention are not important fish-producing nations. Even so, many of the regional multilateral and bilateral fishing conventions that have been negotiated since 1958 contain important elements of the 1958 Fishing Convention.

Without question, the ocean is considered by a majority of nations of the world as a frontier in which to explore and develop its uses and resources. There is a great and growing demand for fishery products; the production of oil from the edge of the sea is increasing very rapidly at the present time; and the conflicts arising from the competition for food and mineral resources are causing difficulties in all parts of the world ocean. In the case of fisheries there has been much speculation as to the potential of these resources to mitigate world protein shortages in the developing world. The increase in world demand and the rapid development of markets for fishery products in both the developed and developing world has surprised all those who follow international fishery developments. As a result of this world-wide demand the competition for the most available stocks of fish has been growing, and conflicts among distant-water and coastal fishermen are increasing to the degree that they are causing serious difficulties among nations in some parts of the world. Considering the increasing pressures for a larger fish catch from the world ocean, it seems quite obvious that present international fisheries arrangements are inadequate to handle the developing conflicts. Furthermore, the problems that are arising are not primarily those of the conservation of the resources, although these problems are serious indeed, but are problems involved with the allocation of the allowable catch.

One can conclude that scientists have the techniques developed to deal with the conservation of the resources, but it is not at all clear that we have the appropriate techniques, institutions, or accepted law to deal with essentially economic and political problems in the field of international fisheries. More often than not, arrangements for the future must take into account the questions not only of conservation, ownership, and jurisdiction of resources, but the allocation of the income from these resources among nations who believe they have a right to share in them.

Without question, the next few years will see great attempts to settle the current gaps in the law of the sea. For example, one can anticipate that debates and possibly international conferences will deal with the problems of the boundary of the seabed, the breadth of the territorial sea, control over fisheries, and some form of internationally-controlled deep-seabed regime. But it is not so clear that these issues will all be settled within the near future. Thus, it is likely that it will be necessary to work out arrangements based upon current practices in the area of law of the sea with difficult negotiations settling those aspects of the arrangements where broad disagreement in general principles still exists. It seems clear that such successful and useful arrangements will be those that provide for the conservation of the resources, allowing

for the freedom of fishing on the high seas, but with a greater balance provided in terms of recognition of the special interests of the coastal State.

It is the view of a greater and greater number of coastal States that, as the competition for limited fishery resources develops, it becomes more apparent that where competition between coastal fishermen and high seas fishermen exists present practices tend to favor the high seas distant-water States to the detriment of the economic and social interests of the coastal States. For example, the United States has fished Georges Bank off the coast of New England for years. In fact, our fishing on Georges Bank extends from colonial time and we have had a monopoly for all practical purposes except for some Canadian fishing for the fisheries of these grounds, without competition from foreign vessels. In recent years, however, a very successful year class of haddock occurred on Georges Bank. It entered the fishery in 1965 and was looked upon as a very favorable sign by United States coastal fishermen. It was anticipated that this large year class would support our fishermen for several years. But, unfortunately, a large mobile fleet of foreign vessels also located the enlarged stock of young haddock and concentrated their effort on Georges Bank. As a result, the foreign vessels caught a very large catch, thus reducing the year class to a very low level. The same foreign fleet appeared on the fishing grounds the following year and again took the remainder of the surplus of this year class. In the meantime, the United States fishery with its smaller, less migratory fleet was unable to adjust to this new development. It had concentrated its fishing techniques, the design of its fishing vessels, its catch, storage, and even its marketing practices on the basis of continuing fish supplies close to the United States ports. Of course, one can say that the United States fleet also contributed to the overfishing of this year class. But what other course of action was available to the coastal fleet?

In subsequent years the haddock stocks on Georges Bank have been at an all-time low. In addition, a series of about five unsuccessful year classes have followed the successful one and to the present date there is no sign of a recovery of the stock. Scientists studying this phenomenon agree that the reduction of the stock may have been so great as to affect the future recruitment of haddock on Georges Bank. In the meantime, the large distant-water vessels were able to adjust to the overfishing and moved off of Georges Bank to other promising grounds where presumably this practice might have been repeated. Again, a local fishery might be seriously affected. This is an example where the advantage of the distant-water fishing fleet was so profound and where the economy of the coastal fishermen was so greatly dependent upon the local fishing grounds that the coastal fishermen were greatly disadvantaged by the activities of the foreign fleet. This is not to say that the foreign government was unwilling to cooperate in studies on the resources nor was it unwilling to accept scientific findings of the effect of its fisheries on these stocks once such findings had been found. But, obviously, that was too late; the fish were gone. In the meantime, the United States fishermen, fishing New England ports, have been required to find different stocks of much lesser economic importance or go out of business.

This example and several others like it lead to the conclusion that there must be some different balance between the rights of the high seas fishermen to fish freely on the high seas and the rights and appropriate interest of the coastal fishermen. It seems reasonable to predict that an acceptable regime of fishing on the high seas for the future will provide, under specified conditions, certain preferences to the coastal fishermen beyond the zone of national jurisdiction in order to ensure that their rights to access to the resources are not abridged by the activities of the distant-water fleets.

One can conclude that the techniques for resolving international fishery disputes that have been relatively successful in the past are not longer sufficient for the future. Changes in world fisheries are occurring so rapidly that international fisheries agreements which were formerly successful require significant changes in the future. With the present level of high seas fishing, it is obvious that current practices favor the distant-water fishing States over the coastal fishermen. If we are going to prevent broad and unilateral extensions of jurisdiction by coastal States, then greater protection of the rights of the coastal fishermen for access to coastal resources must be provided in new international fisheries agreements.

It seems quite clear also that the broad extension of unilateral control over fisheries by coastal States is an important, but undesirable, substitute for a reasonable resolution of the conflict between the coastal fishermen and the distant-water fishermen. To the extent possible, the principle of freedom of fishing must be preserved in order that the full development of the potential of the ocean to produce food can be achieved as soon as practicable. While simple solutions to the problem of international fishery disputes seem attractive at first glance, solutions such as the absolute freedom of fishing on the high seas without adequate safeguards of the coastal fishermen's interests or, at the other extreme, very broad national jurisdiction over extensive areas of the oceans that overlook the rights to freely fish on the high seas, the most rational development of the ocean fishery resources will be seriously inhibited and the continued rapid development of world fisheries will be retarded if either of these extreme approaches to the problem are followed. On the other hand, with a better balance provided in our international fisheries conventions of tomorrow between the interests of the coastal States and distant-water fishing States, there is no reason to believe that the world fish catch cannot continue to increase at a very substantial rate while the productive capacity of the world fishery resources are fully protected.

REMARKS

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Obviously, there are many comments that should be made in response to the excellent criticisms, both destructive and constructive, that have come forth, but I simply have not got time to cover all of them. I will try to answer specific questions if I can. Instead, let me focus on some major items that I think will clarify the Commission's position and thinking and perhaps set some of these issues in proper focus.

One that I must stress very strongly is that the Commission was under no illusions that it could or would come forth with final answers in an area which has been subject to a great deal of debate, and which has spawned a literature so prolific that it is quite obvious that a lot of the commentators have not read it all (and might well have profited from so doing). No one is going to come forth, after eighteen months of hard work, with earthshaking and revolutionary new discoveries in the fields of fisheries management. To expect the Commission to have done so is, I think, missing the point. It is also quite obvious that no group is completely single-minded; we were fortunate in having a remarkable degree of agreement on principal issues that were dealt with in our Report; but, as Professor Auerbach pointed out, it is still a fascinating document because those of us who read it after it was published kept finding many new things that we had not seen before. I found a lot of new things in that part of the fishery section that I had written that somehow got in while I was in East Africa.

There are a few things in which I would agree fully with the critics. For instance, somehow in the course of rewriting, the emphasis on the national quota scheme became much too strong. I am sure I speak for all of the Commission members in stressing that what we intended was to give an example of a kind of technique which, for a particular area, as Ambassador McKernan has suggested also, showed particular promise. There was no intention to imply that this is the only technique that should be considered or that it would be applicable everywhere throughout the world. Those who read both the Commission Report and the Panel Report a bit more carefully than I think some of the commentators did would have caught this fact. There was no intention to suggest that regional groupings were not appropriate in terms of efficient management areas or that the desirability of incorporating these, at least in a coordinative sense, under FAO or some other international agency might not be very desirable. This has been stressed as a criticism of the Report. I think you will find that it comes through fairly clearly if the Report is read as a whole.

Now let me get a couple of hard points before you as we saw them. If one looks at the international fisheries management situation overall, there are a few cases - a very few cases - in which there exists a scientific basis for management geared to physical objectives, that are, in fact, being carried out relatively efficiently with respect to those physical objectives. There are a number of debating societies which make a considerable amount of noise, some of it interesting reading, and some of it quite useful, but which don't regulate anything at all. There are other debating societies that just make noise. To my knowledge, there are no international fisheries management organizations in which economic efficiency, as one of the objectives to be sought, emerges either as a statutory or operating objective. In effect, I am saying that our fisheries scientists have far outrun our ability to define sensible economic and social objectives; and fisheries science has outrun by an even greater margin our ability to devise mechanisms that will enable us to move along, as Austen Laing just put it, toward those objectives in terms of progress rather than in terms of perfection. Until we can specify far better than we can what it is that represents progress, we are in no position to specify what mechanisms will accomplish our goals. Yet somehow somewhere the impression seems to have gained currency that if we just know enough about fish stocks, as scientists, that will suffice to define how to manage them and with what mechanisms to manage them. I think that this is where we have fallen down and fallen down rather badly.

Both Dr. Kask's and Professor Larkin's excellent papers lay some onus on the Commission, but in diametrically opposite directions. One says we went too far and thought too boldly; the other says we did not think boldly enough. The issue is clearly posed. The Commission had to choose, in writing some words about international fishery management, between two courses. We could define something well beyond our ability to realize for the next decade or two but representing, in distilled form, the best thinking on idealized fishery management in terms of objective and technique. Or we could take the position that this was hopelessly idealistic, and that to achieve results we must take the much more modest position of moving forward within the framework that now exists but toward more sensible objectives. This was essentially the point of view that was taken. We felt that the idea of considering sole ownership through the United Nations or some specialized agency of the United Nations was not worth very much attention. Not that sole ownership would not have provided very significant advantages in analytical terms; but this has already been developed fully in the literature in a very eloquent paper by Professor Scott, in the book by Professor Scott and Dr. Christy, and in the case of a number of individual case studies by several people - myself included.

But there is no point in belaboring this any further. We were considering, and had I think to consider, that if we wanted improvement in fisheries management in the present environment, we could not afford to come up with any proposals against which could be arrayed together the enemies of any fishery management, the enemies of any economic content in fishery management, the enemies of United Nations participation in management, and the enemies of the United Nations. By the time you get all these people put together (and that is

precisely what a UN management proposal of the sort that Professor Larkin was talking about would bring you), the chances of doing anything effective would have been very limited indeed. So, it was a choice; whether we made the right one or not, I think, is beside the point. As long as discussion is stimulated along both lines, among knowledgeable people, then I think the Commission will have served its purpose well.

There is a good deal of stress in the discussion that has taken place on the difficulties of deciding how to divide up the loot. Now let's face it: that is the key issue in international fishery management. Science is basic and necessary, and there is a lot of fun and games to be enjoyed in its pursuit, but the hard fact is that who gets the fish and the return therefrom is going to determine the bargain. To say that it is very difficult under a national quota or any other international management scheme to divide up the loot in some fashion that is more satisfactory to everybody than an unrestricted rat race is to state the obvious. But if we do nothing, if we wait until all of those difficulties are resolved, we are dividing up the loot in a random, unplanned fashion that has the further impact of seriously impairing the productivity of some stocks and seriously worsening the economic position of the industries that operate on them. I think that the counsel of perfection here is really the counsel of despair.

Finally, I must note, in response to some of Ambassador McKernan's comments - and I say this not in criticism because the Commission did exactly the same thing - that he shows the schizophrenia that develops when you are simultaneously dealing with an audience that wants the best possible solution for international management of fisheries (which is bound to be a multi-faceted recommendation and not a single one) but are also charged with protection and rehabilitation of the American fishery interest. I think he illustrated it perfectly by saying, as he did, that national quotas are very attractive in the North Atlantic where we "ain't doing so good" but in the North Pacific and in the Southeast Pacific, where we are "doing pretty fair," quotas are very disturbing. It is like the old Southern preacher who was inveighing against adultery, drinking, and other vices and everybody said, "Yea, man." When he finally got around to inveighing against dipping snuff, one old gal in the back said, "Damn it, now he's quit preaching and gone to meddling"!

DISCUSSION

Chapman: I have some comments to which Professor Crutchfield may wish to respond. He has referred, as you have Mr. Chairman from time to time with rather heavy weight, to the games played by economists and biologists as to whether we should maximize physical yield or maximize net economic yield. I think that this game we play back and forth is irrelevant, immaterial to the situation, and sovereign governments pay no attention to this particular element at all. They do not, in my experience with them in their activities, consider the maximization of net economic yield to be of any consequence whatever in dealing with their fisheries in the international field. They have a variety of objectives and the most frequent one, in my observation, is the earning of foreign exchange or the saving of foreign exchange. We can cite numerous examples of this - two recent ones are Italy and Spain that have put rather heavy subsidies into the development of their long-range fisheries for the expressed purpose of getting protein foods into their country to save foreign exchange, and it has been stated policy by those governments that that is why they are doing it. The United Arab Republic is doing the same thing, Israel is doing it, Greece is doing it; you can go down a whole long list.

At another meeting some years ago (1961), we had a very concise statement of Japanese policy in this respect. They were working simultaneously on four prime policies with respect to their high seas fisheries. One was to maximize the production of protein food which they needed badly and didn't want to pay for. The second was to maximize the earning of foreign exchange, which they needed very badly during the 1950's. The third was to maximize employment, and they needed that badly at the time. The fourth was to use the fisheries as hard as they could to maximize the accumulation of capital, which they also required. There was no mention whatever of maximizing net economic yield.

I think that this argument that economists and biologists are scrapping over amongst each other is nonsense and that it should not be in the deliberations at all. What we should be dealing with is actually the interest of some of the sovereign nations in their high seas fisheries as evidenced by their activities.

Crutchfield: I agree with you, Dr. Chapman, although I think my reasons for saying that you are correct are somewhat different than yours. But I can straighten you out later. The important point, and it is a very important point, indeed, is that the Commission did try - and that is one reason for the advocacy of a national quota system in the North Atlantic - to achieve a situation in which a variety of national objectives could be accommodated without having the objectives of any one nation forced on others. If some nations chose to catch their quota as efficiently as they could - and I might add that one way of adding to the capital stock of a nation is to operate any one industry as efficiently as possible - they were free to do so. If, on the other hand, another nation chooses to use its fishery - perhaps quite rationally - as the

least-cost way of dealing with an otherwise unemployable population, very immobile to any other occupation, it would be free to do so. That is, I think, a reading of what Austen Laing indicated by saying that we were looking for a second-best solution with considerable latitude for each of the participants to express in action its particular national objectives without dominating the actions of others.

McKernan: One of the points that has been made repeatedly by Professor Crutchfield, and I heard it last week in Miami and the same general point is made by Dr. Christy, is that of the problem of limited entry of fishing vessels. I certainly can agree with this as a general principle, but when I start to apply it in the Northwest Atlantic or in the Eastern Tropical Pacific or in the North Pacific I find I get into difficulty because of my knowledge of these multi-nation fisheries. For example, if one were to achieve the optimum economic effort in the yellowfin fishery in the Eastern Tropical Pacific that would reduce the effort to about one-half the tuna vessels now fishing in the Eastern Tropical Pacific. We know what the maximum sustainable yield is in the yellowfin tuna of this area and, in fact, the Inter-American Tropical Tuna Commission under Dr. Kask's direction (and of Dr. Schaefer before) has done a rather outstanding job in ascertaining the allowable annual catch and in providing this figure each year with reasonable accuracy. So we now have another outstanding example of conservation. Yet we are building larger vessels, more efficient vessels, and we are taking this catch of yellowfin in a shorter and shorter period of time. In fact, this year's season ended somewhere around April 25.

On the other hand, there are stocks of fish and places to fish in the world that are being fished by this efficient fleet which would not be fished if we did not have the limitations that are being applied and we did not have the effort that is being applied in that area. Skipjack tuna is another very valuable species, world-wide in distribution and ocean-wide in migration probably, and found in almost all the tropical oceans of the world, and it can very likely be fished as much as two or three times as heavy as it is being fished at the present time. It is not so easy to catch and you have to go farther from home to catch it and it costs more, but it is no doubt economic to take much more than we are taking at the present time and the fleet is being forced to take them. The concentration of fishing effort on yellowfin tuna, which has brought a very short season in yellowfin, has tended then to broaden the horizon of the tuna fleet and put it on other fisheries, other resources, and in other oceans which are not being fully fished.

In the Northwest Atlantic the same thing is true. Here the increased fishing effort has brought about a wide diversity in the fishery that is continuing (I think Mr. Laing would agree with me), and pollack are coming under exploitation as well as capelin (a species of smelt), sand lances and all sorts of species that are perhaps a little lower on the economic ladder of resources, and yet the fleets are continuing to fish for these and, in fact, the catch in the Northwest Atlantic continues to increase. So, I don't know that we know enough

yet to start thinking exactly how or when or where we should start limiting effort in multinational international fisheries.

Pontecorvo: Professor Crutchfield has to go now but I wish to acknowledge again that his appearance represents great personal sacrifice for him. We want to thank very very much.

Crutchfield: I would like to take a minute to answer the question Ambassador McKernan has raised because I think it is a crucially important one. I don't know whether I can develop it satisfactorily, but let me try.

What he is arguing, stripped of the more attractive verbiage, is that we allow more and more vessels to catch more and more yellowfin tuna in shorter and shorter periods of time until it becomes so unprofitable to catch yellowfin tuna that they start hunting for skipjack. I am suggesting that if it is profitable to catch skipjack it can be achieved without going through this process of using a very big hammer to swat a fly. If, in fact, we catch the yellowfin with the number of vessels required to do so, we are not hampering the development of the skipjack fishery and there are a number of ways in which this can be stimulated. To the extent that there are intermingled species we have a different kind of problem for which an adequate analysis can be developed very easily. In effect, it may be desirable to slightly "overfish" the yellowfin in order to achieve development of the skipjack fisheries. There is no great mystery about this. But it is not necessary that we run the industry into a position where we have twice as many vessels as we need catching the fish in half the time required in order to achieve that desired expansion to the lower-priced species; and I think this is true with respect to the geographical spread as well.

Pontecorvo: Let me exercise my prerogative as Chairman and reply very briefly to some of Dr. Chapman's remarks. I agree with him that the argument about the relative merits of the maximum sustainable yield and the net economic yield have been done ad nauseam and we all know the logic of the argument. I submit, however, that the argument is not a figment of the imagination, regardless of whether or not it is involved in policy consideration. It is quite difficult, in my view, to think about managing any fishery unless the yield function for that fishery is defined. Clearly one needs to have a yield function; what any point on that function may or may not imply is one thing but of even greater consequence, in my opinion, is the nature of that function and its statistical reliability. I submit that the insistence (at this time I will just make this one point) upon the utilization of the maximum physical yield as a guide to management in the context of the kind of problems Professor Norton raised with respect to net economic yield, is in a sense false. False because we really do not have any adequate measures of the statistical reliability of the existing biological functions which - in turn - as I said a moment ago, are necessary for the management of fisheries. In other words, our level of knowledge is pretty low here and it may be true that policy considerations must, therefore, be very crude, but it is only by moving in this direction that we can manage anything.

Schaefer: I want to point out, Mr. Chairman, that there are at least two fisheries where the statistical reliability of the estimated equilibrium yield function is known and has been published. One is that for the yellowfin tuna of the Eastern Tropical Pacific - you will find it in a Bulletin of the Inter-American Tropical Tuna Commission published in 1957, where the relationship is given with its standard error of estimate. The other is that for the Peruvian anchovy fishery, and can be found in publications of the Instituto del Mar del Peru. And there are other fisheries where it is available. It is not only possible to measure the statistical reliability of the yield function, but it has been done, and you will find that there are some fisheries, such as those for yellowfin tuna and Peruvian anchovy, that are "well-behaved," where the stochastic variation is small. You will find other fisheries, such as that for herring of the North Atlantic, where it is very large, and in those cases it is equally difficult to specify maximum sustainable yield or maximum net economic yield. But in the "well-behaved" fisheries it is quite easy.

Pontecorvo: I submit that I did not say that it had not been done. I just raised the question about the statistical reliability of the function itself. In the long run that is what we are talking about and I don't mean to debate this matter.

Schaefer: We know how to measure the statistical reliability and it has been published for a number of fisheries.

Bevan: I would like to respond to a couple of comments that have been made here. One, was with reference to socialist-thinking fishermen. In my own remarks, I don't think that is what I actually said. I know fishermen quite well. I find them sometimes cantankerous, sometimes obstructive, and usually independent. Their politics vary but I almost always find them to be rather hardheaded businessmen. The point I was trying to make is that we have socialized the resource. When we do that we make it impossible for these people in a free enterprise system to have ownership - or, at least, to pay rent or to have some leaseholding ability. The problem is we force common ownership on the individual fishermen.

The other point I would like to make (and I suspect I shouldn't let my resentment show so much, but I hate to have it appear that I need Ambassador Mc Kernan to remind me) concerns the success of the Halibut Commission. If you recall, I mentioned that there were several successes; I didn't list them. Obviously, the Halibut Commission will be on anyone's list of successes. Mr. Allen, if no one else, would correct me had I omitted it. The Halibut Commission model is exactly what I was talking about. It is a model in which the economic decisions have at least been agreed to by the fishermen. I will agree our economists don't like the economics of the halibut fishery but I submit that the fishermen in Prince Rupert, Vancouver, and Seattle, particularly right now, are very happy with them; and because those issues are not a matter of controversy between the two countries that are involved, this is a model international commission.

Christy: I have a question related to some of the things that Ambassador McKernan said earlier about not establishing national quotas for Pacific salmon

because this might affect the distribution of wealth. Apparently, at least according to my information, there is an attempt now in the North Atlantic to affect the distribution of wealth, to claim, in a sense, a vast extension of jurisdiction. This is the fact that ICNAF has just recently approved an abstention agreement for salmon fishing on the high seas. First, I wonder whether or not this is true; second, if it is true what are the chances of this abstention agreement actually going through; third, is it a desirable kind of step to take with respect to the high seas salmon fishery in the Atlantic; and, fourth, what is being given in return to those who are abstaining from taking salmon? Now, as Professor Crutchfield said, the critical issue is the distribution of wealth, the dividing up of the loot. Well, what are those people, such as the Danes, getting for giving up their right to take salmon on the high seas? Finally, I would like to have some response on this as to the implications of this kind of arrangement for other kinds of arrangements in the North Atlantic.

McKernan: Speaking of the question of salmon: It is true that the ICNAF Convention recently voted eleven to two, with one abstention, to curtail salmon fishing on the high seas. The United States, by the way, voted for this resolution. Canada introduced it and we voted for it and, in fact, we spoke in favor of it, which is consistent with our policy in the North Pacific as well. The basis for the United States view on this is one that involves the appropriate conservation of the resource. Our salmon runs are relatively small, but we are spending in the neighborhood of \$2 million a year or so attempting to build the Atlantic salmon resources. The developing high seas fisheries for salmon has only occurred within the past three or four years. In the view of the United States, Canada, the United Kingdom and some other nations the conservation of Atlantic salmon is the issue, and a high seas fishery for salmon, one that fishes the races from various countries indiscriminately, is undesirable in terms of the very limited supply of this particular species in the North Atlantic.

In connection with whether or not this has a chance of going into effect, the answer is that I don't know. The Convention requires that all nations approve the recommendations from the Commission; it seems to me quite unlikely that Denmark will agree at the present time. While I am not speaking for the United States government, I think that if I were the member nations of the Northwest Atlantic and I were Denmark, I would try and do what Mr. Laing pointed out a little while ago - try and look for some arrangement which will satisfy both sides and will be somewhere in between the total ban on fishing and an unlimited permit to take these salmon on the high seas.

Herrington: Mr. Chairman, I have a question on a matter that I had in mind before the exchange between you and Dr. Schaefer. Based on the report of Professor Norton, if I understood him correctly, he supports the Commission's conclusion that the agreement on the North Atlantic should be based on maximum sustainable yield not on maximum economic yield. After years of being urged to put maximum economic yield as the objective of United States international conventions, I was quite astonished to hear an economist cite the same reason that the negotiators have had for not putting them in. That is my first question.

My second question is that I understood him to say he opposed the Commission's recommendation that the country quotas should not be subject to sale. It seems to me that if the quotas are subject to sale it will greatly complicate the problem of reaching some agreement on how you whack it up (these country quotas), because if they are subject to sale it seems to me that every country in the world will claim an interest in the quota on the basis of its being a member of the family of nations. If the country's quota is not subject for sale only countries with some possibility of participating would be much interested in getting a share; so, I think for practical reasons the Commission's recommendation is much sounder than any that would make these quotas subject to purchase or sale.

Norton: To answer the second question first, the Panel Report recommends that the quotas assigned under the country quota system would be transferable to other nations. The point that I was making was that in the specific case of preferential treatment for certain coastal States the Panel Report was, in effect, treating these quotas differently from the quotas for other nations. In other words, they were saying that quotas for all nations should be transferable except those given for coastal State preferential treatment. My point was that making this one exception may actually contribute to economic inefficiency. I would definitely support the Panel's recommendation that quotas be transferable among the different countries and I assume that if they are transferred they would be sold rather than given away.

Herrington: The reason is they should be subject to sale?

Norton: Yes. The Panel recommends that they would be transferable and I would agree with that.

Concerning your first statement, I would say that certainly it would be desirable if it were possible to specify what each country really wanted to maximize and what goals they wanted to obtain from their fisheries. Then international quotas could be set in a way that would allow all fishing nations to optimize their position. My feeling is that since this is not possible the best alternative is to set up country quotas based on maximum sustainable yield. I will accept this as a second-best solution, but as one which is realistic.

Black: The points that have been discussed have generally been dealing with issues associated with the exploitation, administration and control of marine resources. I have a question that I am anxious to get an answer for. Has there been any consideration given to the social, economic priorities associated with or derived from marine science and from marine technology? This is a problem that we are greatly concerned about.

Pontecorvo: Would you please specify a little more about what these social priorities and economic priorities are that you have in mind? We just had this exchange about the relative merits of a purely physical priority - the maximum sustainable yield as contrasted with the net economic yield from the resource. What, in addition, did you have in mind?

Black: We are trying to find some of the priorities. What could they be? For example, in the Gulf of St. Lawrence area we have a poor population - it is a depressed area and the people are not very mobile. There are those who would say they should be moved to an industrial area; that is a reflex answer and not a solution to the problem. We must find some solution to increase income rather than the payment out of welfare aid. Welfare aid is not a solution; it continues a depressed situation and it should only be a temporary measure until the population has acquired the technology, the training, so that they can exploit the resources. It must be borne in mind that around the Gulf of St. Lawrence the areas suitable for agriculture are quite sparse; it is a hostile environment on the whole. The easiest resource to exploit is the resource of the sea. The point is the coastal population requires the techniques, the technology, the education, the training, and the supporting interest to succeed economically.

It was mentioned by Ambassador McKernan that the United States needed assistance to develop and rehabilitate its deep-sea fishery. I wonder if that is really what he means. The wealthiest nation on earth should be able to import from the poorer ones. I was at a meeting last December in New York - a meeting directed by Miss Judith Joye, who is here - and a speaker pointed out that the \$10 million oyster industry could be developed to a \$100 million industry if the pollution were cleaned out of the coastal estuaries. We are anxious to know how you are handling some of the problems with the depressed fishing areas. What aspects of marine science and technology are you giving priority to in this context, other than political considerations?

Pontecorvo: Let me attempt to give an answer and let me say before I try that it will be unsatisfactory. It is unsatisfactory first of all because the level of social consciousness in this country has not really come to grips with these problems as yet. We are wrestling with them in many ways, in many depressed areas in the country, and more particularly the issue of the plight of the cities represents a set of analagous problems to the one you have raised. It is obvious that we have no solutions. I guess the best comment I could make is to cite as an illustration the Swedish attempt to deal with these problems. The Swedish economy is a relatively narrow-based system which operates in an extremely competitive world market. They are, therefore, walking a very narrow tightrope between inflationary tendencies in the system which will price them out of world markets and deflationary policies that will give them serious problems at home as well.

What they have done is to develop very complicated tax schemes to provide incentive for industrial development and also extensive transfer payment mechanisms that encourage the movement of population from rural areas where they are not so productively employed to major industrial centers. These kind of transfer mechanisms involve, just to illustrate, first of all actual sums for moving allowances; secondly, extensive training and retraining opportunities for the individuals actually involved (and this may extend even down to the level of psychological screening of the capacity of individuals to move - and generally younger individuals are perhaps more mobile than older). So what you are calling

for is a complete set of overhead cost programs that will permit you to move significant population from less productive areas into areas where they would be more productive and to see to it that when they get in those new areas they have the proper training, housing, recreational facilities that will permit them to function in a more or less (as best human beings could ever be) happy frame of mind with respect to the new environment.

This is a very complicated social problem and we have just scratched the surface of it here. It is a very pertinent and pressing problem with us. The native populations of Alaska employed in the salmon fishery are a classic illustration. Some of the Maine lobster fishermen - those in eastern Maine - are another group which are similar to the ones you mentioned in eastern Canada. So, I would say that this is the kind of answer that can be advanced. Clearly, it is not - it seems to me - a very satisfactory comment because we are not doing very much about the problem.

McKernan: I know just a little bit about the problem of the fishermen of the Gulf of St. Lawrence, and I don't know whether the man who asked the question realizes or not but, of course, some of us in this government deal very closely with the very competent officials of the Canadian Fisheries Department. Dr. A. Needler is an old personal friend of most of us who have dealt for many years in the fisheries fields.

In the first place, the Gulf of St. Lawrence coastal fishermen and those around Newfoundland are economically depressed, as the gentleman stated. The present government of Canada and the past government of Canada, have certainly been concerned and, as I understand it, the plight of these fishermen has been a very serious political problem in Canada. Some of you will remember that Canada threatened to close the Gulf of St. Lawrence and make it inland waters. This would certainly change the character of the law of the sea as it is generally understood and practiced. A good many countries, including the United States, felt that this was a very bad precedent to set because it would not only affect our use of the seas and edges of the seas but it might affect passage of our ships and it might affect the defense interests of the United States very broadly, and we opposed it. Most of us in the United States realized what the gentlemen said, that there is a real problem. These small fisheries (I think Laing's use of dependent fleets is a very good one in this sense) depend upon the resources of the Gulf of St. Lawrence. They are immobile in terms of moving very far - either the fleets or the people themselves - yet they have had very large fleets of foreign nations move into the Gulf of St. Lawrence and compete for these relatively limited stocks of fish.

This, then, leads to the question about how the problem can be resolved without rather drastic changes - unilateral changes - in jurisdiction that might affect not only Canada but might adversely affect the United States in other areas of the world oceans. Out of this thinking came our view that some recognition of the special interests of the dependent fleets of coastal fishermen was necessary; some special consideration needed to be given. The United

States has joined with Canada in suggesting such recognition and eventually such consideration within the Northwest Atlantic Fisheries Convention. Both the Canadian commissioners and the United States commissioners have raised the issue and it is being considered at the present time in terms of allocation of resources among fishing nations of the Northwest Atlantic itself. The present Minister of Fisheries, Mr. Davis, has indicated that Canada is considering drawing a fishery line across the mouth of the Gulf of St. Lawrence, putting a new kind of jurisdiction in effect. This new kind of jurisdiction would make all the waters in the Gulf of St. Lawrence within the jurisdiction of Canada for fishery purposes. It would leave the jurisdiction of other matters as yet unresolved.

From my own point of view, and I don't claim to be a legal expert in this field, I can see here a unilateral attempt by a very important maritime nation - Canada - which, if it is accepted and adopted by the country could lead to very bad precedents and very seriously affect the freedom of the seas and freedom of fishing on the high seas. It would very seriously affect both the economic and defense interests of the United States. It is a problem and it has to be taken into account, and I suggest that it be taken care of by considering the problem of these dependent fleets or coastal fishermen and giving them some preference in places where it is justified - and it is clearly justified, in my judgment, in the Gulf of St. Lawrence.

Sokoloski: I believe I am the only economist presently in the Bureau of Commercial Fisheries that has much of an interest in the things we are talking about here. When you add my magnificent presence to the three or four non-government economists, I think we should all be somewhat flattered by the impact we have apparently had - good, bad, or indifferent.

Going on that base, I have two questions relating to what I consider to be two significant omissions during the day's proceedings. The first is directed toward Ambassador McKernan. When we talked about minerals on occasion we framed the urgency of the solutions in some kind of a time span, and I wonder if you could suggest what type of a time span we have for coming up with our solutions, whether they be idealistic or pragmatic.

My second question is directed to Professor Bevan. Apparently as economists we have overlooked one element of propaganda and that is the poor long-lost consumer. In particular, with reference to the management of the halibut resource, I want to hasten to admonish that we not equate economics with the immediate profits that can be had by a select group of individuals, for if this were the case perhaps the ideal would be to turn the whole halibut fishery over to a single individual. When we add the consideration of the possibility of maximizing some reasonable return in combination with bringing this product to the consumer at a competitive price, I suggest this would alter the character of our management and I wonder if this would in any way alter your appraisal of this form of management?

McKernan: In terms of fisheries regimes, in terms of developing these new concepts, new ideas, no matter what they may be, it seems to me that the time span

is different in different parts of the world. The time span is very short in terms of the North Atlantic, in terms of the problem of the gentleman from the Gulf of St. Lawrence (I think he is from that region). I believe that time is running out in the Northwest Atlantic and responsible people have to consider this man's problem or else we are going to get a solution to the problem that we don't like and it is going to be forced on his government by people who have this real problem and others who won't wait forever. So, the time span in the North Atlantic is short.

I mentioned when I spoke about the problems of the ground fish in the Northwestern Atlantic that the problems are severe; the problems are serious and people won't allow us to procrastinate much longer. On the other hand, in terms of the time frame for some areas in the Southern Hemisphere it is longer and especially where the resources are not fully developed. The time frame, for example, for working out some conservation regulation of skipjack tuna in the Tropical Pacific is perhaps a decade or so. I then would like to submit that in terms of international fisheries arrangements we have a very short time span in some regions and we have a longer time in other places where the problems and fishing development are quite different. My own point of view is that it is more likely that the development will take place on a regional or perhaps subregional basis and that it will be unlikely in the next decade that we will see some overall - possibly revolutionary change - that would apply broadly on a world-wide basis.

Bevan: I am not sure I completely understood Dr. Sokoloski's question. If he is concerned about monopoly in terms of limited entry, I share his concern; but I feel that this can be taken care of by appropriate legislative action at the time when these schemes are set up. If he feels that somehow the consumer and what he pays is really related to these problems of the fishermen, I am afraid I cannot share his concern. I feel quite frankly that things that happen in other markets - the price of beef and the importation of Greenland halibut and other species, for example - have much more of an impact on the market itself and I assume that we do have a competitive market in which halibut seeks its price in relation to other foods and that the fisherman has to live with this. Does that answer your question?

Pontecorvo: May I just make one comment along the lines that Ambassador McKernan has been talking about. I once went on record a long time ago as referring to the lobster fishery of eastern Maine and eastern Canada as a fancy unemployment insurance scheme. I was criticized for this but I always felt that it was a reasonably felicitous phrase. What it really means is you cannot use the fisheries per se to solve these particular problems; all you can do is to improve the situation in the very short run. You may raise incomes relatively for those here at the moment, but the underlying economic conditions that brought about these problems of depressed areas remain and they will reappear in the future as population growth and income growth elsewhere proceeds. So the fisheries can be only utilized as a partial stopgap and do not really produce the underlying fundamental social reorganization that is necessary to get the greater labor mobility that we were talking about a little bit earlier.

Vernon: While talking about general arrangements and perhaps even progress made in the Pacific, we note that some problems seemingly have been overlooked in our discussions. One point that I would want to bring briefly to your attention has to do with the seizure of boats, particularly those of Japanese vintage. For instance, two weeks ago two Japanese fishing vessels fishing for herring were taken in by the U.S. Coast Guard Cutter STORIS in Norton Sound for fishing inside the twelve-mile zone; one of the boats was about three and one-half miles from the shore and the other about five miles. One had a deck load of fish. The two vessels were part of a large fleet of thirty-two catcher boats and two mother ships and, therefore, it may be suggested that some daring of U.S. authorities was going on. It should also be pointed out that since 1965 three Russian and five Japanese vessels have been seized in Alaskan waters for fishing too close to the shore. Furthermore, Japanese vessels had been apprehended earlier in 1969 off Juneau and Kodiak when illegal halibut was found in their holds. In all of these instances only pleas of no contest were made. In the latest case that took place two weeks ago, however, a contest might be possible and the defendants brought to trial in order to test the law, under which they were arrested. There is no doubt that probably the Japanese have had some rough moments and experiences in waters close to the American coast, since one of their fishing boats also has been apprehended in Canadian waters earlier this year and two Japanese fishing vessels have been fined, for the first time, this year also in Canadian West Coast ports.

Nevertheless, Japanese fishermen seemingly face greater problems and risk more in other parts of the Pacific than close to the American shores. It has been pointed out that the Japanese are probably catching four times as much salmon in Russian waters, of Russian origin, than they catch American salmon in waters close to our own shores. For purposes of information it might also be interesting to note that Soviet authorities have seized 1,275 Japanese fishing vessels and 10,763 fishermen since 1946 and that, as of the end of last year - 1968 - a number of fishermen and boats still have not been returned to Japan. In the meantime, twenty-eight Japanese fishermen died while in Soviet detention. Last year alone forty boats and 346 fishermen were captured by the Soviet Union and of these twenty-five vessels and forty-six men are still in Soviet custody. It ought to be understood - but should not be discussed within the framework of the topic before us - that some of the problems have come into being because of fishing in waters surrounding the Kuriles, still regarded by the Japanese, like Okinawa or the Bonin Islands, as integral parts of Japan; and while the Soviet government has stated that the issue of the Kuriles is closed and non-negotiable, the Japanese want them back eventually and they believe, hopefully, this might come about after they regain sovereignty over Okinawa and the other Ryukyu Islands.

Allen: This meeting has struck me as being very unfavorable towards the coastal fishermen both as to the recommendations made in the Commission Report and in the remarks that have been made from the rostrum, and I would just like to say that we should not overlook the poor coastal fishermen who constitute the producers of about 80 per cent, I believe Ambassador McKernan stated, of the local fishery and who, I think, are entitled to more consideration.

It is true that American fishermen are not inherently much different from those of other countries, the normal idea being to catch all the fish one can while the catching is good regardless of the future; nevertheless the experience of both the halibut and salmon commissions is that once the affected fishermen were impressed with the beneficial aspects of conservation they gave it their support.

It is, therefore, reasonable to believe that coastal fishermen are more likely to accept, even to promote effective conservation of their adjacent fisheries than are those who are world rovers, hence that the wider the fishery protective zone of this nation can be made the better prospect there will be for perpetuating the fisheries of the continental shelf.

Therefore, there is much to be said in favor of determining the geographical extent of fishing zone protection on the basis of what will best facilitate fishery conservation.

This, of course, has nothing to do with the width of the territorial sea which logically should be narrow so as to avoid interference with navigation. Nor should "freedom of the seas," meritorious as it is when applied to navigation, be misapplied so as to interfere with ocean fishery conservation. Here its application is obsolete.

May I add that I have really admired Ambassador McKernan's handling of the negotiations with the different countries, not because the results were wholly what we wanted but because they were probably the best that could be obtained and he is doing something in the field that needed immediate attention. I think he should be greatly complimented for what he has accomplished.

McKernan: Well, Mr. Chairman, the government is beginning to get very concerned. Mr. Allen (and I think most people in this audience know him to be one of the leaders and, in a sense, the father of international fishery development in the United States) had a great deal to do with the establishment of the abstention principle, and has stoutly defended the cause of the coastal fishermen for many years. Dr. Chapman, on the other hand, has vigorously defended the rights of the distant-water fishermen and has thought for a good many years that the coastal fishermen were getting far too great a break. When these two gentlemen say something a little bit kindly about what is going on in government with respect to fisheries policy then I begin to jump on Dr. Christy's side and wonder if we should not review our policies once again.

Introductory Remarks:

KEY PITFALLS IN THINKING ABOUT NEW RULES FOR SCIENCE IN THE OCEANS

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There are three principal dangers facing the scientific community as it turns its attention to the growing problems of doing research in foreign waters or in connection with foreign continental shelves:

- (1) The danger of failing to recognize the effect of allowing a gap in agreed rules to continue.
- (2) The danger of undervaluing the powers and tools we have under international law and the consequences of not using them.
- (3) The danger of not concerning yourselves as scientists with the exact rules that the political people and lawyers work out.

The first pitfall stems from a not wholly unjustifiable belief that when governmental delegations get together to thrash out a common set of rules, the lowest common denominator is often reached; thus, this line of reasoning goes, if we can leave matters as they are, at least we shall enjoy the better operating conditions for our research in those States which do not unilaterally impose burdensome ones.

The trouble with this is that the grossest expressions of unguided sovereign power have a way of pulling other States after them, in the absence of any agreed rule. For example, you will recall, the first series of extensions of sovereignty over territorial seas out to 200 miles occurred after the Truman Proclamation but before the agreed rules on maximum widths for territorial seas and contiguous zones contained in the 1958 Geneva Convention when Article 24 set a maximum of twelve miles for the combined zones.

If the lowest common denominator were in fact the only one realizable, then there might be some wisdom in eschewing the search for a world-wide rule. In the notice, details and certification to be required of foreign scientists, however, we should be able to attain appreciably less than this most-onerous set of rules. Further, only the widespread adoption of clearly workable rules will permit scientists to plan expeditions in the oceans without fears that unreasonable unilaterally-imposed conditions will force them to be cancelled. After all, there are not that many scientific attacks on ocean problems to treat lightly their possible restriction or cancellation. For example, of eighty-five United States oceanographic ships going on missions between November, 1969, and April, 1970, thirty-one now plan to go off foreign shores, according to NAV-OCEANO's Index to Oceanographic Ship Operations.

The second pitfall - that of undervaluing the international law techniques we have available and the cost of not using them - stems from a similar cynicism, again not wholly unjustifiable, which arises from counting up the failures of the international legal system while totally ignoring its successes. For example, we already have one widespread treaty with liberal rules for scientific exploration in the Western Hemisphere in a small area which embraces even internal waters. This is the Western Hemisphere Treaty which guarantees free access by foreign scientists to national parks and nature preserves. Under that treaty, after its widespread ratification in the 1940's, it became possible for any scientist to do research in any ratifying State's parks. For instance, the underwater portions of our "national seashores" created in recent years arguably already meet the definitions of areas for which the United States has agreed by that treaty to scientific research.

In addition to the possibility of exploring maximally favorable conditions for research either by limited purpose multilateral conventions or by optional protocols to general purpose ones, we might do well to explore the possibilities of applying the "Most-Favored-Nation" clauses in our bilateral treaties of friendship, commerce and navigation. These clauses can frequently be interpreted to protect a scientific expedition from one party to the treaty from harassment by authorities of the other party when it imposes more difficult conditions on expeditions from one country than it does on any other's oceanographic ships.

A further device well worth exploring is that of the Reciprocal Waiver. For example, if it makes scientific sense for an expedition on planned stations off Costa Rica to follow up an unexpected geological feature into Panamanian waters, then it makes sense for the United States, or any other researching nation, to obtain by promised reciprocity some "short order" procedure for gaining quick permission to add such an unplanned area to its expedition. This can be done without necessarily obtaining universal agreement among States, if only those countries which appreciate the value of rules which make scientific search open and sensible simply exchange diplomatic notes agreeing to waive more unreasonable IOC conditions under stated circumstances.

Finally, we should not overlook the progressive role which third-party adjudication can play in developing workable rules for world-wide scientific efforts. For example, the interplay between the marine researcher and the commercial fisherman, seen as pivotal by Professor William T. Burke in his 1967 report to the National Council on Marine Resources and Engineering Development on "International Legal Problems of Scientific Research in the Oceans," can be predicted to provide the biological scientist with new forums in which to seek third-party rulings through the dispute settlement provisions of the various regional fisheries commissions.

Again, as to States which are parties to the Geneva Convention on the Continental Shelf of 1958, this third-party recourse is always possible if the governments take their positions to arbitration or to the World Court on such differences of opinion as these:

- (1) Whether Article 5(8) requirements for consent "in respect of any research concerning the continental shelf" cover such non-prospecting activities as thermal recording and depth sounding during transit over the shelf of a foreign State between stations.
- (2) Whether, in the case above, research without physical contact with the shelf is nevertheless not research "undertaken there" within the intent of Article 5(8).
- (3) Whether the requirement that "the coastal State shall not normally withhold its consent" in Article 5(8) makes it a violation to impose unreasonable conditions, such as Brazil's 180-day notice requirement.

Indeed, as Professor Burke reported to the National Council, it is open to us, when faced with States which have not ratified the Geneva Continental Shelf Convention, to urge such a third-party adjudicator to adopt the view that this "consent" requirement is not customary law binding upon non-signers. Certainly, this is a stronger argument after the World Court's decision in the North Sea Continental Shelf Cases.

Lastly, it should be pointed out that scientists themselves have perceived that a principle of notification without consent does make more sense in terms of their work. The ICES working group came up, therefore, with a system for circulating identification lists of bona fide research vessels. Where, as off South America, fear of guerrillas lies behind stringent requirements before a research vessel can work offshore, the widespread success of such a system in dispelling such fears might add more weight to the customary "freedom of research" so urged.

If these techniques are so simple, what then you well may ask is the problem? It would be a whopper of a mistake to believe the United States does not use them because they are doomed to failure. In this hemisphere, for instance, there is a long history of successful resort to third-party adjudication when frictions mount, from the Atlantic Fisheries Arbitration to the Gulf of Fonseca decision of the Central American Court of Justice and, in recent years, the Honduran-Nicaraguan dispute before the World Court and the Argentine-Chileno arbitration. Likewise, between the United States and each of its neighbors, the almost day-to-day recourse to some one of the four joint international commissions we have with Mexico and Canada confirms the effectiveness possible in such third-party resort.

It is far more plausible that the reason so few of these techniques have been tried is that the oceanographer's real needs have not been thought important enough to warrant them. Herein lies the third pitfall in the framing

of international rules for research: the possibility that the silent scientists among you will fail to concern yourselves with the working out of those rules. The result could be a set of unworkable "realistic compromises" agreed to for political or other non-scientific reasons. It would be well, for one example, to ask yourselves whether the unlocking of the oceans' scientific secrets is not one of our most grossly unappreciated "defense assets" in some of the compromises already reached. Ask yourself, for instance, how many times in the past your research expeditions would have just had to stop operating if a seven-day or ten-day notice to the harbormaster "or appropriate authority" were required before every port call; yet this is just what the IOC draft is now working with, according to Dr. Schaefer's report.

Lastly, as scientists, ask yourselves whether you have been right not to mobilize in a more effective way, and to leave things to us lawyers and diplomats.

FREEDOM OF SCIENTIFIC INQUIRY

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"The need to consider the environment as a whole is a scientific imperative, for the oceans and atmosphere and solid earth are interacting parts of a single geophysical continuum. Eventually, man must understand the sea, the air, and the land as a single, incredibly complex system."¹ To understand the sea portion of this complex system, scientists must freely consider the entire ocean, not just that portion which is absent of restrictions on research. Unfortunately, they cannot do this, for parts of the ocean are subject to the jurisdiction of the coastal State, and this jurisdiction may be exercised in a fashion anywhere from facilitating scientific research to virtually prohibiting it, and all such exercise of jurisdiction is at least partially shielded by the law of the sea.

The Commission Report contains numerous truisms. For example, it says that "...a strong, solid base of science and technology is the common denominator for accomplishment in every area of marine interest,"² and that "A full realization of the potential of the sea is presently limited by lack of scientific knowledge...."³ Whether or not anyone considers anything else in the Commission's Report to be true, there can be no doubt that science is the base for achievement in the ocean, and that limitations on scientific knowledge presently limit achievement of many goals in the ocean. A good many, if not most, of these limitations are due to practical restraints on money, men, ships, and other facilities - but not all. Some of them are artificial, and may be designed to hinder rather than facilitate the conduct of scientific research under the law of the sea.

The Commission's Report appears to contain three areas dealing specifically with the facilitation of scientific research in the oceans or impediments to such research:

* This paper represents an individual view. The views expressed herein are not necessarily those of the Department of State or the United States government.

¹ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 169. [Hereafter referred to as COMSER.]

² Ibid., p. 4.

³ Ibid., p. 4.

(1) The proposals to establish a definitive limit to off-shore sea bottom jurisdiction and a regime beyond such jurisdiction.⁴

(2) The proposals to, ultimately, "establish an inter-governmental organization dealing with ocean matters at the treaty level and having adequate authority, personnel, and financial resources."⁵

(3) The proposals to establish an international legal framework to facilitate scientific research within areas under national jurisdiction, and interim measures to this end.⁶

The proposals to establish a definitive limit to the continental shelf jurisdiction of a coastal nation seem to offer some considerable promise to the scientist. He would, at last, know where the coastal State exercises "sovereign rights" over the exploration and exploitation of the continental shelf, which includes for some reason the right to control scientific research "concerning the continental shelf and undertaken there," even though "explore" used in conjunction with "exploit" has a far different meaning from "research" in the Convention.⁷ Under the present "expandable" definition of the continental shelf, the scientist can only guess as to whether a particular portion of the sea bottom falls within the coastal State's possible jurisdiction unless he is working in shallow or very deep water. And this is assuming that he can tell whether his particular research falls within the Convention's definition of what research the coastal State controls. But that is another question.

The Commission would establish the coastal State's jurisdiction over the continental shelf to "the 200-meter isobath, or 50 nautical miles from the baseline for measuring the breadth of its territorial sea, whichever alternative gives it the greater area..."⁸ This finite answer to the jurisdictional question may be very much preferable to the questionable "expandable" continental shelf which presently exists. However, it should be recognized that in some cases it could in the short run give the coastal State jurisdiction over a

⁴ Ibid., pp. 141-53.

⁵ Ibid., p. 200.

⁶ Ibid., pp. 201-5.

⁷ Convention on the Continental Shelf, Geneva, 1958, Article 2, paragraph 1, and Article 5, paragraph 8.

⁸ COMSER, op.cit., p. 145.

greater area than the present "expandable" but "not-presently-expanded" definition gives it or that it might obtain through operation of the "expansion" provision. Nevertheless, over the long run, the Commission's recommendation would preclude very expansive continental shelf jurisdiction which could result from a failure to resolve the question of a finite definition.

Maybe...but that is not the end of the Commission's proposals on this topic, and these proposals must be considered in context, for the Commission notes that "the question of fixing the outer limits of the continental shelf is inseparable from that of the framework applicable beyond these limits,"⁹ and that these "recommendations are inter-related. Rejection of any one of these recommendations would raise serious questions in the minds of the Commission as to the advisability of continuing with the others."¹⁰

Thus the scientist must weigh the desirability of having a finite limit on the jurisdiction of the coastal State over research on the continental shelf, with the possible drawbacks this entails of itself, in the context of the related Commission proposals. The proposals for an International Registry Authority and International Fund, with certain powers and duties of registering nations, may offer some cause for concern, although they leave the present freedom of scientific research concerning the deep seabed and subsoil, undertaken there, intact.¹¹ It is conceivable that the exclusive rights to exploration conferred on the registrant under these arrangements may lead to the same problems for the scientist as he encounters under the continental shelf regime.

But a new element is also introduced, an "intermediate zone,"¹² in which the coastal State would exercise control over the exploration or exploitation of mineral resources but which would otherwise be subject to the regime of the deep seabed. This raises a new question for the scientist, recognizing that a narrow coastal jurisdiction is much preferable from the scientific viewpoint, and leaving aside the Commission's arguments as to why a limited coastal State jurisdiction is necessary for non-scientific reasons, or why any change from the status quo is or is not desirable at our present stage of knowledge concerning the seabed from 200 to 2,500 meters. What can the scientist do in the area of 200 to 2,500 meters, or the area 50 to 100 miles from the coast, which would fall in this zone? The Commission states without explanation that "Scientific inquiry concerning the bed of the intermediate zone and undertaken there will

⁹ Ibid., p. 146.

¹⁰ Ibid., p. 147.

¹¹ Ibid., p. 147.

¹² Ibid., pp. 151-3.

not require the coastal nation's prior consent."¹³ While the Commission's position is commendable, is there any reason to believe this would hold true? Further thinking on this would appear necessary. For example, in spite of the commitments to the International Registry Authority and the International Fund, the coastal State would exercise essentially the same control over the explorer or exploiter in the intermediate zone as on the continental shelf - the authority over who can do what, when, where and how. The coastal State's real control would essentially be the same for the two areas. Setting aside the question of physical interference, is there any reason to believe that the coastal State would not extend its jurisdiction in the intermediate zone to include "purely scientific research"¹⁴ just as in the case of the continental shelf? This especially in view of the very fuzzy distinction in the Convention between exploration (meaning in connection with possible exploitation) and scientific research (meaning something "pure"), and the tendency of one jurisdiction in the ocean to extend itself to another, and another, and another.

Thus it appears that the scientist may find some disadvantage in terms of the Commission's proposals on sea bottom jurisdiction, whatever their meaning may be for the "explorer" or "exploiter." First, the establishment of a finite limit on the "expandable" continental shelf may, in fact, expand it significantly off many nations beyond the present potential but non-expanded shelf. Second, the coastal State's jurisdiction over scientific research may well accompany the newly-found jurisdiction, even though circumscribed in the proposal, over a most important "intermediate" area of the seabed between 200 and 2,500 meters. Third, the "exclusive" rights to deep seabed exploitation could conceivably cause problems for the scientist, although this is a less clear danger to the scientist than the other two. On the other hand, the scientist is faced with the distinct possibility of stricter and stricter national controls over larger and larger areas of the sea bottom unless the nature and extent of national control is delineated by international agreement. In any attempt to do so, the difficulties cited should be borne in mind.

The Commission does not give high priority to its proposal to establish a global oceanic organization. Although there are many people who have felt for a long time that the establishment of such an organization is necessary and inevitable, it is unclear whether such an organization would be instrumental in the facilitation of scientific research. In theory, of course, such an organization should create a climate which would be conducive to the granting of research clearances to "pure" scientists, regardless of the jurisdictional regime which may exist for the coastal State. This theory would be subject to too many variables in actual practice, however, to make any predictions as to whether it will work. Much will depend on the nature of the organization, and here also, there are too many variables to permit a prediction. Regardless of

¹³ *Ibid.*, p. 152.

¹⁴ Convention, *op.cit.*, Article 5, paragraph 8..

other considerations in this proposal, we can only wait and see, hopefully, whether the scientist will be aided in conducting his research within the jurisdiction of the coastal State. And wait a good many years - for such an organization seems to be at least ten years or more away from being established.

Although we must wait and see, it should be kept in mind that the present Intergovernmental Oceanographic Commission, a far weaker body than the organization proposed by the Commission, has already started working on this question. At its last session, in 1967, it established a Working Group on Legal Questions Related to Scientific Investigations of the Oceans,¹⁵ and its next session in September, 1969, will consider a draft resolution produced by this Working Group which is intended to facilitate the obtaining of clearances for any research which may fall under the jurisdiction of the coastal State.¹⁶ Further, another Working Group of the IOC which met in April to consider the implications of present activities to broaden and strengthen the IOC produced a proposed new set of Statutes which would enumerate the most significant functions of the organization. Among them would be listed specifically that the IOC "Promotes freedom of scientific investigation of the ocean."¹⁷ Thus it may well be that we will not have to await the formation of the Commission's proposed world organization to learn if the international organization approach to the solution of the problem is profitable.

Thirdly, "the Commission urges the United States to join with other nations to effectuate the principle of maximum freedom for scientific inquiry. To this end," it says, "a new international legal framework is required."¹⁸ For, the Commission notes, "to observe, describe, and understand the physical, geological, chemical, and biological phenomena of the marine environment, the marine scientist must conduct investigations on a global basis. But the existing international legal framework does not facilitate these investigations."¹⁹

Even if a limit could be established for the continental shelf, and a regime for the area beyond, and a global ocean organization as well, it appears that this proposal offers most hope for the marine scientist. There appears to be a general and inevitable trend to codify and elaborate the law of

¹⁵ IOC Fifth Session, Summary Report, Resolution V-6, Annex III, p. 5.

¹⁶ IOC, Report of the Working Group on Legal Questions Related to Scientific Investigations of the Oceans, Annex III.

¹⁷ Unpublished.

¹⁸ COMSER, op.cit., p. 202.

¹⁹ Ibid., p. 201.

the sea. While it has long been accepted that one of the freedoms of the sea is the freedom of scientific research, even though specific mention of this freedom was omitted from the Convention on the High Seas²⁰ while other freedoms of the sea were enumerated, the scientist is troubled by the lack of a definition of this freedom. He is troubled as well by a lack of clarity as to how this principle of freedom is carried over into areas of specialized jurisdiction such as the continental shelf and contiguous fisheries zone, as well as by the meaning of the principle in such areas as the territorial sea and internal waters. For such distinctions, which have such legal meaning, are only impediments in the eye of the scientist, who must consider the totality of the ocean and its environment.

To resolve these problems, the Commission has both long-term and short-term proposals. It would establish a new international convention embodying several new and attractive provisions, from the standpoint of scientific research:²¹

- (1) Territorial sea or continental shelf research without prior consent of the coastal State provided certain conditions are met.
- (2) Fisheries research in contiguous fisheries zones under the same conditions.
- (3) Use of research submersibles under similar conditions.
- (4) Use of research buoys in territorial waters.

For the short-term the Commission urges the United States to seek bilateral and regional agreements embodying these provisions, and to take other initiatives to encourage freedom of scientific research.

Since these proposals offer different promises and pose different problems, it is perhaps best to briefly consider certain questions concerning them individually.

(1) Territorial Sea - The Commission uses the term "territorial waters," where it would have been better to use the more precise "territorial sea" (as defined in the Convention on the Territorial Sea and Contiguous Zone).²² It appears that the Commission meant "territorial sea" since it states that security considerations are generally too sensitive in internal waters for

²⁰ Geneva, 1958.

²¹ COMSER, op.cit., p. 203.

²² Geneva, 1958.

the proposed convention to apply there, even with the safeguards it proposes. This seems realistic.

The Commission would, however, apply the convention to internal waters which were once part of the territorial sea but which became internal waters because of the use of straight baselines. This poses greater problems in securing agreement on such arrangement, because of the sensitivity of the coastal State over any internal waters, but which perhaps can be overcome. One wonders, however, why the Commission omits mention of areas of internal waters which were once part of the high seas. The latter would seem a bit more feasible to include than the former.

But in any event, the principal area will be the territorial sea. One would hope that the coastal State would take a positive attitude toward scientific research and agree to a no-consent-required concept, provided that it is notified of the objectives and methods of research and the time involved, in sufficient time to enable it to participate if it so desires, and provided that the results of the research will be published in any event. Such an international arrangement will be difficult to negotiate, without doubt, and it appears probable that a further condition will have to be imposed under which the coastal State may veto the project in its territorial waters - that is, the research may go forward after proper notification under the terms specified unless the coastal State says "no."

Even with this limitation such arrangements would be a major step forward, for there are some indications that difficulties in securing positive clearance may simply be bureaucratic inertia or red tape holding the request from going through channels in a timely fashion. Further, under present practices clearance probably isn't granted unless a bureaucrat builds a positive case as to why the foreigner should be allowed to come and do what he wants. Under the Commission proposal, the bureaucrat would have to build a case as to why the foreigner shouldn't come in order to stop him from coming. On a rational basis, anyway, this will probably be somewhat more difficult for the bureaucrat and thus research may be facilitated.

The Commission appears to believe that the safeguards required are only or primarily to give the coastal State protection against intelligence collection or espionage.²³ Experience seems to indicate that, in spite of the increasing concern resulting from the widespread publicity given to the mission of the PUEBLO, which was unfortunately confused with an oceanographic ship, coastal States are more concerned with economic considerations and out-and-out nationalism in considering research clearance requests. This makes it more difficult to cope with the problem, since these various concerns come into play independently. The usual situation is an interplay of the various factors, but with a different "mix" in each case.

²³ COMSER, op.cit., p. 204.

(2) Continental Shelf - The above comments on the territorial sea also apply more or less to the continental shelf, except that the economic concerns of the coastal State are probably the greatest here where they possibly were not in the case of the territorial sea. The greatest fear of most coastal States is probably that the large powers which have the capability to do research far from home are going to gain some advantage through such research with regard to exploitation of the "fabulous" wealth of the sea bottom. This is even true of countries which already reserve sea bottom exploitation to national monopolies. The rejoinder, of course, is that it matters little what someone else may find out about the sea bottom under your jurisdiction as long as you retain control over who may exploit it and under what conditions. Even if the coastal State doesn't know as much about an area as the potential exploiter, it is possible for skilled negotiators to find out just how far the bidder will go to secure the concession. The biggest problem here would appear to be the public relations job of convincing others that this safeguard already exists.

Of course, from the standpoint of science, the best thing to do would be to delete the new restrictions imposed by the Shelf Convention. The rightful purpose of the Convention was the regulation of exploitation of continental shelf resources, including the exploration associated with such exploitation. No useful purpose was served by extending the Convention's restrictions to purely scientific research, even though written in such a fashion as to normally assure the required clearances. It is too much to expect, probably, that this completely unnecessary impediment to scientific research will be removed, however.

(3) Fisheries Research - The picture here is not as clear as the Commission's observations might lead one to believe. It is not simply a question of differentiating between commercial fishing and scientific research, although the Commission is correct that the quantity of fish taken should be a significant difference in most cases.²⁴ Rather, it is a question of differentiating between biological and other scientific research on the one hand and specifically fisheries research on the other. The difference is that biological and other scientific research in a contiguous fisheries zone is not controlled by the coastal State, while fisheries research in such a zone may be controlled by the coastal State. The difficulty is in differentiating between the two, because similar or identical actions may be involved, including the taking of fish in scientific research and doing physical oceanography in fisheries research. What matters here is essentially what matters on the continental shelf - motivation; fisheries research is akin to the exploration part of exploration and exploitation. Fortunately for scientific research, there is no contiguous fisheries zone convention which gives the coastal State control over purely scientific research in the fisheries zone.

Now, it might be argued that because of the similarity mentioned between the continental shelf situation and the fisheries zone situation, there

²⁴ Ibid.

should not be any difficulty in facilitating fisheries research in the fisheries zone because the important thing is that the coastal State retains control over exploitation of fisheries in the zone, just as it retains control over exploitation on the shelf. Unfortunately, this is not true. Continental shelf resources, probably with the exception of only a few crabs, do not normally move back and forth on the sea bottom over the 200-meter isobath. Fish, however, generally swim back and forth through the imaginary line delimiting the fisheries zone, and act as if it did not exist. Even if they stay outside the fisheries zone, conditions in the zone might affect the fisheries outside the zone. Thus fisheries research in a contiguous fisheries zone by foreign fisheries scientists may well affect the competitive fisheries situation between fishermen from the coastal State and distant water fishermen in the area beyond the fisheries zone. This problem exists on top of the basic one that no satisfactory definition of fisheries research has been devised.

It might be argued that the best solution would be to give up control over fisheries research in the contiguous zone and limit controls to exploitation. Unfortunately, given the growing international problems associated with coastal fisheries, this is just not practical. Most fishermen are coastal fishermen who want to extend coastal State control even further, and they represent a potent political force.

Negative as this discussion has been, it does not mean that the Commission's proposal to free research in the contiguous fisheries zone cannot be implemented. If the coastal State is interested in facilitating research in the ocean, it could accept the Commission's proposal. In practical terms, it would just mean that the coastal State would have to maintain its vigilance over notifications concerning fisheries research, and perhaps veto them or impose conditions more often than in the case of "pure" biological research in the territorial sea or continental shelf research in order to protect its special fisheries interests.

(4) Research Submersibles - Although the Territorial Sea Convention requires submarines to navigate on the surface, it is feasible even today to operate research submersibles under water in a foreign territorial sea. It just requires obtaining clearance, the same as for any other kind of research in foreign territorial seas. The United States has done this without any more difficulty than with any other kind of research clearance request. On the other hand, having a provision in a convention, as suggested by the Commission, would probably facilitate such scientific operations in the long run, and should be sought. (Again the reference should be to "territorial sea" rather than "territorial waters.")

(5) Research Buoys - The greatest problem here would not seem to be research buoys placed in a foreign territorial sea, which is what the Commission restricts itself to in its proposal, but the use of research buoys generally. Other types of research generally do not face the same problems as buoys, especially unmanned buoys and free-floating buoys, on the high seas. This is

because the law of the sea with regard to such buoys is very unclear. This relates primarily to such matters as liability and theft, rather than jurisdictional problems although the latter exist where such buoys drift into territorial waters. This problem was recognized by the IOC many years ago, and work is progressing, although slowly, toward a convention which hopefully will resolve these problems. This work has the full cooperation of the Intergovernmental Maritime Consultative Organization (IMCO), which has general responsibility for international shipping matters, and IOC's parent body, UNESCO. Work has already started on a draft convention, and UNESCO will probably be convening a conference of plenipotentiaries by 1972 or 1973 to complete negotiation of such a convention.

Whether the Commission's proposal should be included in the convention it has suggested, or whether it should be included in the IOC/UNESCO/IMCO convention in process, is a question to be evaluated on practical grounds. Whichever avenue is used, the problems of accomplishing the Commission's aims on facilitating use of research buoys would appear to be roughly the same as for its basic proposal regarding research in the territorial sea discussed above. It is a difference of degree, not of kind.

The proposal to seek such arrangements on a bilateral or regional basis pending the negotiation of a worldwide convention is reasonable. It should be easier, initially, to deal with such problems on a bilateral or regional basis than with some ten dozen countries. Further, dealing with this subject on a bilateral or regional basis should provide the necessary groundwork for a broader approach, and should permit the working out of many of the details which might otherwise prove impossible if attacked first on a worldwide scale. Finally, with the already large, and growing, nature of the problem of conducting scientific research in the ocean, it is imperative that action be taken as soon as possible. Hopefully, the IOC draft resolution will be adopted in September - but this is not enough. And the necessary preparations for and the negotiation of a broad-based convention will take a good many years. Over the long run it is clear that we must approach the problem on both a bilateral and broad-based multilateral basis, and that this must be done in a coordinated fashion.

The Commission also proposes certain other initiatives the United States might take to facilitate the conduct of scientific research in the ocean on a short-term basis pending negotiation of the suggested convention.²⁵ These proposals, more or less ancillary to its basic proposals on this subject, are certainly directed toward the facilitation of scientific research. However, a number of comments appear to be necessary to set them in proper perspective.

The most specific proposal, internationally speaking, is that the United States should announce that it will consent to the conduct of any proposed foreign scientific investigation "certified" by the IOC as meeting the

²⁵ Ibid., pp. 204-5.

requirements of the Continental Shelf Convention.²⁶ This goes far beyond the procedures envisaged in the IOC draft resolution on the facilitation of scientific research.

The IOC is simply in no position to make such a certification. It has an extremely small staff with which to undertake its already large and complicated responsibilities. Even if this staff is significantly enlarged in terms of proposals presently being considered in IOC, UNESCO, FAO, WMO, IMCO and other international organizations, it will be no more than barely adequate to carry out IOC's present responsibilities and those which have been envisaged for it by the UN General Assembly and others. To make a certification on a positive basis as suggested by the Commission would take an enormous staff, which cannot be foreseen, and would still be somewhat questionable.

While some purely scientific institutions are well known, the ability of more and more institutions to go to sea at great distances has been growing constantly, and probably will continue to do so. To investigate a little known or unknown institution would involve a significant expense in people, time, and money, which IOC cannot now afford and is never likely to be able to afford. But regardless of the institution, how is IOC to consider the merits of a particular project without a full-field investigation? Even "pure" scientists have been known to take on a commercial contract at times. And how is IOC to ensure that the results will be published? It can't. Regardless of how extensive an investigation it might make of any particular request, IOC would still have to depend on the bona fides of the requesting government and scientist. And so, any IOC certification - even assuming it could do an investigation if necessary - would be worth only as much as the host government's trust of the requesting government and scientist. It is simply not very practical.

The Commission suggests that the U.S. announce that it will grant continental shelf clearances on a broad basis for scientific research.²⁷ There does not appear to be any substantive problem with this, except that one wonders why the Commission did not suggest that the U.S. announce that any clearance is automatically granted in the absence of a positive veto if the request meets the criteria in the Continental Shelf Convention and notification is given a reasonable period in advance. One wonders, also, why the Commission has felt it necessary to go on to suggest that the U.S. state that its consent is required "only for research concerning the continental shelf which involves physical contact with it."²⁸ The Continental Shelf Convention is already the law of the land, after all, and it specifies that consent for the purely scientific

²⁶ Ibid., p. 205.

²⁷ Ibid., p. 204.

²⁸ Ibid.

research specified therein must be research not only "concerning the continental shelf" but also "undertaken there."²⁹ How can it be "there" if it is not in physical contact with it? It is not at all unusual to conduct scientific research concerning something at some other place, but if such research were continental shelf research it would not meet the criteria established in the Convention definition of research requiring permission.

The Commission also suggests that the United States should stress that its prior consent is not required if the research concerns the superadjacent waters and not the continental shelf.³⁰ Again, one wonders why the United States should stress this? It is very clearly stipulated in the Convention³¹ and the United States and most other countries have consistently operated internationally as if there is no question concerning this self-evident truth.

Finally, the Commission suggests that the U.S. announce that it will consent to any research that is part of an international cooperative project sponsored or endorsed by the IOC, provided that it may participate in the research and that the results will be published and the basic data made available to it.³² This suggestion seems to put too much reliance on the IOC. The United States, true, actively supports the IOC and seeks to broaden and strengthen it. But it must be borne in mind that IOC projects are voluntary, and generally any project which several members are interested in is adopted, for no member must participate in any project except as it decides. The Commission's suggestion would make the United States automatically a participant in any IOC sponsored project which might include areas of the ocean off its coast. This appears to go a bit too far, even in the interest of scientific research, since there are other American interests which must be considered in such circumstances. Basically, it would seem that the general discussion about research in the territorial sea and contiguous fisheries zone would also apply to IOC sponsored programs, rather than any special policy. It might, of course, be in the best interest of the United States to bring its position on these matters to the specific attention of the IOC, but that is a far different matter from this suggestion of the Commission.

In short, the Commission's proposals regarding facilitation of scientific research in the ocean offer significant promise of aiding the marine scientist in this era of increasing difficulty in securing the necessary clearances from the coastal State to do important research. In a number of details which relate to legal, political, economic, and scientific considerations, the Commission's proposals are misleading or erroneous. Nevertheless, the intent

²⁹ Continental Shelf Convention, op.cit., Article 5, paragraph 8.

³⁰ COMSER, op.cit., p. 204.

³¹ Continental Shelf Convention, op.cit., Article 3.

³² COMSER, op.cit., p. 205.

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is right and the need is clear, and everyone concerned should give them serious consideration. Finally, subject to the caveats which have been discussed, everyone concerned with the facilitation of scientific research in the oceans should seek positive steps toward this end as quickly as possible.

INTERNATIONAL ORGANIZATIONS FOR MARINE SCIENCE
AN ECLECTIC MODEL

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The Commission on Marine Science, Engineering and Resources notes that, in general, existing "international organizations have served well in facilitating collaboration on marine science problems." Its report goes on to say, however, that there will need to be a strengthening of existing organizations, both governmental and non-governmental, "as the pace of research and exploration intensifies....This need is particularly pressing if development of world-wide systems for earth, air, and ocean monitoring are to be coordinated."

We can hardly decide how to strengthen and perhaps restructure existing scientific organizations without referring to the general experience of international organization, however, and we ought also to consider the implications for marine science of the Commission's recommendations for a political-legal regime to regulate the exploitation of seabed and ocean resources beyond the limits it recommends for the continental shelf. This paper, accordingly, seeks to take up where the Commission leaves off. Specifically, it seeks to project what the International Registry Authority and the International Fund would be, how they might affect marine science, and whether they would serve the national interest of the United States in foreign affairs. More specifically, I am concerned with the strengths and weaknesses of present institutional arrangements to promote scientific discovery in the oceans. I am, in short, endeavoring to sketch a model of international agency activity in the oceans to meet scientific needs for the next decade or so.

Of necessity the model is eclectic. No existing agency and no system of agencies seem adequate to the task of monitoring and investigating the marine environment. The task of model-building is complicated by the fact that men and governments use the oceans in many ways necessitating different types of regimes and institutions to regulate the different uses. While there is something to be learned from the arrangements dealing with outer space and Antarctica, for example, these political-legal regimes are by no means perfect analogies. In comparison with ocean arrangements, these regimes were cut from new cloth. The uses of these areas were relatively limited when international regimes to govern them were established. Little was needed in the way of international organization to promote the cooperative arrangements sought by the few nations involved.

In ocean space the situation is quite different. Even the high seas beyond any claim to exclusive national jurisdiction are subject to intensive

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use. As a result, a few international organizations have already been established to promote the peaceful exploitation of ocean resources. This development is likely to continue because, in comparison with outer space and Antarctica, there are far greater opportunities for economic reward in ocean space. Because of these opportunities, national claims over ocean resources are threatening to expand from the limits of the continental shelf to the continental margins. Paradoxical though it may seem, this development may well promote the further growth of international ocean agencies. Increasing exploitation of natural resources invariably requires regulation in the public interest by public authority. For well over a century, international organizations have facilitated the peaceful exploitation of international rivers and other transportation systems for the benefit of the riparian States. International organizations are essential for our international mail and telecommunications systems. They are increasingly important for the maintenance of public health and safety. They have been used with some success to conserve fish stocks. Therefore, an international organization model to promote marine science and ocean resource use will be eclectic because it will borrow from many organizational precedents.

Perhaps I should show my hand at this point. I agree with the recommendations and reasoning of the Marine Commission and its International Panel. The existing international political-legal framework is inadequate to promote the primary national interest of our nation in furthering the exploration and use of ocean resources. It is inadequate because it fails to serve United States defense interests and foreign policy goals. It fails particularly to serve our interests in marine science. The Commission is to be commended for its insistence that the twin question of limits to exclusive national jurisdiction and the nature of the regimes beyond are foreign policy matters. Beyond doubt, these questions affect our relationships with all coastal nations and to some extent our relations with all States.

The Commission seems persuasive also in its insistence that problems relating to specific uses of ocean resources cannot be solved in isolation from problems caused by other uses. This is not to say that a single multipurpose agency and legal regime must regulate arms control, fishing, and mineral exploitation, but rather to say that different regimes and institutions for different uses must be considered in relation to one another. After all, the world ocean is a system, a bio-system. Its continued equilibrium, therefore, requires a matching administrative system to regulate its use.

The Commission seems correct also in stating or implying that, since the oceans provide an unprecedented opportunity to develop new modes of international cooperation, because they are largely unclaimed and unoccupied, we must act quickly. As technology advances, interests harden, and claims are extended. Will these interests promote international peace or international conflict? That is really the question before us this week and in the years immediately ahead.

I take modest exception to one of the Commission's premises, however. The question of limits to national jurisdiction is stated as being prior to the

question of the regime beyond. I disagree. The nature of the regime will influence governments in deciding on the preferred limits to national jurisdiction. In saying this, I am speaking both of living ocean resources and non-living resources including those on and under the seabed. It seems only logical to ask how exploitation and scientific investigation would be conducted beyond the recommended contiguous zones and narrow continental shelves before extending national sovereignty in any radical way. It appears to me, for example, that those favoring wide areas of exclusive national jurisdiction over the sea and the seabed do so because they fear that resource exploitation beyond such jurisdiction would differ radically from exploitation within such jurisdiction. I question this apprehension. The exploration and exploitation of seabed and ocean resources under the Commission's proposals, including the International Registry Authority and the International Fund, operating within and beyond an intermediate zone, would do very little, it seems to me, to change the ways in which oil and gas producers, miners, and fishermen, would go about their business. The model implicit in the Commission's recommendations makes national governments responsible internationally for the behavior of their citizens and firms operating in areas beyond national jurisdiction. That is, oil men, miners, seabed resort owners, and even fishermen on the high seas would continue to look to national governments for the security of their titles and operations and for the redress of their grievances. If the terms and conditions under which they work prove to be familiar and similar to conditions within national jurisdiction, would there be any need to upset traditional arrangements which have long permitted the use of vast ocean resources for the common benefit?

My reading of past experience is that international organizations do not threaten national governments. Rather they improve the capacity of member nations to manage their affairs. Indeed, that is why most of them are created. Only rarely do governments seek to "wither away," so to say, by integrating in supranational, as opposed to international organizations. When they do seek supranational authority, as in common markets, actual and proposed, they find it hard to come by. But in any case, the Commission is not talking about supranational authority. Its report speaks rather of intergovernmental cooperative mechanisms that would enable national governments to use ocean resources efficiently and peacefully. To accomplish this, an international regime and such institutions as may be necessary should be designed to serve the needs of rich and poor and strong and weak.

What I am urging is a careful look at the regime, including the institutions involved, to regulate both scientific inquiry and resource exploitation beyond national jurisdiction before making hasty decisions on the limits to such jurisdiction. Negotiations on the regime "beyond" might persuade governments and the interest groups they represent that international administration is not so threatening after all. To me the real question is whether the control mechanisms needed to implement a world public interest in the oceans would put an intolerable burden on international organization. If the burden is too heavy, further extensions of national jurisdiction may be necessary in order to utilize

needed resources. The point is that we don't know as yet whether this is the case. I think national claims can be restrained and international interests broadened by building on past experience with international institutions.

An International Public Interest - The United Nations General Assembly

The Commission says very little if anything in its report about the United Nations General Assembly. Its International Panel recommends that the Assembly adopt a declaration of principles to guide nations in their exploration and exploitation of the oceans. Such action is desirable and inevitable. Because it is the most comprehensive political body in the world today, the Assembly is particularly qualified to formulate an international public interest. The Assembly is a prime candidate for this role because it is a forum where governments seek support for their national interests and foreign policies. In so doing, they sometimes find areas of agreement. Among the antecedents of the Outer Space Treaty were the United Nations Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, adopted by the General Assembly in 1963, and another resolution the same year calling upon States to refrain from stationing weapons of mass destruction in space whether in orbit or on celestial bodies. A similar declaration of principles by the United Nations General Assembly would be an important step toward a viable international ocean regime. There are signs from the record of the Ad Hoc Committee on the Sea-bed and its successor standing committee that agreement on principles to regulate the use of ocean resources is within reach. Further resolutions might recommend the establishment of specific institutions for an international regime such as the proposed International Registry Authority and the International Fund. Such agencies could be autonomous units within the general UN framework. Governments would join them or not as they might choose. There are several precedents for this procedure. The United Nations Industrial Development Organization (UNIDO) was established as an autonomous organization within the UN system by an Assembly resolution urged particularly by the developing countries. The fact that it has been largely neglected by the advanced countries is proof of its voluntary character. The United Nations Institute for Training and Research (UNITAR), also an autonomous body within the UN, owes its origin to a resolution of the Twenty-first General Assembly. It has its own governing body and is financed by voluntary contributions.

Because it has a huge stake in the global oceans, the United States needs a diplomatic, i.e., political, forum as a means of persuading other nations to seek and accept norms of conduct. When these are agreed upon, their enforcement will depend primarily on national authority rather than international authority. The Assembly is, in fact, already involved heavily in setting norms for ocean use. Its political processes during the past two or three years have prodded member governments to decide what their interests in the oceans should be. The performance of this political or policy function, however, does not mean that the Assembly, or any UN body for that matter, should assume operational responsibility. Nor does it require that the UN take title to the oceans or the ocean floor. Such steps have been unnecessary in the peaceful use and

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exploration of Antarctica and outer space. The Assembly's role is rather to facilitate international acceptance of operations that would be conducted primarily by national governments or their agents and, secondarily, by specialized international agencies on the basis of international agreements.

Implications of the Proposed Seabed Regime

Before considering the Commission's "strong" endorsement of the International Decade of Ocean Exploration and the role of the Intergovernmental Oceanographic Commission (IOC) in planning and coordinating the Decade, we should consider the implications for marine science affairs of the Commission's recommendations for regulating mineral resource exploitation on the deep seabed. Would the recommendations for an intermediate zone, an International Registry Authority, and an International Fund have any implication for marine science? Would they help or hinder? I should think these recommendations would be helpful.

Consider first the proposed intermediate zone. The Commission notes that the existing international legal framework fails to facilitate scientific inquiry sufficiently. The accelerating rate of expansion of national claims over the oceans and the seabed enlarges areas in which scientific inquiry cannot be conducted without the coastal States' permission. Permission is sometimes slow in being granted. Despite our long coastline, American scientists cannot learn all they need and wish to learn by studying their own shelves or adjacent slopes. In addition to the deep ocean floors, they need access to other shelves and slopes. At the very least, they need access to the information derived from investigating areas not adjacent to their own shores. By specifying that "scientific inquiry concerning the bed of the intermediate zone and undertaken there will not require the coastal nation's prior consent," the Commission has sought to strengthen the principle of freedom of access for scientific inquiry. A complicating factor is that this freedom in the intermediate zone would be important for military as well as scientific reasons. The fact that only the coastal State would have exploitation privileges in the zone, however, may be reassuring so far as defense considerations may be concerned. Under this arrangement, only the coastal State would be authorized to build and maintain installations on the ocean floor in the zone.

The Commission hopes the concept of an intermediate zone will be supported for economic reasons also. Although narrow shelves may serve military and scientific interests, the Commission recognizes that economic incentives are necessary. The preferential right of coastal States to access to seabed resources as far from shore as what would be essentially the continental margin would be the reward for accepting a narrow continental shelf. It should appeal to both the advanced and the less advanced States by giving them preferred access to resources. It should appeal to scientific interests and naval powers. If this reasoning is sound, the proposed intermediate zone might help to head off extreme national claims in the oceans which threaten the freedom of

scientific inquiry. In so doing, it would help to assure freedom of access for scientific investigation on the seabed at least beyond the limit proposed for the continental shelf.

I realize, however, that American scientists, and scientists generally for that matter, are concerned with the right to conduct basic scientific research closer to shore, i.e., in territorial waters, on shelves within the proposed limits, and in exclusive fishery zones. Freedom of scientific inquiry is threatened in these areas most particularly. Nonetheless, the concept of an intermediate zone would be helpful in promoting scientific advance through international cooperation. The functioning of the proposed International Registry Authority (IRA), moreover, would parallel very closely one of the tasks the Commission recommends for the Intergovernmental Oceanographic Commission (IOC). This is the certification of foreign scientific investigation on the shelf as consistent with the criteria set forth in the Convention on the Continental Shelf. That is, the IOC under this arrangement would certify the bona fide scientific nature of investigation in territorial waters and on continental shelves. The objective of the certification process would be to gain coastal State permission for scientific investigation within its national jurisdiction by other States just as the purpose of the Registry is to permit access in the intermediate zone and ocean floor beyond for mineral exploitation. An important difference is that registration would confer exclusive exploitation rights over a given area for a specific time period, whereas certification would provide evidence that the research involved conformed to internationally agreed standards of basic scientific investigation. Despite this difference, the two bodies, a registration agency for exploitation and a certifying agency for scientific inquiry, are functionally similar. They would provide access and contribute to security of operations. They would elicit information and provide resources for the common benefit. Their similarity may lead us to consider whether the management and control of the world ocean should be entrusted to a single agency as NASCO and other bodies have suggested. We can return to this point later.

Are there precedents for the proposed Authority? If so, have they been successful? How, for example, and to what extent do international agencies enforce international agreements? There are two tests such an agency must meet. First, it must be acceptable to the majority of governments. Second, it must be strong enough to do the job. These criteria might appear mutually exclusive. In fact, they are not.

The Authority's enforcement powers would hardly be a threat to any national government. Beyond satisfying itself that the national organization, seeking to undertake exploration or exploitation, is qualified to do so, the Authority would have no discretion to deny registration of any claims. Moreover, it would be required to convert an exploration claim into an exploitation claim upon proof of discovery. Its policing authority would be limited to modest inspection privileges to insure that registering nations fulfilled their treaty obligations. Its enforcement and other activities would be guided by a policy-setting body appropriately organized. It would be an autonomous body

within the general UN system. Its membership would be based on what the Commission describes as "multiple principle" representation based on technological capacity and "geographic distribution." The latter principle is a generally understood euphemism for political considerations. This would doubtless mean that through a rotation scheme developing nations, landlocked nations, socialist nations, and Latin American, Asian, and African nations would find their places on the Authority, in addition to advanced nations some of whom might be permanent members on an Executive Board. Its functions and powers would be specified in an international agreement, possibly in a general treaty, specifying the principles, rules, and institutions of a seabed regime.

This sort of organized international collaboration has long been familiar on the international landscape. The extent of institutionalization required to establish and enforce international standards of behavior varies with the case. The Antarctic Treaty requires no international organization. Rather it authorizes national teams to inspect any area in Antarctica to verify compliance with the prohibitions against military uses. Governments inform each other of their operations, the inspectors are called observers. The United States has exercised successfully the right of observation with respect to its friends and its friendly enemies, including the Soviet Union. In the case of the International Atomic Energy Agency (IAEA), however, inspection is carried out by the agency's own teams to ensure that nuclear materials and facilities are not used for military purposes.

The fisheries commissions occupy a middle ground between national and international action. While there obviously is some organization involved (there are international commissioners), none of the fishery conventions permits international enforcement by a commission itself. In the case of the International Commission for North Atlantic Fisheries (ICNAF), each member enforces the North Atlantic Convention's regulations with respect to its own citizens. In the North Pacific, however, several conventions permit authorized officials of the member governments to inspect ("search and seize") each other's vessels suspected of wrong-doing. The Marine Commission's International Panel urged a further increase in the power of international fisheries bodies so as to provide a corps of neutral international inspectors, responsible to, and paid by, ICNAF as a contributing element in the enforcement of national catch quotas in the North Atlantic.

Whatever institutions are thought necessary to enforce the Marine Commission's recommended ocean regime, they need not extend beyond familiar precedents in the theory and practice of international organizations.

Equally and perhaps more important for gaining international acceptance for its international proposals is the distribution of economic benefits. In this connection, the Commission wisely separates the International Fund from the International Registry Authority. For example, the Fund's membership would be determined by the UN General Assembly, while the Authority's membership would be specified in the international "agreements embodying the new framework." The

effect of this distinction between the Fund and the Authority would be to give developing countries a relatively greater opportunity to control the fund. While the Authority would be an "expert" body, relatively speaking, carrying out its registry functions in terms of economic and other "objective" criteria, the Fund would be a "political" body distributing economic benefits as an arbitrary matter. Member governments might favor using the Fund's resources for such activities as food-from-the-sea programs, assistance to developing countries, or marine science activity. Perhaps the UN Capital Development Fund - not the Program - would be a good candidate. At the moment it is comatose owing to a lack of financial nourishment.

The Authority would use economic and other "scientific" criteria to register claims. Nations adhering to the agreements would exploit on a "first come-first registered" basis. They would be left alone provided they had the capacity to exploit, and did not "sit on" a claim. Parenthetically, I might remark that American oil companies would be dealing with U.S. government departments and agencies much as they do now under the present shelf regime. While the Commission states that new domestic legislation would be necessary to insure that exploitation in and beyond the intermediate zone would conform to international obligations, it does not appear that the oil companies would be inconvenienced if a portion of the royalties paid on the value of production were used to further American foreign policy objectives such as aiding developing countries. The latter, in turn, would continue to have a claim on resources that traditionally have been common-use resources available to all nations.

In conclusion, there is ample precedent for the Commission's recommendations for international regimes, which, moreover, should go a long way in meeting the needs of marine science. The two agencies, the Authority and the Fund, should not be so strong as to threaten national interests, nor so weak as to be ineffective in fostering international cooperation. I do not mean that gaining and implementing agreement will be easy. International inspection in the intermediate zone may prove to be a stumbling block for national sovereigns. Another difficulty is that inspection requires trained manpower - a commodity in short supply in many, but not all, international agencies. Crucial in gaining the acceptance of the scientific community, it seems to me, is the differentiation of the Authority from the Fund which would separate science from politics when they should be separated (the allocation by the Authority of an exploration right) while mixing them when science needs political backing (the incentive the Fund would provide for ocean resource exploration).

Of more immediate concern for marine science are the Commission's views regarding a cluster of international agencies, notably, UNESCO and its Intergovernmental Oceanographic Commission (IOC), WMO (World Meteorological Organization), FAO (Food and Agriculture Organization), plus the International Hydrographic Bureau (IHB), and the non-governmental ICSU (International Council of Scientific Unions).

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Investigating the Oceans

The Commission states flatly that the "IOC's present strength is inadequate to the task of planning and coordinating a program of the scope of the International Decade of Ocean Exploration....The IOC requires additional staff, budget, and expertise." The reasoning behind this assertion emerges if we inquire into the capacities the organization must have to fulfill its tasks. Five tests of capacity have been suggested: political, legal, structural, resource, and administrative. The IOC is weak in all of these.¹

Because the IOC is politically weak, it may not be able to fulfill the legislative function of setting the international policy goals and norms of behavior necessary for scientific advance. To be sure, it shares this policy-making or legislative function with other bodies, notably the UN General Assembly, the Economic and Social Council, and other specialized bodies such as the FAO and the WMO. Nonetheless, the IOC was assigned the specific responsibility of promoting scientific investigation of the oceans. If it is to be the focal point for coordinating the Decade, it must be politically influential in order to shape international science policy. The problems hampering marine science are as much political - or politico-economic - as they are scientific. While I lack proof that national marine science policy suffers from a lack of integration with other aspects of national and foreign policy, it seems inescapable that the fulfillment of the Decade depends in considerable measure on foreign policy - and the political capacity of the IOC.

One political weakness is its membership. Though open to all UN members, it comprises less than half of them. This means that its membership, approximately sixty States, does not include a number of maritime nations which, although scientifically backward, have important contributions to make to the Long-Range Expanded Program of Ocean Research and the Decade. It is not open to non-UN members, moreover. Is China important as a maritime nation? These non-members have ports, shelves, and territorial waters to which access is important for scientific investigation. They also have much if not more than the advanced nations to gain from scientific discovery in the oceans. This fact suggests that mutual assistance programs may be a key element in developing the IOC's political capacity. If membership held promise of a significant pay-off, maritime nations might be more interested in joining. It seems little short of extraordinary that Malta, which has taken so much initiative to promote an international interest in regulating and using the oceans, should not yet have taken the trouble to join the IOC. The fact is the organization seems to some governments to benefit primarily the technologically advanced nations. This, plus the fact that membership in an international organization is demanding in terms of time, money, and manpower, make the IOC appear only mildly attractive to the developing countries. Even landlocked States have a stake in the oceans. More of them should join. The universal ocean logically requires a universal

¹ For this analysis I am indebted to Miss Margaret Galey, doctoral candidate at the University of Pennsylvania.

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administrative framework for purposes of investigation, control and perhaps distribution of economic benefits.

An international organization must also have the legal capacity to perform the tasks assigned to it. I am uncertain whether the IOC has the legal capacity to implement such activities as the Expanded Program, the Decade, or IGOSS (Integrated Global Ocean Station System). Although I am as yet unable to be precise on this matter, amendments to the IOC Statutes may be necessary if the organization is to have the necessary structure, resources, and administrative capacity to coordinate internationally basic scientific research and basic resources research. The central constitutional issue is whether the IOC can perform the tasks expected of it if it remains a subsidiary of UNESCO, however autonomous its activities and enlightened its leadership.

The UN General Assembly has requested UNESCO to invite the IOC to intensify its scientific activities "within its terms of reference" so as to coordinate world-wide ocean exploration including international agency programs, an expanded international exchange of data from national programs, and international efforts to strengthen the research capabilities of all nations and particularly the developing countries. The Marine Science Commission urges the U.S. to take the initiative to propose a new international convention on marine scientific research. The government should also consider whether the IOC has sufficient autonomy for these purposes, including the capacity to enter into treaty arrangements with governments and other international agencies such as FAO and IMCO (Intergovernmental Maritime Consultative Organization).

There are a number of things to say regarding the IOC's structural resource, and administrative capacities. While the organization has exhibited commendable flexibility in adjusting both its formal and its informal structure to the tasks in hand, a number of changes are under active discussion. Its Plenary Session at present meets every two years. The Plenary Session, of course, is the organization's conference and authoritative policy-making body. The problem is to increase its efficiency in considering an increasing number of issues as the Expanded Program and Decade get under way. To consider these issues effectively, the plenary session structure needs to be organized around specialized, permanent committees. Four such committees are under active consideration, each to be chaired by an IOC vice president, an idea discussed at the Eighth Session of the Bureau and Consultative Council which may be pursued at the Sixth IOC plenary session in Paris in September, 1969. One committee might deal with research and exploration; one with oceanographic services including IGOSS; one with technical cooperation, training, and education matters generally; and one with budget, administrative, and legal questions. These standing committees would meet during IOC sessions, of course, and perhaps also at major "off-year" meetings of the proposed executive council discussed below. The purpose would be to consider more thoroughly than would be the case with council meetings, IOC programs as they unfold during and following the Decade. As to membership on these committees, one suggestion is that they be open to

all IOC members at plenary sessions and to all executive council members during executive council meetings. An alternative might be to have these committees include all IOC members all the time the better to serve the organization's functions of disseminating scientific knowledge and influencing national science policy. After all, the organization's objective is to persuade as many nations as possible to adhere to high scientific standards.

One difficulty is that many governments may not be ready for some time to come to invest the time, money, and human resources in such a highly structured IOC. The developing countries, in particular, will not join nor will they agree to organizational development and elaboration unless they benefit from membership. Underlying all discussion of any organization is the problem of providing incentive.

At present the organization's work is carried on between plenaries by a three-man bureau and a seven-member consultative council. I believe these two bodies have always met together since the IOC's establishment in 1961, i.e., two or three times between plenary sessions. A group of consultants, appointed by the bureau and consultative council, has suggested that the bureau and council be replaced by an executive council consisting of a president (rather than a chairman), and the four vice presidents already mentioned, plus ten member countries.

The shift from consultative council to executive council, implies greater program responsibility for the IOC. The executive council would have substantive responsibility for the organization between plenary sessions. It would oversee the implementation of decisions reached at the sessions. It would coordinate such IOC programs as the International Decade.

This development has many precedents as international organizations shift from consultative roles to operational activities. It gives rise to the question whether the executive council should be composed of scientific experts appointed in their individual capacities or governmental representatives. It is doubtless wise to appoint member governments to the council on the "multiple principle," already suggested for the Registry Authority, to take into account scientific expertise and special interests. The hope would be that each member government would then appoint its most qualified expert. This procedure would follow the FAO model and other examples of international executive bodies. It would differ somewhat from the World Bank where the board of executive directors consists of individuals whose manner of appointment is intended to reflect to a considerable degree the relative monetary power of Bank members. This arrangement amounts to weighted representation. For a relatively new organization, of uncertain acceptance like the IOC, weighting had better be played down. The executive council, however, could go far in this direction by always including in its membership the advanced maritime nations and governments selected so as to represent the less developed regions of the world on a rotating basis. This is also the arrangement the Registry Authority might adopt.

A restructured IOC would also include subsidiary groups to advise the plenary session or traditional conference and the executive council. At present there are a great many working groups considering such substantive areas as mutual assistance, the legal requirements of scientific research, and the International Decade. It is through such groups that the organization receives its major scientific input. These groups could be established and terminated by the plenary session or the executive committee as they are now dependent for their existence on the conference and the joint meetings of the bureau and consultative council. The natural tendency to expand the number of such units must be guarded against lest too many demands are placed on the secretariat and the member governments. I believe the appropriate limit is thought to be twenty such bodies. They represent, in effect, a "structure for action."

Advisory bodies have been and will continue to be important to the IOC for several reasons. They provide links between the organization and the international scientific community long organized effectively on a non-governmental basis (particularly in the ICSU). They provide links also with other specialized bodies, such as the FAO and WMO, the activities of which bear on marine science. Notable among these is the Advisory Committee on Marine Resources Research (ACMRR), established by FAO in 1961, composed of experts appointed in their individual capacities to advise FAO on marine fishery research. This body also serves as an advisory body to the IOC with respect to oceanographic research.

Another expert body, of course, is SCOR (Scientific Committee on Oceanic Research) of the International Conference of Scientific Unions (ICSU) which, as indicated already, is an NGO or non-governmental organization. These bodies will continue as the two principle scientific bodies to advise the IOC.

The theory of this structure is obvious, and need be summarized only briefly. The advisory bodies provide the scientific input. They represent a long-standing international community of scientists whose views are essential in defining an international public interest in the oceans. The ICSU antedates the majority of intergovernmental organizations, for example. Particularly interesting is the fact that the advisory committee structure permits nationals to participate in specialized intergovernmental activity even though their governments have not chosen to join certain specialized organizations. The experience of Soviet citizens on ACMRR is a case in point.

The plenary, of course, reflects the decentralization of government in the world. Its national representatives advance the mutual and conflicting interests of States whose ocean policies determine how man uses global resources. It is, par excellence, a political body. The executive council, despite its name, would also be a political body, only more so. Its membership, including perhaps permanent representation for advanced States, and rotating membership of certain other classes of States, would reflect certain political realities not expressed in the plenary where all States are legally political equals.

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The underlying structural question, of course, is whether the IOC should be separated from UNESCO as a specialized oceanographic agency. A further question is whether there should ultimately be a comprehensive ocean agency to oversee the many uses to which ocean space may be put such as mineral exploitation, scientific investigation, and arms control. For the next decade we had better leave things as they are. Governments are hardly ready for the IOC let alone a more comprehensive or more authoritative ocean agency that might include functions of the seabed Registry Authority, the Fund and other agencies. Meanwhile, experience with the present pattern of decentralized activity involving FAO, WMO, IMCO, IAEA, and UNESCO may suggest someday to the membership in the General Assembly and its ECOSOC that a more centralized ocean structure is necessary.

For the time being, IOC is firmly placed within UNESCO, constitutionally, structurally, and administratively. There are advantages and disadvantages to this arrangement. The chief advantage is that UNESCO comprises many nations some of whom are hesitant to join, or pay for, another organization. The chief disadvantage is that the IOC presently has insufficient resources for the tasks expected of it. Marine science is but one of UNESCO's diffused interests just as the Department of Fisheries, incidentally, is only one claimant for FAO's attention and resources. Specifically, the IOC secretariat is drawn from and practically is synonymous with UNESCO's Office of Oceanography. I should suppose that UNESCO's entire Office of Oceanography should be transferred to the IOC. If this were the case, for example, IOC could be responsible for the mutual assistance programs, including education and training, and the UNDP (UN Development Program) programs now administered in the UNESCO Office of Oceanography. Such a change would make the IOC more visible and more attractive to the developing countries. For this reason, it would be particularly important for marine science as well as a step in building up international machinery for the wise administration of the ocean environment.

IOC would be strengthened if it were responsible for planning and coordinating certain services such as an enlarged data exchange program and the IGOSS. To do this, IOC would continue to maintain close relations with the ICSU through its Scientific Committee on Ocean Research (SCOR). The model being followed here is essentially that of the International Indian Ocean Expedition. Again, if it is important to have international machinery for ocean management and investigation, we should proceed at once to develop some organizational muscle by giving the IOC more of a load.

What of fisheries? There does not yet appear to be a convincing need to combine the resource activities of the FAO Committee on Fisheries and its Department of Fisheries with the scientific activities of a remodeled IOC. For one thing, the Soviet Union is not yet an FAO member although Soviet citizens serve on an FAO advisory committee. For another thing, fishery commissions and regional organizations will be involved increasingly in ocean matters. This growing structure to deal with the management of ocean living resources would be too much for the IOC for some time to come. If separate regimes for different ocean uses

defy coordination efforts in the future, further steps can be taken gradually toward centralized ocean management. In the meantime, closer links between such agencies as FAO, WMO and UNESCO could be formalized with the establishment of an Interagency Board representing the agencies' executive heads. I should suppose the chairman or future president of IOC should be the chairman. Such a board has been recommended by UNESCO's executive board to the director general who has the authority to establish it. The board would assist in recruitment of staff as well as planning IOC programs. In addition, a trust fund for IOC has been accepted and is to be administered by UNESCO's director general. This fund would receive voluntary contributions, not obligatory funds, from governments to be used to augment IOC's staff and programs.

In sum, these suggestions, most of them under active consideration by governments, would leave the IOC in UNESCO's general charge while giving it increased independence in carrying out its program. They would add coordinating capacity to that exerted by the ECOSOC Administrative Committee on Coordination. The director general would continue to appoint the IOC secretary although nominations would come from the IOC chairman or president.

Equally important often to an organization's success is its informal structure. I am struck by the cohesion and, I think, power or influence of the IOC's informal structure. For years there has been a transnational community of scientists sharing values and objectives. The IOC is primarily a recent and specialized institutionalization of this community. What is more, this international scientific community has its national counterparts which are increasingly influential in shaping national policy, foreign and domestic. Many of us look to this informal power structure to build important sinews for world peace.

My general philosophy, in conclusion, is that our national interest requires strengthening the structure of international cooperation. I would go so far as to say that the strengthening of intergovernmental mechanisms should be a national policy objective. That is, international organization, as a growing administrative phenomenon, should be seen as an object as well as an instrument of national policy. International scientific cooperation to promote the orderly management of the global environment provides a particularly good opportunity for approaching this objective.

REMARKS

William T. Burke
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I have a few comments about scientific research in the context of the remarks that have already been made and of the Marine Science Commission Report. First, the part of the Report that deals explicitly with scientific research seems to me to be excellent. But there are two other parts of the Report that raise some questions that deserve attention and fortunately Bill Sullivan left these out of his paper so I could comment on them. He has already included them in the written version of his remarks and I want to endorse what he has said there.

My comment concerns the suggestion in the Commission Report that scientific research in the intermediate zone (the zone they suggest beyond the 200-meter, fifty-mile continental shelf) be free and not subject to the concern of the coastal State. It seems to me that this is subject to serious question. If the coastal State is to have exclusive rights in the intermediate zone to the extent at least of either giving consent to exploration and exploitation or not it is probable that the same kinds of restrictions that we are now threatened with will extend to the intermediate zone as well. And it is also, I think, notable that it is subject to some questions whether there will not be restrictions on scientific research throughout the entire ocean. If under the proposed International Registry scheme there is to be an exclusive right of exploration, I am not sure that there won't be a very considerable temptation to put restraints on scientific exploration as well as commercial. At least the Commission did not seem to me to address that point and it is one that ought to have been considered.

Another point that I would like to mention is in connection with a number of statements that have been made that controls over scientific research under the present Convention on the Continental Shelf are an illustration of what happens when you extend jurisdiction for one purpose and it somehow jumps over to another. As a matter of fact, of course, the provisions for control over scientific research are now in the Convention; it is not inadvertent that there are controls over scientific research, it was deliberately done and probably an enormous mistake (at least I think it was) but it is not an instance of where a State gets jurisdiction for one purpose lawfully and then suddenly extends it to another supposedly unlawfully. As a matter of fact, the provisions in the treaty give the coastal State some controls over research and in certain instances they probably have been exaggerated but nonetheless they are there.

The final point that I want to mention now concerns an understatement that Bill Sullivan just made that the PUEBLO was unfortunately confused with an

oceanographic research vessel. It certainly was unfortunate but it was also quite deliberate. I think that we can complain and do complain quite bitterly about foreign restraints on scientific research, but it is useful to remind ourselves that on occasion the difficulties for scientists can arise from their own government and, of course, the United States is one of the leading illustrations of this in the world today. The PUEBLO illustrates the difficulty. You may recall that in the PUEBLO episode the testimony before the Navy's Board of Inquiry was that the PUEBLO was to suppose to appear to be doing oceanographic research and that this was a cover for the conduct of electronic surveillance. It is curious to note that in most contemporary interpretations the emission and receipt of electronic impulses by a ship travelling beyond the territorial sea is regarded as perfectly lawful, though it has been prohibited in the instance of fixed installations on at least one occasion, but that in this situation the Navy sought to shield this supposedly lawful activity by invoking the concept of oceanographic research, an activity which might be unlawful in the area concerned. It is also interesting, I think, to note that the U.S. Navy, or whatever the responsible agency was in this instance, has not at this date to my knowledge publicly stated that it will not in the future seek to use scientific research as a cover for electronic surveillance activities. I think this is an enormous mistake and I hope that it will be remedied in time for the meeting of the Intergovernmental Oceanographic Commission in September.*

* EDITOR'S NOTE: At the 6th Session of the Intergovernmental Oceanographic Commission in September, 1969, the following statement was made by a U.S. representative during a meeting of a drafting group of the Legal Committee:

The United States Government, in the interest of promoting scientific research, is not designating any intelligence vessel as an oceanographic research vessel. This policy applies to all United States vessels, including those of the United States Navy. The Government of the United States calls upon all States to adopt a similar practice.

REMARKS

Dale C. Krause
School of Oceanography
University of Rhode Island

A confusion exists in many minds between oceanic basic research on one hand and oceanic applied research and technology on the other. The Commission on Marine Science, Engineering and Resources has done a fine job, but I think that their Report does not adequately spell out the importance of basic research in oceanography. Therefore, I emphasize here that the marine sciences need adequate protection under any proposed regimes, both national and international. Now, why should this be? Is it simply a matter of special pleading? Let us look at that.

First of all there has been real payoff from oceanographic research in human terms. The geological sciences have literally been revolutionized in the last three years by marine research. We now have proof that the surface of the earth is in motion and that many of the natural phenomena can be related to this. Phenomena such as earthquakes and volcanoes have real impact on society in ways that were not envisaged by any specific oceanographic research. The distribution of mineral resources, both on land and at sea, is strongly influenced by these new observations. There has also been a real benefit as far as the world economy is concerned. The manganese nodules that were discussed by Mr. Flipse on the first day of this conference were discovered and their world distribution was determined on oceanographic expeditions; we wouldn't know about them today if it had not been for the scientist. The mineralization of the Red Sea was discovered solely as an offshoot of oceanographic studies. The oil in the deep portions of the Gulf of Mexico was hypothesized, then discovered, on the basis of scientific expeditions; we now know that structures similar to the Gulf of Mexico ones also occur in the deep Mediterranean. Such deposits are not necessarily economic, but they do put pressure on the legal regimes and they certainly form potential resources. Phosphate and other minerals also were discovered in this way. I need not mention the fisheries because they were covered quite well yesterday.

One point that has not been covered is pollution. Pollution does not recognize international boundaries and is getting worse. In the future, many oceanographic studies on the problem of necessity must involve international cooperation.

Now, what sort of international problems are we having? Mr. Sullivan has already pointed these out very well. The greatest one as far as our own personal work is concerned is the restriction of access, either through minor restrictions or absolute exclusion. Many of the problems come about through confusion, as he pointed out, because many of the developing countries either do not have trained oceanographers who can recognize the difference between basic

research and developmental exploration or else do not have effective communication between the limited scientific communities in those countries and the government. For instance, I know of at least one European country that has restricted the data of their own scientists on offshore investigations for fear that this is going to compromise their nation's resources in some way. I can see no justification for that except for the fact that the people making high policy decisions simply do not understand. The scientists are doing their best to surmount this confusion. Another problem that was pointed out was, of course, the confusion regarding "research" with the PUEBLO in North Korea. I am glad to hear that in fact this has not caused as much confusion as might otherwise be true, because our ship has a similar hull - I would hate to think that by association we might be considered to be doing clandestine research.

Oceanography is an international science. For instance, I am working on data that was collected off the coasts of several nations: Colombia, Iceland, Azores Islands, New Guinea. As co-authors I have an Englishman, an Australian and a Russian. When we work off the waters of other nations we try to cooperate with the scientists of that nation, if only so that our own research is better informed. Moreover, the ocean as an environment does not recognize national boundaries. Therefore, we oceanographers need freedom of the seas and from as many restrictions as possible. I sympathize greatly with the small nations in this regard for all the reasons that Mr. Sullivan pointed out; in many ways they either don't understand or else don't have any pressing national priorities regarding oceanography. One criteria for differentiating between basic research and developmental exploration that is obvious after a few years is whether the research is published or not. Good scientific research is always published and therefore is available to the coastal nation and all nations. Oil company research is generally not published in such form. However, they do enter into agreements with the coastal nations where they intend to explore and develop the resources so that there should be very little confusion in that regard.

Finally, I think that the solution is the maintenance of free science to the benefit of all parties - in political terms, in social terms, in economic terms and certainly in scientific terms. Any adopted regimes will undergo great strain and would prove inadequate unless this freedom is maintained, because almost certainly the kind of progress that we have made in the last ten or twenty years will be made in the future.

DISCUSSION

Schaefer: I want to ask a question, but I would like first to recall that two years ago I delivered a paper to this Institute wherein I spoke fairly extensively on the history of this subject in the United States. At that time, my suggestion was that the United States would be well advised to announce that it stood ready to allow anyone to come into our waters, fisheries zones or otherwise, to do research on a reciprocally-agreeable basis with any other country that would grant us similar permission, subject only to the criteria of opportunity for participation, availability of data and, finally, eventual open publication of all scientific results. At the September, 1968, meeting of the Working Group of IOC, dealing with this subject, where I was a member of the U.S. delegation and Mr. Sullivan was the rapporteur, the recommendations were essentially that free scientific research should be permitted subject, again, to the right of the coastal State of opportunity to participate, of availability of copies of data, of access to samples - that is, such things as bottom-cores and plankton samples which we can't duplicate, and open publication of all scientific results. I thought that the United States and others were in favor of this; the only problem being just what would be the role of the IOC in certification. A number of us believed, as Mr. Sullivan says, that this is an impossible function for the IOC, so the IOC would probably need to accept certification from the member governments.

With this as background, I find it very curious that Mr. Sullivan disagrees with these two recommendations of the Commission, which I thought were quite mild. One of these, that the United States accept the freedom to do scientific research of anybody certified by the IOC, might be changed to anybody who is certified by his member government to the IOC. I also find it curious that he would have any objection simply to announcing that we stand ready to allow scientific research to be done by anyone who is a member of a cooperative international expedition, whether IOC or otherwise, subject only to these conditions. I should like, therefore, to ask Mr. Sullivan, or any of the others who may be knowledgeable, why should not the United States simply, unilaterally announce that we stand ready to let anyone come and do research work on our continental shelves, or in our exclusive fisheries zone, subject only to the conditions that we shall have an opportunity to have our own scientists participate if they desire to do so, that all data shall be available and all samples accessible, and that the results shall be eventually published in the open scientific literature? What is the reluctance on the part of our own government to do this, which requires no new regime? It can be done under the present regime of the sea.

Sullivan: I think basically the answer is that we would like to tie down the rights and privileges of research vessels in a more formal manner through the types of arrangements which the Commission alluded to and which I mentioned before. Eventually, we would like to see a broad-based, multilateral convention, as the Commission suggests, which would guarantee the freedom of scientific inquiry. In the meanwhile, we would like to tie it down more specifically than

through a unilateral announcement by the United States; that is, through bilateral and regional agreements governing what can be done, who can do it, under what circumstances, and so forth. We want to secure this freedom for our own vessels through such arrangements, not just secure it for vessels of other countries. We want everyone to have freedom of research, including the United States. This, I think, can be secured best through international agreements of one kind or another.

Schaefer: Mr. Chairman, this is only a partial answer to my question.

Wilkes: That may be all you will be able to get.

Schaefer: Well, the other part - which I think is important to consider - is, would it be adverse to this eventual result simply to take the first steps of good will unilaterally?

Sullivan: I can't give a simple answer to that. I do not think it is very practical to consider in terms of the interests involved outside the scientific community.

Burke: I don't think it would have an adverse effect and I suspect that Mr. Sullivan doesn't think so either. I wanted to refer to the first part of your question, however, which dealt with Mr. Sullivan's criticism of the Commission's recommendation for certification by the IOC. As you know, and maybe others do not know, the U.S. National Committee to SCOR made a recommendation to SCOR which was forwarded to the IOC, that the IOC's role in this instance be a passive one, certifying that a State has said that it will abide by certain conditions in conducting research on the shelf, that the research will be published, that the coastal State can participate and data will be made available or samples will be made accessible to the coastal State. And the reason this recommendation was made was because of the concern of the scientific community that the IOC was not structured and could not be structured to really make a certification because of the difficulties of investigation, and I think that was what Mr. Sullivan attempted to emphasize. I think the point is that the Commission recommendation goes well beyond what the scientific community seems willing to accept. There may be scientists here who think otherwise.

Cheever: I wonder if I could raise for discussion this question of certification? In the first place, if the IOC is not now equipped with the resources to carry out perhaps even a passive role does that mean that inherently this kind of international institution can never be equipped to have a more active as opposed to a passive role? Secondly, wouldn't a more positive or active role for the IOC or a comparable agency appeal to scientists the world over because it might elicit confidence and cooperation on the part of developing countries and other countries not involved in marine science? There are two questions to be considered: First, should the IOC be strengthened so as to promote confidence in international cooperation and, second, if it were, and remembering we spoke also of mutual assistance and other means that might help the IOC gain influence

with governments, would not this strengthened intergovernmental organization be desirable for the advancement of basic science?

Chapman: I think that we are once more stumbling over a basic block that we have in our deliberations: the difference between an international government that has the power of sovereign activity and cooperation among a group of sovereign national governments. I think this is evidenced again in the argument over the policies versus the passive role for IOC. Of course, as Professor Cheever says, sovereign nations who wish to cooperate but do not wish to have their sovereignty infringed upon are not going to be happy to pass elements of regulation along to an international body which they do not wish to have any of the authority that goes with sovereignty.

I wanted to point out one thing with respect to a comment made by Professor Krause. He attributed these reluctances in the conduct of scientific research on the high seas to small nations. I point out that during the 1958 conference of plenipotentiaries on the law of the sea it was the United States government that insisted upon the restrictive elements with respect to scientific research that are contained in that document. In the U.S. delegation we argued violently with our spokesmen on Committee Four that these should be relaxed. Dr. Schaefer, who was at that conference as an expert of the United Nations, not on the United States delegation, likewise worked diligently behind the scenes to get this mitigated without success; others did likewise. It was the United States delegation that was adamant on these restrictive elements. I have seen no indication in the intervening decade that the United States government as a sovereign has changed its attitude a bit. I have tried to elicit by correspondence further information on this subject but have not received it. I don't think the United States will change its mind on this point; I think it is still major governments, and not smaller governments, who are the ones at fault, if there is a fault.

That leads to another aspect of this matter which I will address to Professor Cheever, and possibly Mr. Sullivan as well. I think we are dealing off to the side of the main question here as among the nations. The critical question, I believe, now being considered in international circles is whether the conduct of ocean affairs in the international sphere shall be dominated by the political arm, that is, the General Assembly and its subsidiary bodies, or whether it shall be dominated by the specialized agencies - the scientific and technical arms of the United Nations family. I think that is the basic argument that is going on and it is here that the contest between the developed countries and the developing countries comes to the fore. The developing countries asserted repeatedly in the debates that they do not have adequate scientific and technical skills to be as well represented in the parliaments of the specialized agencies as do the developed countries, whereas in the General Assembly they do have people who are as well qualified to talk and theorize as anyone else has. Therefore, they would like to have the power in the political arm and not in the specialized agency arm. Would you care to comment on that, Professor Cheever?

Cheever: Yes. Dr. Chapman you certainly put the issue very sharply and properly so, but I submit that improved international cooperation in marine science need not mean General Assembly domination. It seems to me that there is a good deal of experience which suggests that the Assembly or, more accurately, the governments represented in the Assembly, have insulated special purpose bodies quite carefully from the clumsiness of Assembly politics. Think of UNITAR (United Nations Institute for Training and Research), think of UNIDO (United Nations Industrial Development Organization); think of specialized agencies created outside, but nonetheless related to, the UN system, such as the World Bank. Moreover, we need both political and scientific inputs for progress in scientific discovery. In fact, I remember you quoting a piece by Don Price in Science, Dr. Chapman, to the effect that both inputs are necessary. The scientific experts should be organized in a qualified specialized body. The politicians can use a political forum to mobilize support for international scientific programs. The issue is how to organize governments to cooperate in scientific endeavors. A non-political specialized agency by itself is insufficient. A political body is used to mobilize political support on the one hand, and an expert body on the other hand is used for cooperation in technical matters. The trick is to structure an organization to perform necessary functions of which political persuasion and coordination of scientific investigation are prime examples.

Beazley: I am not a scientist but a hydrographic surveyor, so I am taking advantage of your suggestion, Mr. Chairman, to express some opinions. I would like to say at the outset that I am speaking only for myself.

I would like to make some comments on Professor Cheever's suggestions to the IOC. I also was a member of the Working Group in Paris, and although I am not an oceanographer and I don't know a great deal about the history of the Commission, my understanding is that it was formed as a means for the oceanographic scientific community to exchange information, to promote cooperation; it was never intended to be a political group and if you make it into a political group I suggest you will simply have to form a new IOC to fulfill the functions which the present one was intended to fulfill. Professor Cheever says that he thinks that other nations' representatives at the Commission should have the equivalent of State Department people there and so on, as the U.S. delegation has. I would suggest to Professor Cheever that that reflects a difference in governmental structure. Of course, as he must be aware, other countries' delegations are not speaking off the cuff entirely.

On the question of freedom of scientific research, I agree very wholeheartedly with Mr. Sullivan's summing up on the Paris meeting and his impressions of what would happen. I would suggest, from my own observations there, that the difficulties that countries find in giving consent are, as Mr. Sullivan says, mainly based on economics; in some cases I would suggest that they are based on nothing at all except a vague fear. These fears - real or imaginary - will not, I think, be overcome on the political stage; they will not be overcome by an enlarged IOC. I suggest they can only be overcome by informed opinion from within. In other words, the scientists in IOC must go home and try to educate their own governments.

If I might make one last point on the question of certification; the requirement for 180 days notice has been mentioned as scientifically impracticable and, of course, one must fully endorse that statement. I wonder how many days would be required if the IOC certified proposed research!

Wilkes: At least at the present stage there is a discussion draft being circulated among the IOC members which proposes a sixty-day notice to the IOC and to the coastal State. According to Dr. Schaefer, in his article on "Freedom of Scientific Research and Exploration in the Sea," in a recent issue of the Stanford Journal of International Studies, the IOC would add its request for favorable consideration within twenty days of its receipt of the notice. In short, the State off whose coasts research was to be done would get both a sixty-day notice from the researcher plus a forty-day notice of IOC "certification."*

* EDITOR'S NOTE: Specific time limits for notice were ultimately left out in September, 1969, when a more general resolution was adopted which provides for (1) immediate notice as soon as an expedition is contemplated with (2) more detailed notice as soon as possible thereafter. The purpose of the earlier first notice was to permit the coastal State to participate in the planning of the expedition as well as in its execution if it so wished.

Knauss: I could also speak as an ex-member of the Marine Science Commission and attempt to defend the Commission proposals. However, I find that both Professor Cheever and Mr. Sullivan were very kind on this aspect of the Commission Report and, therefore, unlike Professor Auerbach and Professor Crutchfield, I don't find it necessary to attempt to explain why we did what we did; except I should also indicate that these proposals, like the others, represent a compromise position.

I would like to say a few words on what I believe to be the attitude of the international science community - what that position is or, at least, should be as I see it. Although I think Mr. Sullivan and Professor Krause and others have alluded to it, I don't think they have gone far enough. I would like to contrast the position with that of the National Petroleum Council. We have all heard this week of that Report; people like Dr. Gaskell, Mr. Finlay and Professor Hedberg have indicated what they think the international regime of the sea should be which would be to the greatest benefit of the petroleum industry. As these gentlemen and others know, I am very much opposed to this position. I am opposed for a variety of reasons, but one of the reasons I am opposed is because I think it is very bad for international science and I would like to think that perhaps the international science community might be able to put together a position and argue it as forcefully as the petroleum industry. I am not very sanguine about this possibility; any industry which can manage to maintain the 27 per cent depletion allowance as long as it has, has a power of persuasion that cannot be underestimated.

As far as the international science community is concerned, we have had a hard time taking a firm stand on anything for the last 400 years; after all, the

patron saint of science is Galileo who, rather than becoming a martyr, knuckled under to the Pope so that he could live and continue to work. Most scientists are somewhat similar, we would rather take a half a loaf and continue on with our work rather than go down fighting for a proper position.

I think that the 1958 Geneva Convention is a disaster for international science for the seas. I am sorry, Dr. Chapman, I was not aware of the fact that it was the United States that led us down that road at the time. I think we need a new science convention for work in the open ocean. And, quite simply, it seems to me it should be something like this: that all the waters beyond the internal waters should be free for any scientific research purposes. I am not going to draw a line between the kind of scientific research that is done for science and that kind of scientific research that is done for oil exploitation, because I don't understand the difference. It really is a matter of degree. When we do research on the continental shelf we use seismic methods, we use magnetic methods, we use gravity methods, and the difference between what we do and what the oil industry does is a matter of quantity not of quality. That is, we use the same techniques but obviously if you are going to put the investment that is needed into finding oil you need to do the work more intensively, with a much tighter observational grid and this kind of thing.

I believe that a new science convention should indicate no permits should be required to do any kind of science. Permits or licenses should be required only if the scientific activity results in undue interference with other activities. One can perhaps provide for licenses to insure that an exploratory drilling team is competent and does not pollute the area unnecessarily, and for these kinds of things, but I don't think it should be necessary - in this country or in any other country - to obtain permission from the Secretary of the Interior to do seismic exploration off our shelf. Now the oil industry may wish to do this because, after all, it is their intention hopefully some day to be able to bid on these lands if oil is found and it may be, therefore, to their advantage to work some kind of an arrangement either with the United States or with the countries adjacent to which they are doing their scientific research, but that is up to them. It should not be a requirement of international law.

Really what I am suggesting is that the whole idea behind the present international regime for science is based on the wrong premise. It is based on intent, and intent is impossible to determine in any objective manner. On the other hand, I think there is a great difference between intent and exploitation. That is, one cannot really tell the difference between an oil company vessel or a scientific research vessel going out and doing exploration on the shelf. One can certainly tell the difference between that kind of work and bringing in a producing well. One can certainly tell the difference between catching a few tons of fish for some statistical taxonomy and developing a commercial fishery. One can tell the difference between a detailed survey for the positioning of a submarine detection device and the actual establishment of that device (if you want to call that activity a kind of exploitation). Thus, it seems to me that the whole idea of a scientific regime which is based upon intent is misconstrued;

it isn't going to work, we are going to have trouble with it forever. I would like to suggest that the international science community should work toward an international convention which is based upon a more realistic approach to science, and would allow freedom to conduct all kinds of scientific research, including resource exploration.*

* EDITOR'S NOTE: These ideas were further developed by Dean Knauss some weeks later in testimony before the Ocean Space Subcommittee of the Senate Foreign Relations Committee. This testimony is reproduced on pp. 404-408.

Basiuk: My comment is addressed to Professor Cheever. I was somewhat intrigued by the statement of Professor Cheever to the effect that the case may be that in our time institutions should become objectives of policy and not instruments of policy; the reason he cited was the necessity to control global environment. I suggest that if we do this we would be making institutions independent variables which might develop an impact and a purpose apart from the one for which these institutions were created. I am, therefore, not so sure this would be a rational thing to do. On the other hand, I do agree with Professor Cheever in one respect; these days our problems are getting to be increasingly global, particularly in the area of environment, and we need more global institutions to cope with them. But it appears that Professor Cheever had a purpose in mind which exceeded that of merely controlling environmental problems; the added purpose seems to be a political one - to cement the world for global control of whatever problems we may face on a global scale. If this is the case, then the institutions which we might create would have a double purpose - a functional one (e.g., to control environmental problems) and a political one (to cement the world in order to facilitate control of other problems that might emerge). If this is what we choose to do, we should keep the double purpose clearly in mind - but then the institutions thus created will remain instruments of policy, i.e., dependent rather than independent variables.

Blake: I am not a social scientist, but I am a very political scientist at times. I am with Chevron Oil Field Research Company, and that establishes my motivation for this audience. I would like to speak somewhat on the same subject as Dean Knauss, except that I am going to talk about "impure" or commercial research. I quite agree with him on the difficulty of distinguishing between the pure or academic research and the impure or commercial research. We have already heard Professor Krause mention the difficulty of distinguishing between fishery research and biological research. Dean Knauss mentioned the difficulty of distinguishing between geological research of an academic nature and geological research of an industrial nature. He is quite right. The only difference really is one of intent; there is - for the benefit of the social scientists not familiar with the operations - to my knowledge, no objective operational way of distinguishing between what an oil company does offshore and what a marine geological scientist does. The same technology, same type of operations, are used throughout.

Dr. Schaefer has suggested that there might be a possibility of distinguishing on the basis of allowing access to the data and publication. I submit that this is not a very good test either, because when we do commercial geological operations offshore the United States, for example, willy nilly, we allow participation of scientists from the U.S. Geological Survey. They have access to the data and to the cores and so on. So that distinction disappears. As for the intent to publish: I don't wish to be nasty here about the delays in publication in some of our esteemed scientific institutions, such as the U.S.G.S., but I suggest that our rate of publication is about as fast as theirs is, so you can't make a distinction there. A certain well-known academic institution on the East Coast - which shall remain nameless - is also pretty slow about publishing sometimes.

I really agree with Dean Knauss that we should consider at least the feasibility of not requiring permits for commercial exploration or for academic. Let us either go one way or the other. He would rather say no permits for either, and I don't object to that. However, I would mention that there are some difficulties in this; and one of the problems is with relation to drilling. It depends little on whether you are a JOIDES operator or a commercial operator if you are going to do core drilling, you see. We both have used the "CALDRILL I," which was a ship used in the early part of the JOIDES work, so you can't tell any difference on that basis for outer slope core drilling. I suggest that if only for purposes of safety - engineering safety and preventing blowouts and so on - that there may be some need for requirements for permits there. I think Dean Knauss would agree on that. For engineering purposes, there is a requirement. Dean Knauss did suggest that one should be able to do seismic work without any permits. Well, that is fine with me, but if you academic people can persuade the various state Fish and Game Commissions not to monitor seismic operations, we would be most grateful.

Orlin: Would any member of the panel comment on the possibility that restrictions demanded by the coastal States in the name of exclusive rights to economic and scientific exploitation are not only proposed due to fear, as has been suggested, but also might have some valid national security implications.

Sullivan: The situation prevailing in the coastal State is very complex. I don't think you can differentiate at all times among the motivations of the coastal State in controlling such research. At times a national security interest probably is the primary motivation, but at other times it probably is strictly economics or strictly nationalism or the vague fear which has been mentioned. I sympathize with the proposition that Dean Knauss made that all such restrictions be lifted. However, in the case of commercial exploration directed toward exploitation, I don't think this is very practical. I do not think that sovereign governments are about to give you their prerogative to control such activities. There are too many economic and nationalistic factors involved here to give any practical consideration to this kind of an idea.

I disagree with Dr. Chapman, however, that it is impossible to give up the control over scientific research on the shelf. My own personal belief (I am not sure that the U.S. government would agree) is that the U.S. government may admit that it made a colossal blunder in leading scientific research under this restriction, and that if we come to the stage of changing the Continental Shelf Convention the United States and other governments which realize that this was a mistake might very well remove this restriction.

Chapman: I just want to correct the record. I did not say at all that it was impossible. What I said was, that to the best of my knowledge, it has not been done yet and I do not think that the U.S. government presently is under any decision position to make that withdrawal. I would like to see them be in such a position because I am in complete accordance with the views of Dean Knauss on this subject.

Knauss: To answer the question on military security, the most important product that would come from research in coastal waters would be detailed navigational charts. These are useful for intelligence purposes but they are unclassified because they are of such great importance to other users.

As to your other point, Mr. Sullivan, that you don't think my proposition is very practical, I would submit that although it may not be practical at least one of the reasons you gave is not correct. It may not be practical for reasons related to nationalism but I think it is quite practical for economic reasons. I don't think there is any economic justification for the present situation we have with respect to the criteria we use for scientific exploration, that is, the "intent" system. There is no economic return on the resource until it is exploited.

Orlin: The detailed nautical charts of military significance that are available cover the region close to shore where surveillance is not a problem. It is probably the detailed bathymetry much farther than three miles offshore that cause the greatest anxiety.

Thursday, June 26, 1969

Knauss

STATEMENT*
HEARINGS, SUBCOMMITTEE ON OCEAN SPACE,
SENATE FOREIGN RELATIONS COMMITTEE

John A. Knauss
Provost for Marine Affairs
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I wish to give my opinions on the status of ocean science as it is affected by the present legal regime of the ocean, and on the trends in the interpretation of this regime which are effecting ocean science.

I can summarize my comments by indicating that I believe that the net result of the four Conventions governing ocean activities agreed to at the 1958 Conference on the Law of the Sea in Geneva was a disaster for international ocean science. Although several ocean scientists participated as advisors to the United States and other delegations, either their influence was not great or their perception of what might occur was inadequate. At any rate, it is becoming increasingly difficult for the international science community to continue its work along the edges of the ocean and, unless something is done, I think this problem will worsen.

As I see it, the problems are of two kinds. First, the problems of scientific research were not explicitly treated in the Geneva Conventions. I would like to urge that this administration and Congress act on the recommendation of the Commission on Marine Sciences, Engineering and Resources that the United States take the initiative in proposing a new convention on scientific research.

The second problem with the Geneva Conventions as they relate to ocean science is that either they ignore science or, where science is mentioned, it is developed in such a way as to make the prosecution of science more difficult. I am not sure which is worse. For example, scientific research is not mentioned explicitly in either the Convention on the Territorial Sea and the Contiguous Zone or in the Convention on the High Seas. The fact that scientific research is omitted from Section III on innocent passage suggests that research vessels must have permission from the coastal State before conducting research in territorial waters. It is not clear how universal this interpretation was prior to 1958, perhaps because marine science was more innocent in those days and no one thought to ask such questions.

* EDITOR'S NOTE: This Statement amplifies the remarks made by Dean Knauss on pp. 399-401. Because of its relevance to the subject, it is printed in this volume.

A reading of Article 2 of the Convention on the High Seas indicates the rights of nations to freedom of navigation, of fishing, to lay submarine cables and pipelines, and to fly over the high seas. Nowhere is there mention of doing science on the high seas. Perhaps we can assume that international science has this right, even if it is not made explicit in the High Seas Convention. I would hope so, but I confess that the events of the last few years make me uneasy; and I find little comfort when I look at the Convention on Fishing and Conservation for Living Resources of the High Seas where, in Section 2, Article 6, I find the statement "a coastal state is entitled to take part on an equal footing in any system of research and regulation for purposes of conservation of the living resources of the high seas in that area even though its nationals do not carry on fishing there."

One reading of that article would suggest that at least some delegations thought it was important to put that statement in the Convention so that at some time in the future no one could claim that a nation not engaged in a given high seas fisheries would be excluded from doing biological research in that area. I would have thought that this was such an obvious right of the international scientific community that such a statement was no more necessary here than it was in the previous Convention on the High Seas where freedom to do scientific research was omitted because it was so obvious.

Finally, we come to the section of the Geneva Conventions which is giving the most trouble at this time - Section 8, Article 5, Convention on the Continental Shelf, which states, "the consent of the coastal state shall be obtained in respect of any research concerning the continental shelf and undertaken there. Nevertheless, the coastal State shall not normally withhold its consent if the request is submitted by a qualified institution with a view to purely scientific research into the physical or biological characteristics of the continental shelf subject to the proviso that the coastal State shall have the right, if it so desires, to participate or to be represented in the research and that in any event the results shall be published." Although this article specifically refers to the continental shelf, the procedures indicated are those currently in use for gaining permission to do research in the territorial sea of a coastal nation as well.

I will not go into the recent history of the difficulty we and other nations have had in gaining permission to do research in these areas except to note the following. The procedures are onerous and burdensome, and give every indication of becoming more so. For example, the recently-stated requirements of Brazil effectively close this coastal area to international scientific research. In addition, there are continuing and growing pressures for nations to extend the distance of their seabed of national jurisdiction (i.e., the legal continental shelf) and the breadth of their territorial sea and their exclusive fishery zones; and I see no indication that this trend will change. I should also note that there are several groups in this country who are pressing for the extensions of these zones. As a result of this trend, the area for which the

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international science community is being denied freedom to conduct scientific investigations is increasing. Five years ago gaining permission was routine. Today it is not, and the problem is not limited to U.S. research vessels.

Perhaps the most important thing that is wrong with the Convention article is that it is difficult to interpret and therefore easy to result in misunderstandings. For example, on a recent expedition of our research vessel TRIDENT to "explore the continental shelf" we did this by towing a magnetometer behind our ship and bouncing high energy sound pulses off the bottom from high pressure air guns also towed behind the vessel. At no time did any of our instruments make physical contact with the bottom in the sense of taking cores or samples of the bottom. Were we exploring the continental shelf or were we not? As a scientist, I would say, of course we were exploring the continental shelf, but I don't think we were in the legal sense; an earlier and more innocent interpretation of Article 5 would suggest that exploration of the seabed of national jurisdiction meant physical contact with it. However, this position is not universally held and to avoid possible difficulty we got permission anyway.

The real difficulty with the four Geneva Conventions, however, is that they show a complete lack of understanding of what science is all about and do not differentiate between scientific research and exploration on the one hand, and exploitation on the other. The entire interpretation of the Geneva Conventions as they effect ocean science is based upon intent. At the University of Rhode Island we use the identical techniques in our search for understanding of the nature of the continental shelf and slope as do the oil companies in their search for oil. The only difference is that of the quantity of data collected. Before an oil company will make the investment of an exploratory drilling program, they usually study the area in much greater detail than do scientists who are interested in a more generalized knowledge of the crustal structure.

I submit that the present interpretation on scientific exploration as against resource exploration is an impossible one to interpret in any reasonably unambiguous manner. Although the provisions for publication and participation of scientists from the coastal nations may help, they do not get to the heart of the problem. The interpretation is based on a bad premise and I think international understanding, as well as international science, would be aided if any future convention or treaty respecting ocean science were based on a different premise.

My suggestion is that we draw the line between exploration and exploitation rather than attempt to distinguish between scientific and commercial exploration. Let us admit that there is really no difference between scientists studying the crustal nature of the ocean floor and oil companies searching for oil. The techniques are similar and the differences are only of degree rather than of kind. The present deep drilling program sponsored by the National Science Foundation is a recent example. In this case the scientific community is leasing an oil exploration vessel for scientific research.

Why does an oil company need a permit to explore for oil anymore than a scientific vessel needs a permit to study the crustal structure? The oil company can't do anything with its information until it has a permit to exploit the oil. I can see why an oil company may wish to get permission from the coastal nation to explore because it would hope that if, indeed, the prospects of oil were favorable that it could also secure rights to exploit that oil. Thus, it would be advantageous to have an understanding with a coastal nation right from the beginning. But, that is a problem between the oil company and the coastal nation and need not be a provision of any convention on scientific exploration.

Adopting my suggestion of drawing the line between exploration and exploitation would also simplify the problem in fisheries research. I find it very difficult to distinguish between fisheries research and non-fisheries research. Studies of mixing processes, bottom topography and trace metal distribution can be, and have been, interpreted as fisheries research. On the other hand, I think it is much less difficult to distinguish between a fisheries research vessel and a commercial fishing vessel. The only difficulty I see would be in deciding whether a given exploratory fishing operation was to be classified as resource exploration or resource exploitation. Without underestimating the problem, I submit that isolating the uncertainty to this single type of operation would be a major step forward and I am reasonably certain an operational definition could be developed to distinguish on which side of the line a given exploratory fishing operation fell.

I confess I don't really understand how to handle the problems of military security. The military likes to classify their detailed bathymetric charts, but the difference between these charts and the unclassified versions that are published as navigational charts is again only a matter of degree. I think it has been some years since anyone has seriously suggested that the data used in compiling detailed charts of the bathymetry of the U.S. continental shelf should be classified, and if anyone cares to come and make more detailed charts than we have available, then more power to them. I suggest that one could consider the military security problem in terms of the difference between exploration and exploitation. The ship that makes a very detailed bathymetric survey, wherever it is done, is still doing exploration work. The planting of a submarine listening network based on that survey is exploitation.

In summary then, my suggestion is that any future convention on ocean science or any future ocean space treaty should be based upon the much clearer distinction between exploration and exploitation than on the present concept which attempts to distinguish between scientific exploration and resource exploration on the basis of intent. I believe we should work with all due speed towards development of an ocean science convention or an ocean space treaty which would allow freedom of exploration on the high seas, the continental shelf, and the territorial seas of the world's oceans.

I would hope that the proposed International Decade for Ocean Exploration might prove a useful vehicle for further developing this concept of

the difference between scientific exploration and resource exploitation. Unfortunately, after a fine start, the efforts of the federal government in developing this program seem to have slowed. Whether this is temporary or not remains to be seen.

I would further hope that until such time as a new convention or an ocean space treaty is adopted the United States continue its present preliminary efforts to prepare and conclude multilateral and bilateral agreements which, it is hoped, will facilitate the conduct of ocean science. In particular, the U.S. should press the Intergovernmental Oceanographic Commission (IOC) for an automatic certification procedure which will satisfy the coastal States and those conducting research.

Finally, I would like to bring up one more matter of concern to the cause of international ocean science and that is the use of oceanology as a cover for electronic surveillance vessels. Quite frankly, I cannot see the need for the United States to use oceanology as a cover any more than it is necessary for the U.S.S.R. to use fishing as a cover for their electronic surveillance vessels. Everyone knows they are there and, what is more important, they have a right to be there as long as they stay outside territorial waters. It is my understanding that there is nothing in the Geneva Conventions or in the traditional rights of warships to use the high seas which would suggest that any nation can be denied the right to station its warships in the high seas wherever it wants, as long as it does not interfere with the commerce of the coastal States. A few electronic surveillance vessels scattered around the periphery of the continent but on the high seas, does not constitute such a menace and the U.S.S.R. has as much right to put their vessels off our shores as we have to place ours off North Korea. I think it would aid the cause of international science and most certainly aid the cause of international understanding in regard to ocean space if we could eliminate this confusion. I would suggest that the Navy indicate that ships such as PUEBLO are indeed electronic surveillance vessels and that we invite the U.S.S.R. to indicate those of its "trawlers" which are primarily electronic surveillance vessels. There is little question but what this nation knows which is which and no one is being fooled.

The final irony to a marine scientist such as myself is that PUEBLO, remaining outside the twelve-mile North Korean territorial sea, had every right to be there as long as she didn't try to pretend she was a research vessel. I don't know what kind of ocean research PUEBLO was supposed to be doing off North Korea, but the water depth was about 60 meters and clearly a part of the seabed of national jurisdiction of North Korea as defined by the Geneva Conventions. If PUEBLO was taking bottom samples, or, perhaps even measuring the depth of the water for scientific purposes, then, unless she had received permission from the North Korean government to engage in ocean research on the continental shelf, she was breaking international law. Thus, although her primary mission was legal, her cover may not have been.

REPORT ON
JURISDICTIONAL, ADMINISTRATIVE, AND TECHNICAL PROBLEMS
RELATED TO THE
ESTABLISHMENT OF CALIFORNIA AND OTHER STATE COASTAL AND OFFSHORE BOUNDARIES

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"CHAPTER IV"

As stated in a preceding chapter of this series,¹ there has been no final resolution of any of the numerous components reported upon. Additionally, new unresolved components have developed.

The continuing boundary location problems have been identified, as follows, in summary:²

1. Jurisdiction over intra-state air carrier operations where the flight routes are within the historic boundaries of the state but have segments outside the limits of territorial waters as defined in the Convention on the Territorial Sea and the Contiguous Zone.
2. The precise location of the mean lower low-water mark as the coastal base line as defined by the U.S. Supreme Court in United States v. California, January 31, 1966.
3. The precise identification of low tide elevation boundary base points as defined in the Decree and the Convention, and termed "rocks awash" by the U.S. Coast and Geodetic Survey and "drying rocks" by State Department geographers.
4. What structures or elements are contained within the "...outermost permanent harbor works that form an integral part of the harbor system within the meaning of Article 8 of the Convention"?

¹ F. J. Hortig, The Law of the Sea: The Future of the Sea's Resources, ed. Lewis M. Alexander (Kingston, Rhode Island: University of Rhode Island, 1968), p. 143.

² F. J. Hortig, The Law of the Sea: International Rules and Organization for the Sea, ed. Lewis M. Alexander (Kingston, Rhode Island: University of Rhode Island, 1969), pp. 294, 295.

5. How is the continuity of the baseline to be accomplished where a transition is required from a mainland coastline to an offshore end-of-a-breakwater coastline?

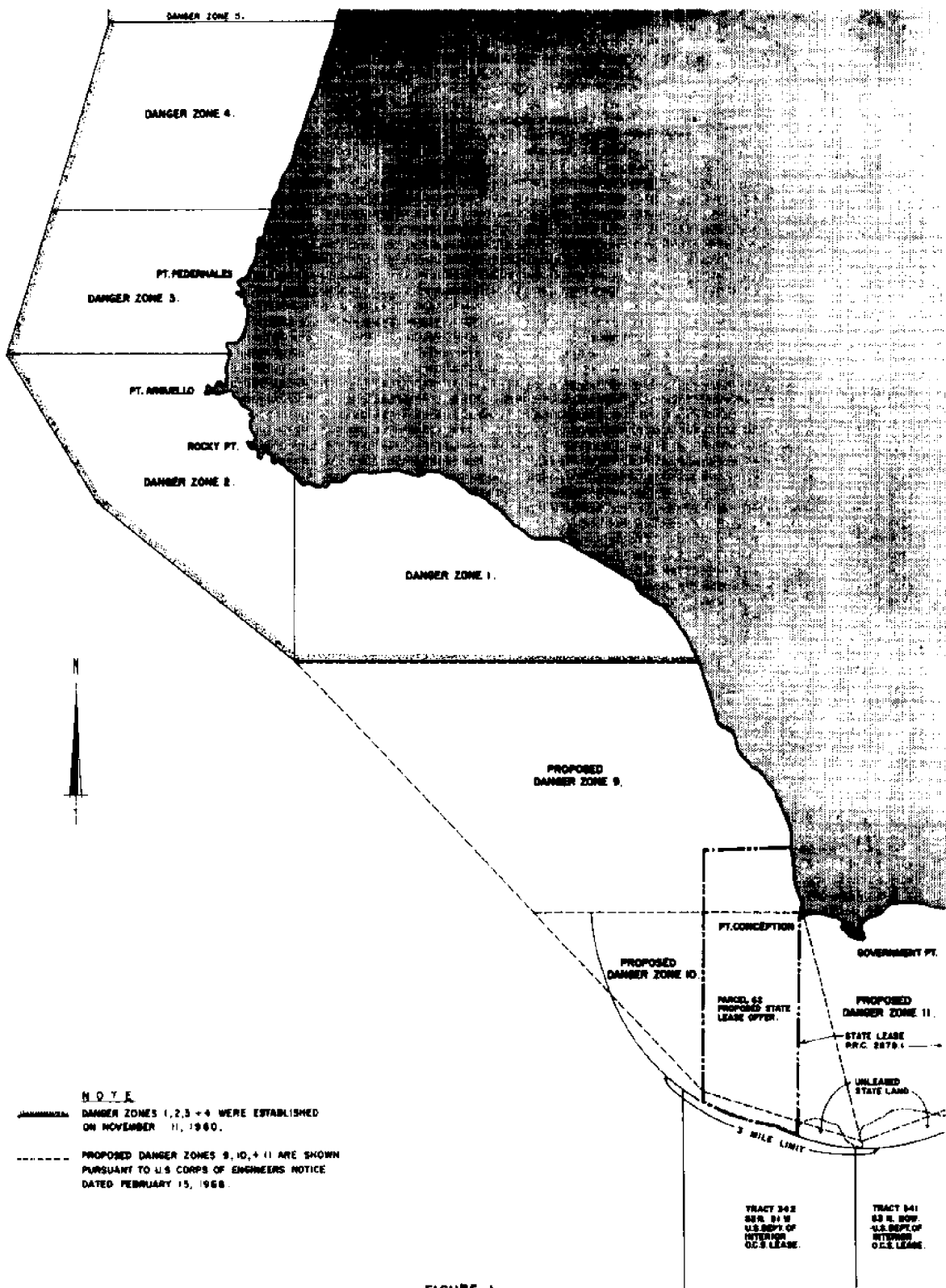
6. What criteria are applicable for establishment of boundaries for division of the territorial sea in negotiations with adjacent nations which are not signatories to or have not ratified the Convention?

7. What is the extent of State political jurisdiction within its constitutional boundaries beyond the outer limits of the territorial sea as defined in the Convention?

The third problem area, previously characterized as a potential problem in California due to the inability to establish precise offshore vertical control, has become an acute unresolved problem area because of the demonstrated infeasibility of practical technical establishment of the prescribed judicial criteria wherever extreme precision of measurement is an absolute requirement. In 1968 it was reported that field work had been completed by the U.S. Coast and Geodetic Survey in an attempt to determine whether certain near-shore rocks qualify as low-tide elevations.³ The survey did not include any measurements to an offshore rock previously reported by a private surveyor as a possible low-tide elevation at elevation -0.3 feet below Mean Lower Low Water,⁴ but instead made observations on rocks which, after visual inspection, were estimated to be higher than others in the vicinity. The survey report did include corrected elevation data which, when applied to the private survey, indicate that the correct rock elevation is 0.0 feet (exactly at Mean Lower Low Water elevation), and consequently does not fit either the definition of being exposed or submerged at Mean Lower Low Water. A resurvey by the California State Lands Division resulted in an elevation of +0.01 for this rock, but the measurement has been questioned because "...if a target is not used there will be no assurance that the observer did not site the top of a 3-1/2" (sea) snail..."! The Coast and Geodetic Survey has reported the probable error in determining the elevations of the rocks in question is 0.1 foot. Therefore, as to those rocks that exist at absolute elevations between 0.1 foot above or below Mean Lower Low Water, the Coast and Geodetic Survey, a leader in the field of precision survey measurements, will be unable to determine whether such rocks qualify as low-tide elevations. Nevertheless, because of unexplainable disparities in the elevation determinations of the other two rocks surveyed by the Coast and Geodetic Survey, a resurvey project was initiated for the area on June 2, 1969. The fundamental problem identified clearly by the foregoing sequence is that the criteria requiring establishment of the Mean Lower Low Water elevation and the elevation of exposed offshore rocks cannot be applied in practice with existent technology

³ Ibid., p. 296.

⁴ Ibid.



N.O.T.E.
 DANGER ZONES 1, 2, 3 + 4 WERE ESTABLISHED ON NOVEMBER 11, 1960.
 PROPOSED DANGER ZONES 9, 10, + 11 ARE SHOWN PURSUANT TO U.S. CORPS OF ENGINEERS NOTICE DATED FEBRUARY 15, 1968.

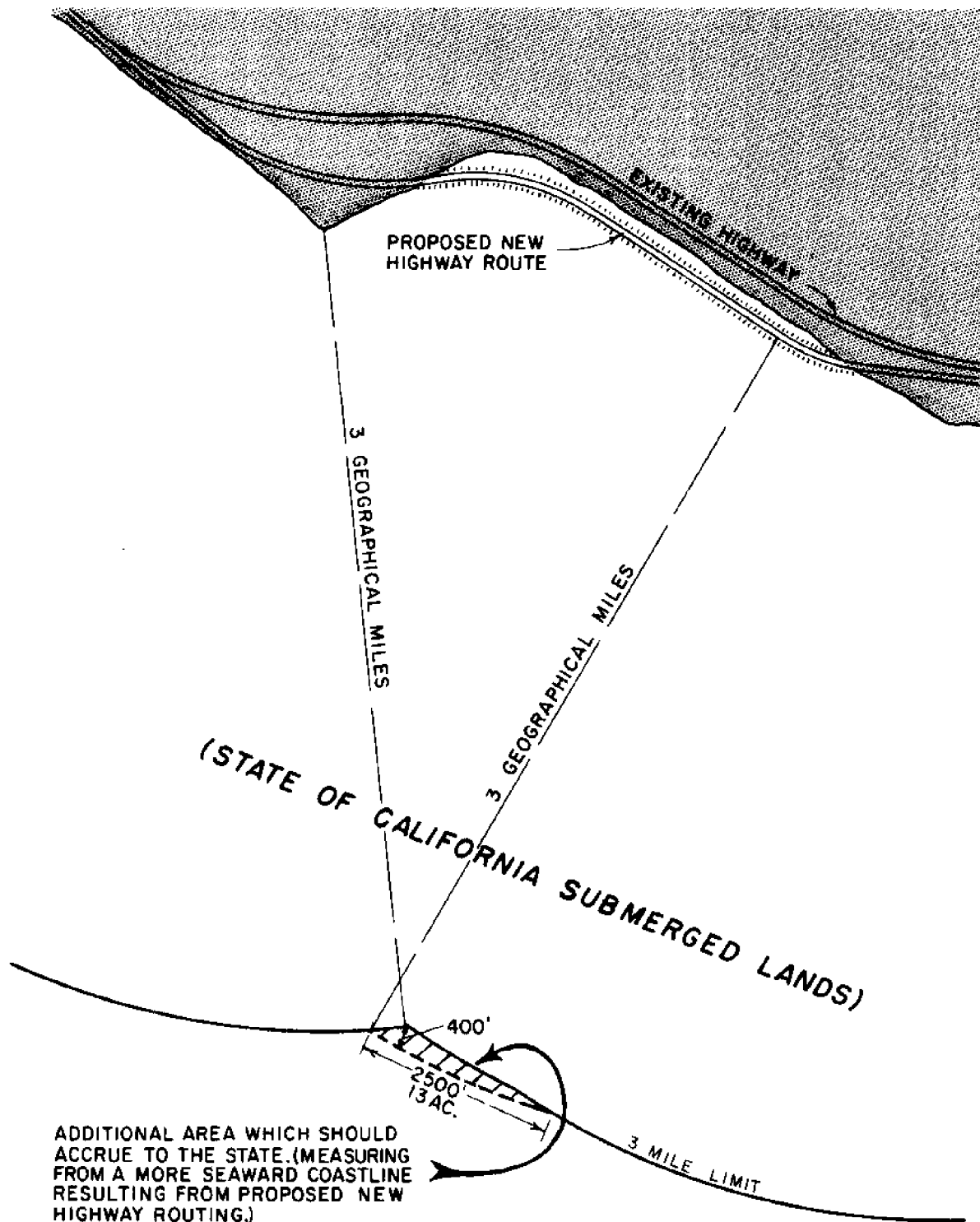
FIGURE 1

wherever absolute precision is required. Under these conditions the situation would continue to be impossible, even with technology for absolute elevation determinations, because the reference planes of elevation are unstable and in continuous motion, principally because of the effects of the ocean tides, earth tides, and, particularly along the "Pacific ring of fire," the tectonic movement of the coastal land masses.

Two new jurisdictional problems involving the offshore have developed in California. The first issue has resulted from consideration by the California State Lands Commission on offering an oil and gas lease on state submerged lands northerly and westerly of Point Conception, Santa Barbara County (Figure 1). The proposed lease area is enclosed on the seaward side by federal oil and gas leases on the outer continental shelf. The Air Force Western Test Range (Vandenberg Air Force Base) has proposed to extend a Danger Zone classification to the proposed lease area and the U.S. Army Corps of Engineers establishment of special navigation control regulations that would be enforced by the Test Range commander. Preliminary estimates of the times required by the Test Range for closure of the area to navigation indicate that no exploration or development operations could be undertaken effectively. This has been the result also of a 1960 Danger Zone classification covering 120 square miles of state submerged lands bordering the Test Range to the north. This pre-emption has been effected without any consideration or compensation to the state as the owner of the lands involved. Additionally, the U.S. Army Corps of Engineers has informed the state that if the proposed lease is consummated, a permit for offshore operation in navigable waters of the United States will be granted to the state lessee only upon the lessee's guarantee that the federal government will be held harmless from any claim of loss or damage to operations on the state lease and that the lessee will suspend operations and evacuate personnel at any time at the request of the Test Range commander.

The second issue arose from a state highway improvement project along the ocean which will require some fill to be placed on state tide and submerged lands (Figure 2). Placement of the fill will result in the displacement of the line of Mean Lower Low Water seaward approximately 400 feet at the maximum. In accordance with the Supreme Court Supplemental Decree⁵ in 1966, the three-mile seaward boundary of the submerged lands is measured from the actual location of the low-water line whether existing naturally or influenced by artificial factors. The 400-foot maximum displacement of the low-water line will displace the dividing line between submerged lands and outer continental shelf lands an equal distance. Such circumstances are provided for specifically in the Supplemental Decree and the Convention on the Territorial Sea and the Contiguous Zone. However, this provision is not acceptable to the federal government, with the result that the state has again been informed that issuance of a U.S. Army Corps of Engineers permit for placement of fill in navigable waters of the United States will be conditioned on a waiver by the state of any claim that the seaward limit of the state submerged lands has, in fact, been extended.

⁵ United States v. California, 382 U.S. 448.



(OUTER CONTINENTAL SHELF LANDS)

FIGURE 2

Proceeding easterly from California following the direction of the 1968 report that offshore boundary problems are at issue from Alaska to Maine,⁶ it can be reported that the Supreme Court of the United States on March 3, 1969, delivered opinions on the Entry of a Supplemental Decree as to the states of Texas and Louisiana.⁷

A December 4, 1967, opinion on the Texas issues held "...that the congressional grant to Texas of three marine leagues of submerged land is measured by the historical state boundaries 'as they existed' in 1845 when Texas was admitted into the Union" and that the Convention is not applicable to Texas. The March 3, 1969, opinion is identified as a sequel on the reserved question of what is the "coastline" from which to measure the three-marine-league limit of Texas submerged lands? Texas contended that measurements should be made from the 1945 coastline; otherwise between 17,000 and 35,000 acres would be lost to Texas because of extensive post-1945 coastal erosion. However, the opinion concludes "...that the term 'coastline' means the modern, ambulatory coastline." A most interesting interpretation of the effect of this opinion is reported in the dissent by Mr. Justice Black:

The effect of the Court's holding today is that where the process of accretion is building up new land along the shores, the boundaries Texas may claim are not extended because, as we held last Term, they remain irrevocably fixed by the 1945 line, but as erosion gradually pushes back the present coastline at other points along the shore, the outer limits of the submerged lands owned by Texas is also pushed back toward shore. This argument of the United States, accepted today by the Court, truly deserves the encomium paid it by counsel for Texas in oral argument that it works for the United States precisely as the old game of "heads I win, tails you lose"...

In the Louisiana opinion of March 3, 1969, the Court discussed at length (63 pages) the question of "The Inland Water Line" and the "Application of the Convention on the Territorial Sea and the Contiguous Zone" with the conclusion "In due course a Special Master will be appointed by the Court to make a preliminary determination, consistent with this opinion, of the precise boundaries of the submerged lands owned by Louisiana in the Gulf of Mexico."

The authorization by the state of Maine of nonliving resource exploration in an area extending approximately from ten to eighty miles offshore was

⁶ The Law of the Sea: International Rules and Organization for the Sea, op.cit. p. 303.

⁷ United States v. Louisiana, et al, No. 9 Original.

reported also in 1968.⁸ This authorization was challenged by the U.S. Justice Department in April, 1969, with the filing of a complaint with the Supreme Court. This complaint requests that the Court take original jurisdiction and establish the limits of submerged land ownership for the states of Maine, New Hampshire, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland, North Carolina, South Carolina, Georgia, and Florida.

⁸ The Law of the Sea: International Rules and Organization for the Sea, op.cit.
p. 310.

VERTICAL DATUM FOR BOUNDARY DETERMINATION

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Coast and Geodetic Survey
Environmental Science Services Administration
U.S. Department of Commerce

Participants in the Fourth Annual Summer Conference of the Law of the Sea - I know of no engineering operation, and position and boundary determination are engineering problems, which does not allow for an error budget. Yet, the legal and political definitions of offshore boundaries are stated in terms of exact quantities and have been so interpreted by the courts. I submit that the establishment of a line either three miles, or 50 miles, or any fixed number of miles offshore, or where we find a depth of either 200 meters, or 2,500 meters, or whatever number of meters, is technically unattainable. Such boundaries must be defined in terms of present technology. Thus, a line either three miles ± 50 feet offshore or where the depth is 200 meters ± 2 meters is a technically attainable boundary today. As our technology improves our definition can be held, and our error budget can be reduced. Another consideration should be the rate at which the parameter that defines the boundary changes. If this parameter changes slowly with distance, it poorly defines a boundary. Depths of 200 meters ± 2 meters may exist over tens of miles and depths of 2,500 meters ± 25 meters may exist over a hundred miles; needless to say, a depth could be a most inappropriate boundary parameter. Geological boundaries, the continental-oceanic interface, are inadequate for the same reason; the transition from continental to oceanic structure is not finely defined. Probably, the most suitable definitions are those based either on distances or on geographic positions (which would depend upon distances, if defined by geodetic positions or on astronomic observations, if defined by astronomic positions). But, in either case, the definition should include an error budget.

Before embarking upon my presentation, I would like to present two of my ideas. First, national boundaries at the three mile limit with international supervision outside this limit would be beneficial to the scientific community; freedom to explore the oceans and the transition zone between continental and oceanic margins would be uncontested. Secondly, I am a firm believer in the value of interdisciplinary discussions and activities. Therefore, I seriously believe that to Dr. Emery's suggestion that lawyers and politicians learn the language of oceanography should be added the suggestion that they also be required to spend several years at sea as navigators before posing as authorities on the establishment of marine boundaries; as an alternative they might be expected to work with marine data requiring accurate marine positions.

My presentation today has greater national, that is United States, rather than international significance. It deals with the method used by the Coast and Geodetic Survey, a component of the Environmental Science Services Administration, to establish the vertical datum and the elevation of "rocks

awash" used in the demarcation of shoreline boundaries. The mapping of such boundaries has become increasingly important as the value of onshore and off-shore properties increases. In general, such boundaries are delimited by the line where the water surface, at some stage of the tide, intersects the shore; this intersection is termed the "coastline" in the Submerged Lands Act of 1953. Thus, the mapping involves two operations: The determination of a height reached by the tide during its vertical rise and fall which constitutes the tidal plane of reference or the tidal datum from which the elevation of tidal benchmarks is determined, and the establishment of the line of intersection of the water surface and the shore at a particular tidal datum which constitutes the coastline. The mapping of the coastline is accomplished by leveling from tidal benchmarks, or by photographing the shoreline at the instant when the tide is at the level of the tidal datum.

Many different tidal datums are possible, since any phase of the tidal cycle may be chosen to define the datum. However, the datums of interest are those which by law define the boundary. With certain exceptions, this boundary is defined by a line indicated on the coastal charts prepared by the Coast and Geodetic Survey. On the Pacific coast it is the line of mean lower low-water; on the Atlantic coast it is the line of the mean of each day's two low tides; and on the Gulf coast it is the line of the mean of the lower lows. Among the exceptions which alter this line are natural rocks exposed at the tidal datum, or "rocks awash," permanent harbor works, and seaward limits of inland waters.

High water and low water are specifically defined quantities; they refer to the phase of the tide and not to the height of the water. Low water is the minimum height reached by each falling tide; that is, whatever the height of the water when the fall of the tide ceases and the rise is about to begin, the tide is at low water. It is not uncommon then to have a high water of one day lower than the low water of another day. Where the tides are semidiurnal, such as on the Atlantic and Pacific coasts, but consecutive highs and consecutive lows are markedly different, such as on the Pacific coast, the tides are said to be mixed and the Supreme Court has ruled that the mean of the lower low-waters shall establish the tidal datum.

Superimposed on the mixed tides, such as those shown in Figure 1 for the Pacific coast, are numerous high frequency oscillations. In addition, these tides do not return to the same levels day after day or year after year indicating that many low frequency oscillations exist in the tidal spectrum; there are also distinct indications of secular variations. Therefore, to define a tidal datum it is necessary to adopt a sampling interval of observations, an averaging process to define a mean value, a length of observation series, and a reference date for this series.

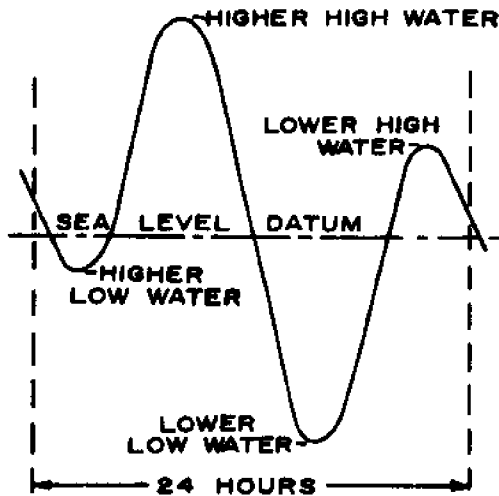


Figure 1

When there are two highs and two lows each day, the tides are said to be Semi-Diurnal.

When the morning tides are of different heights than the afternoon tides, there is said to be Diurnal Inequality.

Tides which are Semi-Diurnal with Diurnal Inequality are said to be of the Mixed Type.

(Atlantic Coast tides are semi-diurnal but do not have diurnal inequality; Gulf of Mexico tides are generally diurnal, with only one low and one high tide each day; Pacific coast tides are of the mixed type.)

To eliminate the high frequency oscillations such as those produced by waves, float wells of tide gauges and float tubes for tide staffs are designed to dampen wave motions and thus provide a record of elevation of a still water surface. With such observed data a sampling interval of one hour is usually satisfactory and is so recorded at Coast and Geodetic Survey tide stations.

For an averaging process the arithmetic mean is adopted. However, the large variations of even the yearly means, as shown in Figures 2 and 3, clearly indicate the inadequacy of basing the tidal datum on such a short period of observations. The Coast and Geodetic Survey uses a nineteen-year series which averages the astronomic tides and also, and more importantly, tends to reduce the effect of such nontidal phenomena as wind, atmospheric pressure, currents, water temperature and salinity. Such a set of observations constitute a primary determination of the tidal datum at a station. However, tidal datums can be determined from an observation series of one year or less at a station, if comparisons can be made with observations at a primary station having nearly similar tidal characteristics.

Finally, due to the slow secular variation as evidenced in Figures 2 and 3, a nineteen-year period from 1924 to 1942 was used until 1960 when the reference period was changed to 1941-59. This secular trend is probably the result of glacial-eustatic effects; but, tectonic actions such as subsidence and uplift of the shoreline are also possible. Tide gauge readings at Mean Lower Low-Water (MLLW) for various epochs at a number of primary tide stations along the Pacific coast are given in Table 1. The trend at San Diego and San Francisco indicated a secular rise in MLLW and a secular fall in MLLW at Los Angeles. However, as previously indicated, in particular for this tectonically active region, subsidence and uplift of the crust cannot be ruled out. Fortunately,

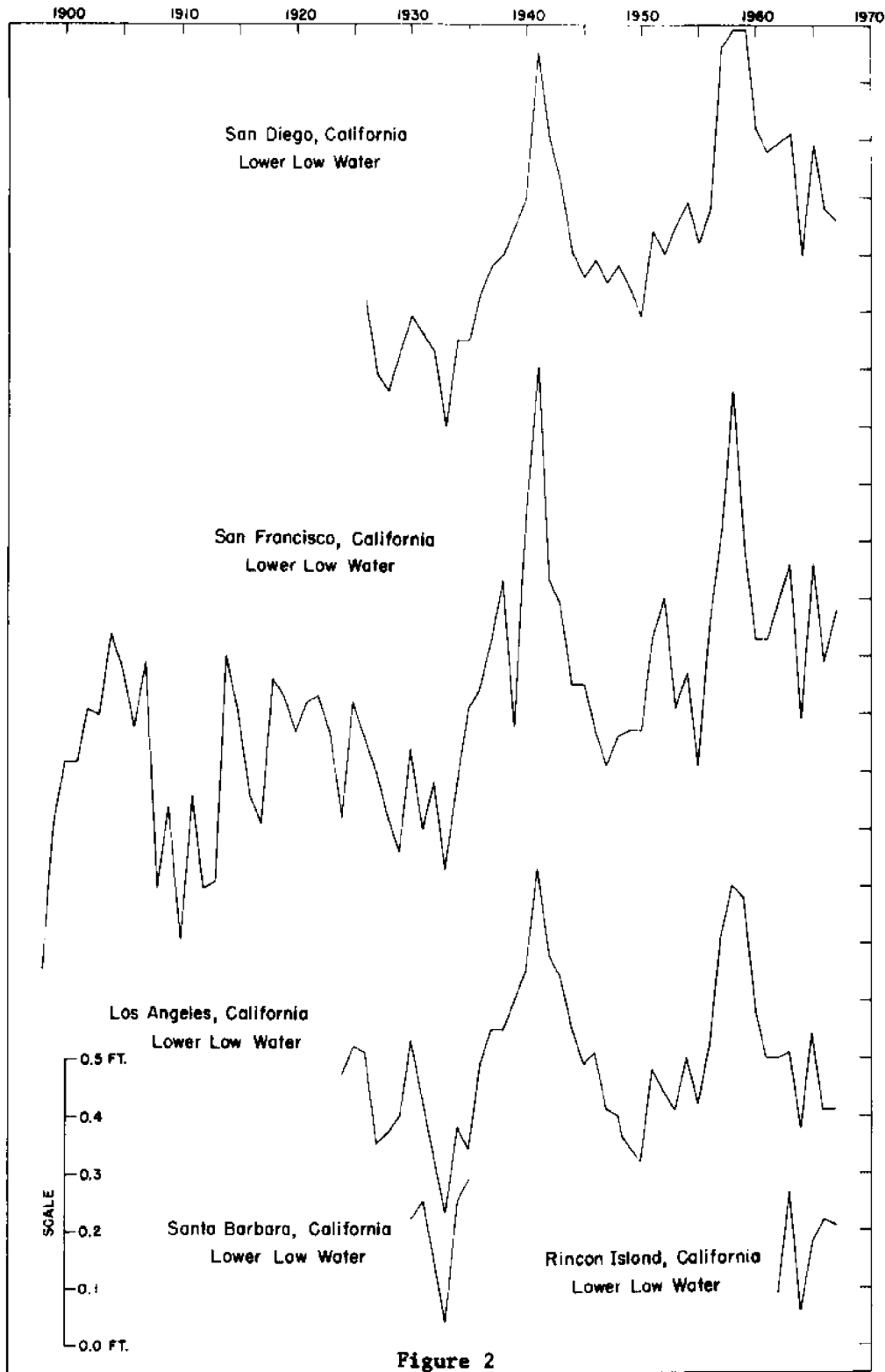


Figure 2

Lower low water variations for west coast stations.

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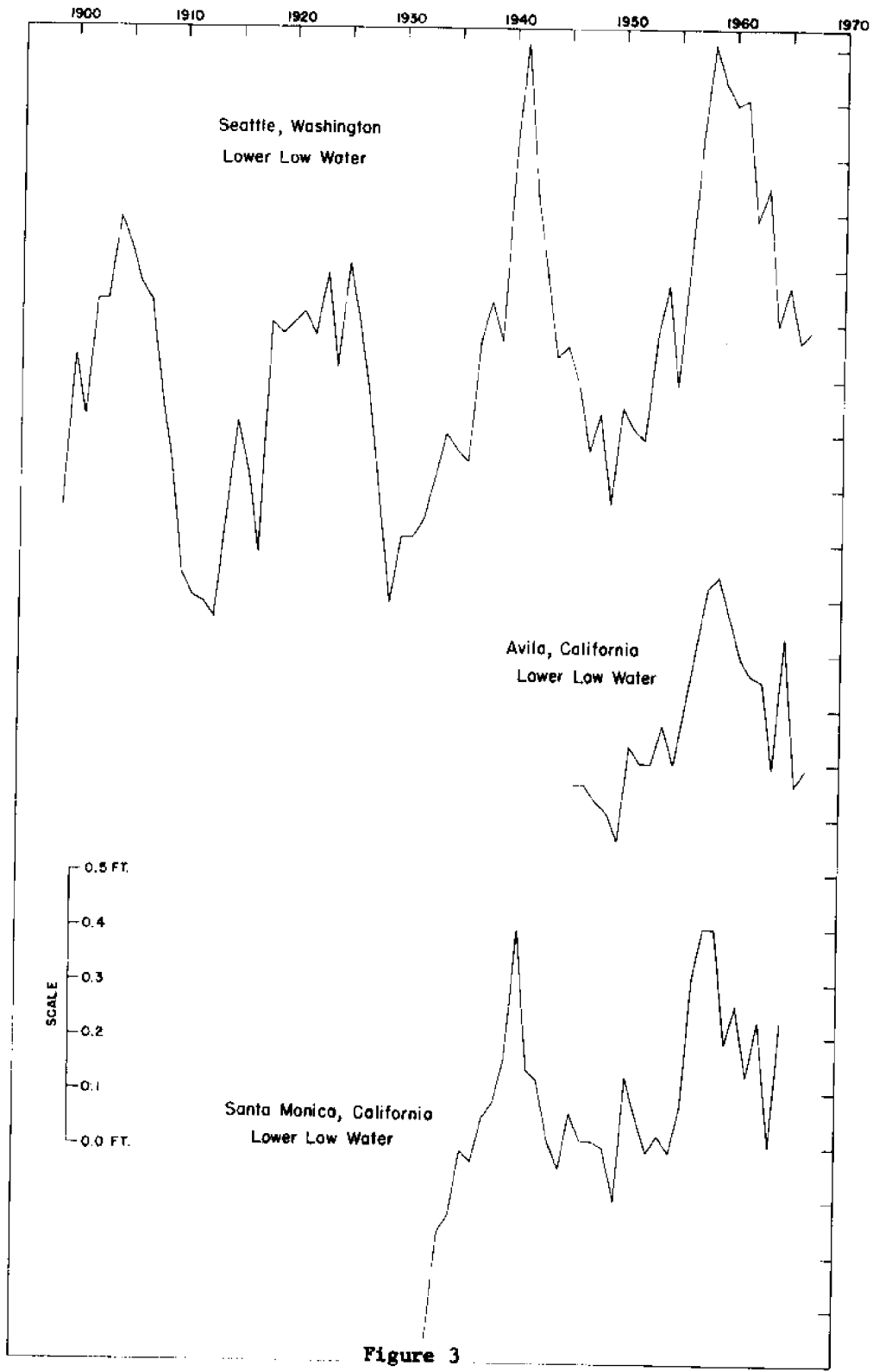


Figure 3

Lower low water variations for west coast stations.

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for boundary determinations, except for special situations, this judgment need not be made as the level of the water surface, regardless of the cause, is what is wanted.

Table 1

Tide Gauge Readings at Mean Lower Low-Water

<u>Station</u>	<u>Reference Years</u>	<u>Tide Gauge Readings at MLLW (Feet)*</u>
Los Angeles, California	1924-67	3.695
	1941-59	3.74
	1945-63	3.71
	1949-67	3.70
San Diego, California	1927-67	3.432
	1941-59	3.49
	1945-63	3.50
	1949-67	3.52
San Francisco, California	1898-1967	5.613
	1924-67	5.624
	1941-59	5.73
	1945-63	5.72
	1949-67	5.75

* Above 0 of the tide staff

The accuracy with which the height of the tidal datum must be determined in order to establish the coastline is a function of the slope of the foreshore. Obviously, the steeper the slope, the smaller is the accuracy required in the observational data and, in addition, the tidal series can be shorter. In Table 2 are indicated the errors made in establishing the boundary if the tidal datum is in error by 0.1 ft.

When the tidal datum has been established and referenced to bench marks, demarcation of the tidal boundary can be accomplished by standard survey practices. The surveyor starts from a bench mark and traces out the contour, such as MLLW, by means of the plane table, or by means of transit and tape, or transit and stadia, or by spirit leveling. However, recently the Coast and Geodetic Survey has found that tide-controlled infrared aerial photography provides a good means of mapping the shoreline. After the tidal datum has been established, observers at the tide stations, by radio communication with the photographic aircraft, notify the aircrew when the water surface is at the datum elevation. Infrared photographs are taken at the correct water level. These show the line of intersection of the water with the land very clearly, Figure 4, and

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this line is mapped by photogrammetric methods. As the period of photography is very short for any one tide, it is difficult to obtain photography of all the shoreline at exactly the datum level. Usually several sets of photographs are taken slightly above and slightly below datum level. From these pictures the shoreline at datum level is interpolated. While infrared photography clearly displays the shoreline at datum level, it is not suitable for mapping very small, detached features such as small pinnacle rocks. These may be missed on infrared photography since this photography does not permit any water penetration. If there are many such features, color photography or panchromatic photography, Figure 5, is used.

Table 2

Horizontal Displacement for 0.1 Foot Change in Tidal Datum

<u>Slope of Foreshore</u>	<u>Displacement of Shoreline</u>	<u>Slope of Foreshore</u>	<u>Displacement of Shoreline</u>
5'	68.7 ft.	10°	5.7 ft.
15'	22.9 ft.	30°	1.9 ft.
25'	13.8 ft.	50°	1.1 ft.
35'	9.8 ft.	70°	0.8 ft.
45'	7.6 ft.	90°	0.6 ft.
55'	6.2 ft.	110°	0.5 ft.

With the tidal datum established at a primary station, it is possible to estimate the datum at a secondary station where considerably less than a nineteen-year series of tidal data may be available. To accomplish this, we must find a primary station with tidal characteristics similar to those at the secondary station. This situation seems to exist between those tidal stations at Santa Barbara and Rincon Island and that at Los Angeles, Figure 2; the discrepancy in range is of the order of 0.1 ft. Therefore, at the primary station we take the difference between the tide gauge readings at MLLW for the datum period and MLLW for the period for which we have tidal observations at the secondary station, Table 3. This difference is then added to the tide gauge reading at MLLW at the secondary station determined from the available tidal data, Figure 2 and Table 3. If instead of the base period 1941-59, the base period 1946-67 were used, these estimated tide gauge readings at MLLW would have been 0.04 ft. lower. In addition, we have not accounted for any differential movement of the primary or the secondary station in this transfer of datum. Comparing tidal data at Avila and Los Angeles, it was found that such movement is small.

At Avila, California, MLLW (1946-67) minus MLLW (1967) is +0.07 ft. Not included are the years 1956, 1957, and 1960, for which years a complete set



Figure 4 - Infrared photograph for mapping the mean low-water contour.

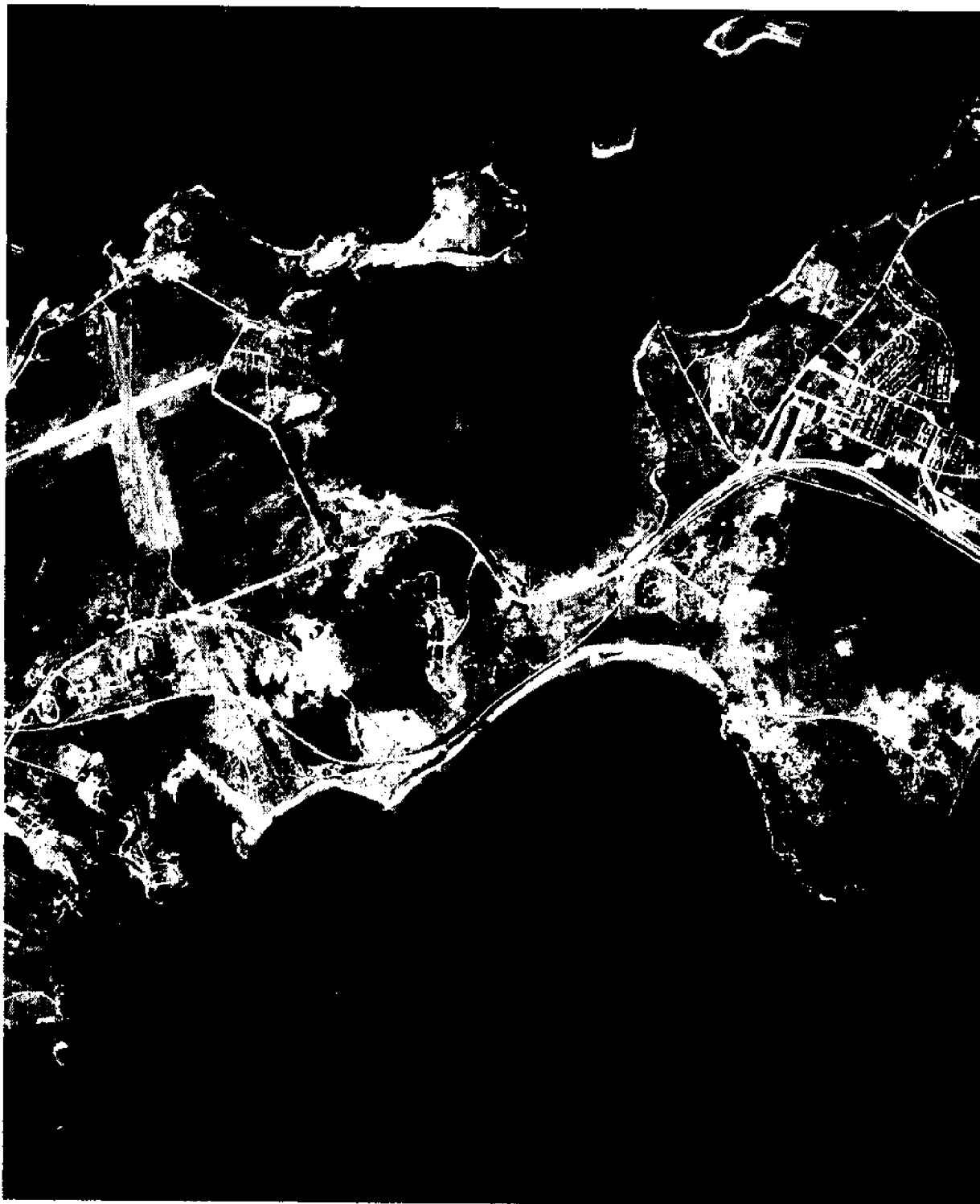


Figure 5 - Panchromatic photograph, taken simultaneously with infrared photograph, Fig. 4.

Table 3

Transfer of MLLW Datum

	<u>Gauge Reading (Feet)*</u>
Los Angeles - MLLW (1941-59)	3.74
MLLW (1931, 33, 34)	<u>3.55</u>
Difference	0.19
Santa Barbara - MLLW (1931, 33, 34)	3.58
Difference	<u>0.19</u>
Estimated MLLW (1941-59)	3.77
<hr/>	
Los Angeles - MLLW (1941-59)	3.74**
MLLW (1962-67)	<u>3.66</u>
Difference	0.08
Rincon Island - MLLW (1962-67)	3.97
Difference	<u>0.08</u>
Estimated MLLW (1941-59)	4.05
<hr/>	
Los Angeles - MLLW (1941-59)	3.74**
MLLW (1967)	<u>3.61</u>
Difference	0.13
Rincon Island - MLLW (1962-67)	3.97
Difference	<u>0.13</u>
Estimated MLLW (1941-59)	4.10

* Above 0 of the tide staff

** The Los Angeles Station is at San Pedro

of data are not available. Compared with the same period at Los Angeles, we find MLLW (1946-67) minus MLLW (1967) is +0.09 ft. If the tidal characteristics are equivalent at Avila and at Los Angeles, and the tidal data are considered accurate; we must assume that subsidence in the Los Angeles area or uplift in the Avila area has taken place. If the tidal period (1946-67) were used to establish the datum at Rincon Island, MLLW would be set at a lower gauge reading if based on Avila than if it were based on Los Angeles. However, the difference would only be 0.02 ft. which is well within the error budget.

Before considering the accuracy of this transfer of MLLW, let us look at the Sea Level Datum of the United States. This Datum is not to be confused

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with the local mean sea level determined at tidal stations. The Sea Level Datum elevations are adjusted quantities, sometimes referred to as the "geodetic elevations," which are based upon observations obtained at twenty-six tidal stations which have been connected by a network of precise spirit leveling; the last continental adjustment was completed in 1929. Rarely does the geodetic elevation of a benchmark, even in the vicinity of a tidal station, agree with the elevation above local mean sea level at the same point. However, these differences are small. A recent 1963 investigation of the relationships between local mean sea level and the Sea Level Datum at a number of tidal stations showed that the geodetic elevation of local mean sea level increases by +0.054 meter ± 0.021 meter (probable error) from San Pedro, California, to Avila, California. If we assume that the geodetic elevation of MLLW shows the same variation, and that this variation is essentially linear between the two points, we may conclude that at Rincon Island, roughly midway between San Pedro and Avila, the difference between the elevation of a benchmark above MLLW and above Sea Level would be 0.09 ft. smaller than the same difference in elevations taken at a benchmark in the vicinity of Los Angeles.

Except for a possible rise in MLLW mentioned in the previous paragraph, we should expect that the difference between the MLLW elevation and the geodetic elevation should agree for benchmarks in the same locality. This is the case for those benchmarks at Santa Barbara and at Rincon Island, Table 4. From the same table we note that this difference is 0.12 ft. greater than that at Los Angeles. However, as noted above, this difference should have been smaller by 0.09 ft. due to the increase in the geodetic elevation of local MLLW as we proceed north along the coast. Even this total discrepancy of 0.2 ft. is fortuitously small as we have made a number of assumptions. It has been assumed that the leveling along the coast was completed in a single line of leveling, that there was no subsidence or uplift during the actual leveling which may have been accomplished over a number of years, and that the adjustment removed all discrepancies. None of these assumptions is absolutely valid. In addition, the geodetic elevations of the benchmarks are based upon the local tidal datums in effect in 1929, and the adjustment constrained these elevations to conform to local mean sea level at San Diego, San Pedro, and San Francisco. But, even though the level of MLLW cannot be substantiated through the geodetic elevation, it is unlikely that the error in determining MLLW at Rincon Island can be greater than 0.1 ft. (probable error). A long series of tidal observations are needed at Rincon Island in order to corroborate this estimate. However, even such a series will not establish the MLLW elevations of benchmarks in the vicinity of Rincon Island without a precise level survey accomplished over a short time period due to the instability of the crustal structure in this region.

Finally, we should consider the problem of rocks exposed at MLLW or "rocks awash." It is not safe to assume that rocks awash noted on the C&GS nautical charts are in reality exposed at MLW or at MLLW, as on the Atlantic and Gulf coasts these rocks may be anywhere between one foot below MLW to one foot above MHW; on the Pacific coast they may be between two feet below MLLW to two feet above MHW. Hence, in many areas a resurvey is required when such rocks are

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involved in a boundary determination. The precise determination of rocks awash is a difficult and costly operation. Added to the error of determining MLLW in the vicinity of such features is the error in transferring elevations from shore. Ideally, simultaneous reciprocal vertical angle or spirit level observations should be made from the rock and from the shore in order to cancel the effect of earth's curvature, normal atmospheric refraction, and instrument collimation error.

Table 4

Comparisons of MLLW and Sea Level Elevations

Rincon Island

Gorda 2 RM 1	22.53	ft. above 0 of the tide staff (1966)
MLLW	<u>4.05</u>	ft. above 0 of the tide staff (Est. 1941-59)
Gorda 2 RM 1	18.48	ft. above MLLW (Est. 1941-59)
Gorda 2 RM 1	<u>15.63</u>	ft. above Sea Level (1966)
Difference	2.85	ft. MLLW minus Sea Level Elevations

Gorda 2 RM 1	22.53	ft. above 0 of the tide staff (1966)
MLLW	<u>4.10</u>	ft. above 0 of the tide staff (Est. 1967)
Gorda 2 RM 1	18.43	ft. above MLLW (Est. 1967)
Gorda 2 RM 1	<u>15.63</u>	ft. above Sea Level (1966)
Difference	2.80	ft. MLLW minus Sea Level Elevations

Santa Barbara

BM 1	20.22	ft. above 0 of the tide staff (1931)
MLLW	<u>3.77</u>	ft. above 0 of the tide staff (Est. 1941-59)
BM 1	16.45	ft. above MLLW (Est. 1941-59)
BM 0-28 minus BM 1	<u>-3.70</u>	ft. (by spirit level in 1948)
BM 0-28	12.75	ft. above MLLW (Est. 1941-59)
BM 0-28	<u>9.95</u>	ft. above Sea Level (1960)
Difference	2.80	ft. MLLW minus Sea Level Elevations

Los Angeles

BM 8	17.55	ft. above 0 of the tide staff (1966)
MLLW	<u>3.74</u>	ft. above 0 of the tide staff (1941-59)
BM 8	13.81	ft. above MLLW (1941-59)
BM 8	<u>11.13</u>	ft. above Sea Level
Difference	2.68	ft. MLLW minus Sea Level Elevations

Simultaneous reciprocal spirit level observations over rivers of width comparable to the distance from shore of the rocks in the vicinity of Sand Pt. and Rincon Island indicate that elevation differences accurate to 0.01 ft. or better are possible by this river crossing method. But, when we compare observations taken in one direction with the mean obtained by simultaneous reciprocal observation, discrepancies of the order of 0.1 ft. were noted. This method was used in California, increasing our error budget by 0.1 ft. Probably the greatest cause for concern is the uncertainty in the effect of atmospheric refraction on the line of sight. Fortunately one obtains a better estimate of the effect of refraction for windy rather than calm atmospheric conditions; such should be the case off the Pacific coast, and the leveling error should be less than the maximum found for one way river crossing observations.

An alternative to the river crossing observations is the method of hydrostatic leveling which has been successfully applied by the Danes and the Germans to span large bodies of water. The principle involves the determination of the level of a column of water at each end of a tube connecting the two sites between which an elevation difference is desired. The observations require great care. But high accuracy is possible; the Germans report differences of only 0.1 mm. between spirit and hydrostatic levelings from the mainland to Rugen Island, a distance of 2 km., and the Danes report variations in observed readings of only 5.6 mm. for a 4.1 km. line with a mean square error of 0.04 mm. for thirteen days of observations.

Conclusions

1. MLLW can be determined at tide gauge from nineteen or more years of data to better than ± 0.05 ft. These observations will take into account the rise or fall of water level and the uplift or subsidence of the general crustal structure. However, they will also record any differential movement of the tide gauge with respect to the crust which could introduce a bias into the determination of MLLW at an unstable tide gauge. MLLW can be transferred from a primary to a secondary tidal station having similar characteristics with an accuracy of 0.1 ft. (probable error).
2. The tidal datum can be transferred to geodetic level benchmarks with an accuracy higher than that with which MLLW is determined. But, in active crustal regions the spirit leveling should be accomplished over a short time period.
3. The coastline can be determined by either standard surveying or photogrammetric methods within 1 ft. of the displacement of the coastline given in Table 2 due to the error in determining the datum.
4. The elevation of offshore rocks can be determined by the river crossing method; the accuracy of this method decreases with the distance from shore. Greatest accuracy, possibly only a few hundredths of a foot, can be achieved by simultaneous reciprocal spirit level observations. One direction measurements may be in error by 0.1 ft. High accuracy appears possible by the hydrostatic leveling method; this method does not appear to have been used in the United States.

Bibliography

- Braaten, Norman F., and McCombs, Charles E. "Mean Sea Level Variations." Unpublished paper delivered at the General Assembly, IUGG, 1963. (Available at ESSA-C&GS.)
- Griffin, William L. "Legal and Engineering Aspects of Federal-State Continental Shelf Boundary Making," Transactions, Marine Technology Society, March 19-20, 1968.
- Jones, Bennett G., and Shofnos, William. "Mapping the Low-Water Line of the Mississippi Delta," International Hydrographic Review, Vol. XXXVIII, No. 1 (January, 1961).
- Shofnos, William. "Tidal Datum Planes and Related Problems." Unpublished paper delivered before the Florida Society of Professional Land Surveyors, October 24, 1964. (Available at ESSA-C&GS.)

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Discussion

DISCUSSION PERIOD

Chapman: Well, Dr. Orlin, after listening to a few days of political, non-political, and social science speakers, hearing a talk by a man who is interested in precise measurements and the accuracy thereof, is just like having a nice drink of Compari before dinner. It kind of clears your mouth.

Blake: Can you tell me where the tide gauge will be, offhand?

Orlin: It is at San Pedro.

Blake: I was afraid of that. Can you take into account the effect of repressurizing the Wilmington Oil Field?

Orlin: Again, I don't care what the cause is. The boundary is defined by the intersection of the water and the land regardless of the cause. And if you repressurize the oil field then the water level is going to change and it is going to appear in the observations you make. Perhaps we ought to change the epoch of the observations.

Blake: What I was concerned about was your comparison between the Los Angeles tide gauge and the one at Rincon, especially the assumption that they behave the same in both places.

Orlin: You mean from 62 to 67?

Blake: Yes.

Orlin: At the moment, I know of no better way to establish the tide at Rincon Island. However, this uncertainty is included in the error budget, the one-tenth of one foot error budget that you have got to buy.

Knauss: Having heard your presentation and those of Frank Hortig over the years I continue to be impressed that the people who decided how boundaries should be determined built their system on a very bad technique and that it really has to be changed. I will only add one additional comment to yours, namely, that you geodesists who are trying to force-fit your first order leveling data have presented us oceanographers with something of a problem. As I remember, your data suggest there is something like a 60 cm. increase in sea level as one goes from south to north along both coasts of the United States and we don't believe it; if you do have 60 cm. increase in sea level from south to north in the United States this would have very important consequences on the ocean circulation. The circulation should be different from what we appear to observe. We think the error is somewhere in your results, not in ours.

I would like to ask your opinion on a recommendation that was made in the Commission Report in which we suggested that the boundaries be drawn on some basis of latitude and longitude, in order to get away from the problems of sea

level, distances offshore, ocean depths, and so forth. What are the problems as you see them in terms of defining these boundaries in the usual latitude and longitude coordinates both offshore and onshore.

Orlin: That is fine. That was Dr. Hedberg's statement a few days ago that I commented on from the floor. Regardless of what was said at the time, I think this really is the best method for defining the boundary. But please again don't define the boundary in terms of a line at such a latitude or a line at such a longitude because you can't achieve it. This is the important point. There are two problems involved. One, if we have a latitude and longitude specified, we have to specify the earth spheroid that we are going to adopt, and it is conceivable, I don't know if you all remember my balloon last year, that if we blow this balloon up or deflate it - which is what we are doing when we make a new determination of the spheroid we are going to use - you don't change the longitude or latitude any but maybe you give a country more or less area. The country may not like this but it would have to accept it. Therefore, first of all decide on a world spheroid that everybody is going to agree on and then define your latitude and longitude. That is the first problem.

The second problem then is how to determine your latitude and longitude when you are out in the middle of nowhere. Our satellite observations, even under the best of conditions today - that is, standing still and taking multiple observations - seem to indicate an error of one-tenth of a mile. There are greater errors involved when you are moving. In this case you need to provide a velocity correction in order to get a good satellite position, so maybe you have another one-tenth of a mile. Therefore, it would be best to define your boundary in terms of latitude and longitude but say a latitude and longitude plus or minus a half a minute of arc or a tenth of a minute of arc, and then make your observation; if you fall within that half a minute of arc or tenth of a minute of arc, regardless of where it is, the coastal State has that property.

Returning to the boundary between a State and international waters, you are better off, close to shore, defining the boundary in terms of a distance because you can probably determine your distance a lot better than you can observe your latitude and longitude. I would say, within three-mile limits, for example, define the boundary in terms of a distance - perhaps a distance from some fixed points along the shore plus or minus ten feet or fifty feet. Then as your technology improves you don't have to redefine your boundary you merely redefine your allowable budget error; as your satellite positioning systems improve to the point where they are good to one-hundredth of a mile instead of one-tenth of a mile, you can redefine your boundaries in terms of X miles plus or minus one-hundredth. The same concept would apply to a boundary defined in terms of latitude and longitude, your boundary coordinates. Your boundary stays the same; your error budget changes.

Panel: Ocean Strategy for the United States
Thursday, June 26, 1969

Introductory Remarks

Chairman - Wilbert M. Chapman, Director, Marine Resources, Ralston Purina Company, San Diego, California

Members of the Panel - Robert W. Morse, Aaron L. Danzig, and Wilbert M. Chapman

Discussion Chairman - William L. Burke, Professor of Law, University of Washington, Seattle, Washington

Introductory Remarks

This afternoon we are going to deal with the subject of an ocean strategy for the United States. I do not know, myself, how to differentiate this from an ocean strategy for the world. President Morse asked me this morning what it was I had in mind in the term strategy and I was unable to give him a satisfactory answer, so whatever he says is the right definition. He will give us general views on strategy. Mr. Danzig will deal with the international milieu in which such strategy will be expected to operate, and improvements therein. I will deal with another aspect of that, intending to antagonize both him and the audience so that we will get adequate response in the line of questioning that will follow, in order to ventilate this subject. Professor Burke will chair this discussion period.

Robert W. Morse, President
Case Western Reserve University
Cleveland, Ohio

Dr. Chapman asked me to present the first paper at this session on the subject of an ocean strategy for the United States. As long as we all admit that my qualifications for doing so are very limited and the subject is enormously complicated, I shall proceed if only to provide some targets for the other participants. I assume that by "strategy" one means a broad and long-range design which specific policies and actions are intended to support.

A general maritime strategy for the United States clearly should be an expression of our long-term national interests and goals. I shall make no attempt here to define these interests and goals except to say that besides national vitality and security they include the preservation of peace and the advancement of world order. I emphasize this point in order to make clear that national self-interest does not mean short-range selfish interest, though often they need not be inconsistent. Thus as a nation we are clearly committed to the peaceful economic and social advancement of all nations, and so to the equitable sharing of both access to and exploitation of the oceans among the world community of nations. Whether or not this nation can have a consistent strategy is quite another question.

It is all very well to recognize that the oceans are a regime where all nations must have common and shared interests, and thus must make mutual accommodations, but it is also true that the most parochial and short-range as well as the most vital and long-range interests of nations come into conflict at sea.

We must also acknowledge the inevitable internal contradictions which exist in assessing national self-interest as applied to the oceans. National policies, for example, which may maximize the economic development of our own continental shelf resources may be in direct conflict with the national interest in other spheres. Indeed, knowing the inevitability of such conflicting values, and being aware of the actual internal processes of government through which our maritime posture in fact evolves, one can ask whether there is much meaning to the concept of an ocean strategy for the United States.

Here I shall take the view that, explicitly expressed or not, we do have a complex of activities and policies with respect to the ocean which in their net result give rise to a strategy. At least these activities have strategic effects although one doubts if there is any overall purposeful design. It is important that we assess the effects of these policies, acknowledge and rationalize their contradictions, and most of all provide for governmental processes which expose them and attempt to resolve differences in favor of the greater good to the national interest.

Let me begin by reminding you of some of the more important trends with respect to ocean affairs. These are familiar to all of us so I will not go into detail or attempt to justify my assertions.

On the international scene we see increasing exploitation of the mineral resources of the continental shelves. While oil is the only important mineral now involved, the movement out to sea has been rapid and the resources are significant. Logically, and particularly psychologically, all the minerals of all the ocean bottoms are assumed to be at stake. This, plus the greater awareness that the food resources of the sea are, in fact, finite, has increased the pressure for international organization and regulation. The newest feature, perhaps, in the past few years has been an increasing interest in the oceans by the non-maritime nations, stimulated most of all by a vision (or should I say "fantasy") of unclaimed wealth on the sea bottom.

The other most significant trend internationally has been in the direction of eroding the more traditional concepts of freedom of the seas. There have been many steps in the past decade which have strengthened the concept of territorial seas and, indeed, the extension of national ownership to continental shelf resources also goes in the direction of carving up the ocean for national purposes. Many of these steps have been taken either with the support or reluctant acquiescence of the United States.

With respect to the actual posture of the United States in maritime affairs it seems to me that in the past several years we have not faced the whole picture. It is my own view that there has been entirely too much concentration of attention on the new and different, and that we have not been paying enough attention to the classical and historically significant uses of the sea. Thus, I believe we are giving far too much weight to the exploitation of the ocean bottom and not nearly enough policy attention to the classical ones of transport, fishing, and naval activity. And with respect to the Navy, as I will indicate subsequently, we are acting as if its policies and development could be separated from the overall maritime strategy. An ocean strategy is carried out not by words or diplomatic positions, but by a whole range of national activities and commitments which in a pragmatic sense can be measured by what the nation actually does at sea. If we examine the trends across this whole range there are more negative than positive features. One would identify generally positive trends in the areas of research and exploration, and in continental shelf exploitation. However, in the more traditional areas of maritime interest there are negative trends of deep strategic significance.

While the dependence on ocean transport and fish resources of the United States increases, it is well known that our fishing and merchant fleet are aging and deteriorating. The reasons for these trends are reasonably understood but little is promised that would reverse them.

I would argue that if these trends continue our strategic position with respect to the ocean will be irreversibly altered. Sea transport and fishing will remain the key strategic variable for the foreseeable future. It is not so much that we need to be preeminent in volume or tonnage; it is of more concern that we not become obsolete. I believe that this nation must be both modern and global in fishing and in ocean transport. It is necessary politically and also if we are to exploit our scientific and technical leverage for the benefit of the world at large. One cannot make up for an absence of progress by substituting research, for research without the incentive of real action cannot be sustained.

The other significant aspect of our maritime posture which requires examination is our Navy, and here too the trend is distinctly negative. One must recognize the following facts: the obsolescence of much of the surface Navy; the decreasing availability of overseas bases; the change in the British Navy from a global to a regional force; the trend of the Soviet Navy toward global activity; and, finally, the yet-to-be-determined impact of the Vietnam War on future United States military and political policy.

The single most reliable expression of the Navy's strategic view of itself is ship construction. With respect to Naval forces it should be remembered that costs and technology are such that ships and hence navies have a long lifetime (about thirty years), and ships, like most things, are usually designed for the world as it was. With respect to our present Navy there are two important points: its size, which effects its ability to discharge global obligations; and its make-up, which determines the range of missions it can discharge. In the past two decades the Navy has been forced to make very difficult decisions about where to invest its money, not only because of the thrust of new technology, but also because of uncertainty regarding the strategic role of the Navy, induced principally by the advent of nuclear weapons. Money has come in competition with the other military services. The priority inevitably surrounding thermonuclear war has made the more traditional strategic roles of a Navy seem irrelevant. The Polaris submarine fleet, for example, can play no direct naval role at sea; its only role is that of assured destruction in a thermonuclear exchange. It was only in the past several years under MacNamara that the more conventional general purpose functions of the Navy were emphasized in ship construction. Nevertheless, since World War II, naval construction has been in the direction of fewer, higher-cost, special-purpose ships. In the process the Navy has gotten steadily older (I would guess the whole inventory of ships must age by about nine months each year), and less able to discharge the traditional naval roles on a global basis.

Finally, I am afraid that in the past several years the non-nuclear role of the military (including the Navy) has been described only as that of waging so-called "limited" war, a concept growing from the Korean War but I suspect eventually to be thoroughly discredited by Vietnam. Thus the impression has been made that the Navy is only an instrument for military intervention; even in

military language strategic equals thermonuclear. It is my own view, and here I hope that I am not just a traditionalist, that the Navy has a unique strategic role to play because of the international character of the ocean. As an example, I believe that given the present make-up of the world and the present trends, that if there were no global naval power committed to the concept of freedom of the seas, that there would be a continuing drift toward the nationalization of the large areas of the ocean.

Even if one has as his objective that of maximum international control of the ocean and its resources, it will come only as an historical continuation of the concept of freedom of the seas. And this concept is one that is ultimately determined by the freedom of movement of naval force.

Aaron L. Danzig
Nemeroff, Jelline, Danzig, Paley & Kaufman
New York, New York

I want to thank you all for the privilege of sitting in on these four days of discussion which have been most interesting and stimulating. While the discussions were going on I spoke to Carl Auerbach and said, "Aren't you a bit disturbed by all this, since so much of it seems to be critical?" but he just smiled his affable smile and said, "No, I think it is good. On a proposal as broad and as new as this one everyone should have his say. That is a desirable thing. Then when we are all finished we can take our next step forward on firmer ground."

As Bill Herrington said to me, "I like this conference, because people are communicating. They are not just talking - they are listening to each other."

I have reviewed my own notes on this conference and I find, after the dust settles down, that much of what has been said, while interesting, is irrelevant.

We are assembled here today confronted with a whole new set of facts that did not exist in 1958. It is not the same chess game as it was in 1958. In 1958 nobody dreamed of today's technology and Roger Denorme was quite right in calling to our attention the remarks of the American delegate to the 1958 Conference that significant exploitation beyond the 200-meter isobath just was not a foreseeable play on the board.

The new facts are the vast treasure which we surely know lies before us and the knowledge that within a year or two or three we shall have in our grasp the tools to take it. The National Petroleum Council says that within five years we should be able to operate at 1,500 feet. I am somewhat amazed at some of the statements that have been made in this conference to the effect that they don't see any significant treasure on the sea's bottom and that this has to be demonstrated to them. Through 1968 our own government has realized \$4 billion in rental payments and received bids of \$1.6 billion in 1968 alone. This sum was realized from exploitation that thus far has not gone beyond the 300- or 400-foot mark. Is there any possible reason to doubt that these resources will taper off at the 300- or 400-foot mark? To the contrary, all that I have heard here and read elsewhere concerning the geological makeup of the shelf and the slope beyond the 300- or 400-foot isobath would indicate that the resources which lie there are of tremendous magnitude. While I do not claim to be a geologist, I still think it is a fair assumption to make that we will find under the seas just about what we found under dry land and since the seas occupy five-sevenths of the earth we certainly are not talking about an inconsiderable area of wealth.

Now can anyone be serious when they say that all this is what they had in mind back in 1958? That is why I say that so much that has been spoken here has been irrelevant.

The whole question is not what happened in 1958 and who meant what. Garcia-Amador can retract any remark that he wants to, and I would be just as happy to see all of these jot and tittle analyses of the Conference Report retracted. The important thing is what should be done today, in the light of what we know today?

For, indeed, the world has not lost its options. Exploitability today, for all practical purposes does not exceed 300 or 400 feet and one of the most telling coups de grace administered during this conference was the question Mr. Browning put to Professor Hedberg, "Assuming that present-day exploitability does not exceed 300 or 400 feet, is it your contention that coastal States have a vested interest all the way down to the abyssal ocean?" When Professor Hedberg said, "Yes," he proved he was a geologist, not a lawyer, for under no interpretation of the Convention can such a vested interest be said to exist.

Since exploitability has only gone so far, for all practical purposes, i.e., 300 or 400 feet, the options are open as to what should be done.

Another irrelevancy to this vital issue is doing what comes naturally. I am not interested in natural elongations or the white Cliffs of Dover. If so, Mexico would be ours. Making babies also comes naturally but according to some very knowledgeable people we have got to put some restraints on the activity before the world has a population explosion.

More relevant to that vital issue of what should be done is our map here - and here I must mention the unmentionables - the endless hordes, the millions, the tens of millions, the almost two billion people (half of the population of the world) who are hungry, illiterate, and plagued by disease, whose everyday fight is just to keep alive, flung out over this vast panorama, the as yet unmentioned souls in this debate. Here lies, too, the vast basins of the seas, laden with wealth, man's last disposable frontier. We cannot, we must not, at the moment of decision, turn our glance from these unfortunate humans.

Can there be any doubt as to where this leads us on the vital issue before us? The line which demarks the area in which mankind as a whole will share should be drawn as close to shore as possible. By a happy coincidence, both our national interest in world peace and, as we found out this morning, the scientific interests of society, also dictate a narrow shelf.

I think the whole body of scholarly thinking as well as political thinking relative to the term national interest has moved away from the narrow self-centered doctrines which were the foundation stones of political policy in the last century, toward a recognition that no nation, like no man, is an

island unto himself; that the plight of other nations must be as integral a part of the planning of a State as its own internal problems and that the reverberative effects of the acts of the State on the international scene must always be taken into consideration.

We have, therefore, come a long way. Our interest both internally and externally, to use the words of a recent campaign in New York City, is to "give a damn" about our less fortunate members of the human race who share this earthly planet with us. Strangely enough, in the long run, what would seem to be an unselfish policy is ultimately the most self-serving. The dividends from such a policy are not simply those of enrichment of the soul, however, they enrich the purse as well. We are in essence passing through a period that may be compared to the struggle between capital and labor that began late in the last century and spilled over into this one, in which capital resisted with every measure at its command the hungry demands of labor but in the long run, having capitulated, entered the period of theretofore unequalled prosperity since the more they pumped into the consuming economy the more the consumer consumed.

Does the United States have any special national interest, differing from any other nation that would dictate an exception to the foregoing rules? It would seem to me that if any exceptions were to be written they must be written in favor of those who are less favorably endowed. We have special legislation in this country for the blind to help promote industry for them. We give special credits on Civil Service examinations to disabled veterans. We make no exceptions for the able-bodied and the intellectually endowed. So be it with the world community. We are a country both physically and mentally endowed to such an extent that if the Bible were rewritten we, rather than Israel, might well have been called the "chosen people." Can anyone therefore logically urge that because we have so much therefore we must have a larger share of what is not yet ours? Can we take, in all conscience, as the National Petroleum Council urges, the shelf, the slope, the terrace and the rise all the way down to the abyssal sea? I would not be very proud of my country if it did.

Considerations such as the ones I have described led the Marine Science Commission to conclude that the line be drawn at 200 meters or 50 miles and caused them to remark:

National security and world peace are best served by the narrowest possible definition of the continental shelf for purposes of mineral resource development.

I agree with the Commission and am not unmindful of the fact that our country should not be confronted with critical shortages of raw material and that there will be a tremendous increase in energy use in the next twenty years which is estimated to be at least three times that of the last one hundred years. The Commission has stated that it is essential that the nation "insure an adequate and dependable supply of minerals by increasing the rate of discovery," but the Commission stated that in evaluating the marine resource

potentials it carefully considered the duality of U.S. interests reflected by its national and international goals and rejected "the idea that self-sufficiency in national resources is a desirable goal for American policy. U.S. national policy clearly recognizes the benefit to the international community of expanding commerce in raw materials." The U.S., of course, can never be self-sufficient. It is almost totally dependent upon foreign sources for such minerals as chromium, manganese, nickel, cobalt, industrial diamonds and tin. Forty of seventy-two strategic commodities come from politically unstable areas. In addition, domestic sources supply only a small part of other important minerals, including aluminum, zinc, and tungsten. Anyone, therefore, who feels that by unilateral declaration he can make this country self-sufficient, is pipe dreaming.

By a happy coincidence, in my opinion, the drawing of such a line is also consistent with private interest. Year after year Dr. Blake gets up and says what makes eminent common sense. He says, "I don't care where the line is drawn as long as I can do business on both sides of the line." His remarks have been echoed by several others, such as Mr. Flipse and, last year, Professor Reiff. In the long run, as Professor Auerbach points out, the greater the area placed under international jurisdiction, the better off private interests will be because no matter where they go in the world they will have a single stable authority to deal with instead of whimsical sheiks, hostile juntas and tirading tyrants.

At this point everybody sets up a howl. Let's see what kind of an agency this is going to be, they shout, and, as soon as one is proffered, they begin to pick it apart. Almost all plans that have been proposed look very much alike. As Senator Pell told you at lunch the other day, he has his concepts of such an agency. My UN Committee of the World Peace Through Law Center has drafted an outline of such a structure, the Center for the Study of Democratic Institutions and, of course, the Marine Science Commission have come up with their versions. They all have common concepts - they are all designed to provide private industry with incentives to exploit, to encourage scientific investigations; they all seek an impartial method of allocation. Most seek to freeze the cold war out of the ocean depths.

Now, we have spent four days discussing the Commission model and such discussions are not without merit: the intermediate zone seems to meet with a lot of approval; the first come-first registered doctrine wasn't so popular; but the important thing is to move forward in gross. As Professor Clingan noted, "You cannot build new policy with old tools." We need a stable international agency. Let us not concentrate our energies on tearing down whatever is proposed but toward constructing a stable entity. Let me give you an ephemeral example of what I call being negative: suppose five or six years ago Professor Alexander were to suggest holding a Law of the Sea Institute and decided to call a conference to determine whether such an Institute should be held. First

of all a lot of people would say, "How can you possibly hold an Institute of any length on the law of the sea since the law of the sea is so vague and indeterminate?" Then others would say, "How can you hold a Law of the Sea Institute at Kingston? The Metroliner doesn't even stop there." Others would say, "A Law of the Sea Institute at the University of Rhode Island isn't practical because only Easterners would come there and what good would it be, and besides even if you go there, they tow your car away." Need I go on? I am reminded of a conference in which I participated just before I came here. One of my clients was engaged in merger negotiations with a large conglomerate and we were sitting with the president of the conglomerate and his assistant. His assistant said to me, referring to the president of the conglomerate, "You know I could never work the way Bill works. I have been following him for fifteen years. Whenever a proposition comes our way I think of all the obstacles and all the technical difficulties whereas Bill just gets a general feel for the situation and if he believes the overall decision is right, he moves. He worries about working out the details later based on general guidelines which have been set in advance." That is what is required of us.

I am very happy that Roger Denorme, the Belgian chairman of the Economic and Technical Sub-committee of the UN Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction could come and talk to us, so we could see for ourselves that the United Nations people who are working toward the same objectives as we are are not ogres, but intelligent and dedicated people, and in the long run a stable edifice will evolve, because it must. To those who think that an international agency is incapable of operating a commercially-oriented organization I need only refer them to the World Bank and the International Monetary Fund, or, in fact, to the Common Market. Economists and technicians do not lose their skill when they enter the doors of an international agency, and the idea here is that such an agency would be administered by trained economists and technicians drawn from all areas of the globe. As Dr. Blake stated in the 1968 meeting of this Institute, "If we could be assured of an international regime which was, let us say, as reasonable to deal with as our own government at the present time, as far as incentive for development was concerned, I don't think it would make any difference. As citizens of the U.S. we might have different opinions, but as oil men seeking an incentive for development I don't think it would make a great deal of difference what kind of agency it was as long as we could do business with it."¹

Now, I was going to deliver a much more extensive talk on our national interests in the oceans. Forget it. I am not going to deliver it. If you want to know all about improving our national excellence and such things read all about it in the 1969 Proceedings of the Law of the Sea Institute.

¹ The Law of the Sea: International Rules and Organization for the Sea, ed. L. M. Alexander (Kingston, Rhode Island: University of Rhode Island, 1969), p. 357.

Thursday, June 26, 1969

Danzig

But as these proceedings draw to a close, I have a strange feeling that in the long run we are all going to see eye to eye. We were just standing around talking the other night and I was interested to hear Maxwell McKnight of the National Petroleum Council say, "We live in a different world. You can't use force anymore, and you've got to worry about the next guy."

Perhaps we shall find in the sea what we have never found on land - man's humanity to man.

ADDENDUM*

I have stressed thus far the extent to which our national interest has changed in the last quarter of the century. In many respects, of course, as the Commission has pointed out, it is in the interest of our country that it not be confronted with a critical shortage of any raw material and that both marine and non-marine resources be developed through a policy which will advance economic efficiency. It is also in our interest to say that, consistent with the guidelines that I have outlined, our entrepreneurs are given a fair chance to participate in the development and exploitation of the resources of the sea.

Subject to these guidelines how shall we conduct ourselves if we come face to face with the manifold problems associated with the exploration and exploitation of the sea's resources?

First of all we must observe that we are woefully inept. We are in the primitive stage of developing submersibles, our measuring mechanisms are still crude, our monitoring devices are lacking in sophistication, our fishing fleet is inadequate and outmoded. Therefore, regardless of how high our moral motivations may be our nation owes it to itself just as each individual owes it to himself, as Socrates has stated, to attain a standard of excellence.

As the Commission has pointed out, we have previously addressed ourselves to the oceans in the form of numerous disjointed projects. There is need for a tremendous coordinated program to which to address ourselves toward improving our excellence; and the recommendations of the Commission in the form of a National Oceanic and Atmospheric Agency which would in turn promote the establishment of laboratories on the continental shelf, studies in pure science and technology, cooperation with other countries in the exploration, measurement and monitoring of the seas, enhancement of our manpower pool for the marine effort, management and improvement of the coastal zones and the Great Lakes, improvement of our fishing fleet and improvement of United States and world fishing research, the establishment of an atomic energy plant under the continental shelf and the canvassing of other sources of power to enable us to properly explore and exploit the ocean bottoms are all highly-commendable objectives designed toward

* EDITOR'S NOTE: These remarks were not delivered by Mr. Danzig during the Conference due to limitations of time.

the end of promoting our own excellence. Aquaculture research and development are also desirable. Drugs from the sea have scarcely been tapped. For instance, chemicals obtained from certain toxic fish are 200,000 times more powerful in blocking nervous activity than drugs currently used in laboratories for nerve and brain research. A substance extracted from the primitive hagfish has been used experimentally to slow down the heart during open-heart surgery, making it easier to operate.

Our next objective should be to join hands with all other nations in the world and we, as well as all others, should be given a fair chance to engage in scientific exploration. Our espousal of a decade of such exploration has met with unanimous approval.

But now I must inevitably face the complex problem of how we, as well as all other nations, will obtain a fair chance to engage in the exploration and exploitation of the resources of the sea. Our present share of these resources runs to a very sizeable sum, as I have indicated above. We are not alone in profiting from shelf exploitation. Sixteen per cent of the total world oil recovery presently is derived from the sea, world-wide production having reached about five million barrels.

But the world does not stand still as we debate these problems.

Now, the National Petroleum Council says that if you were to look at the continents and their respective shelves, the shelves are a natural part of each continent and, therefore, should appertain thereto and belong to the respective continent which they adjoin. They are in favor, therefore, of an immediate declaration by the United States asserting jurisdiction over this extended area so that we can preserve these resources for ourselves. I see these steps in all respects as harmful to our own interest. Aside from the fact, as Mr. Young so wisely cautioned at the 1968 Institute, that other countries in the world would say, "Look at those greedy Americans, who are out there flexing their muscles and trying to snatch a large area before they really know what the law is,"² we have a reaction here that is very much like the focusing device on a camera. You cannot narrow any one part without narrowing the total circle. The more we take for ourselves the more we exclude ourselves from the continental shelves that will be appropriated by the other 110 coastal States of the world. As Dr. Schaefer pointed out at the 1968 Institute, the appropriation of this additional territory, which would mean extending exclusivity from approximately 200 meters to 2,500 meters, would approximately double the area presently falling within the zones of exclusivity and increase the exclusively appropriated area from 7 per cent to 14 per cent of the sea's bottom. It is no wonder, therefore, that the Commission stated that while at first this proposal may seem attractive, "Nevertheless the Commission rejects this proposal as contrary to the best interests of the U.S. It would benefit other coastal nations of the world proportionately more than the U.S. and give them exclusive authority over the natural resources of immense subsea areas."

² Ibid., p. 357.

There is still another danger inherent in the National Petroleum Council's position. If we follow their logic all the way down the line and the geological shelves are a natural part of each continent, then it would follow that sovereignty over these areas would appertain to the continent to which they adjoin and sovereignty means exclusive domain not only over the shelf itself but both downward and upward through the water column and air space. As you know a plane cannot fly over our land mass without giving us one hour's notice in advance of its intention to do so and each country claims the absolute right to bar a trespass of its air space over its land mass - witness the shooting down of several of our own surveillance planes recently. This so-called doctrine of attributing to each continent its geological shelf as a natural extension of the land mass can, therefore, have dangerous consequences. It may mean that tremendous areas of the sea, running out as far as several hundred miles in many cases, would be roped off and sovereignty asserted not only downward but upward as well. And if the National Petroleum Council were to reply that we would be good boys and would do no such thing, but would recognize the freedom of the high seas above our shelf, who is to say that the other 110 nations would do the same with reference to their respective shelves? We need only look at the examples of Argentina, Chile, Ecuador, Peru and El Salvador to see that there is a very grave risk that the NPC doctrine will simply lead into an extension of sovereignties into the seas. What is more, it will choke off the international waterways of the world, a situation which this country would seriously want to avoid.

It seems to me that our next objective is to remove the uncertainties between the area that would be confined to national jurisdiction and that which will fall under international jurisdiction. The Commission to Study the Organization of Peace has recommended in its 19th Report that this area be limited to the 200-meter isobath or 50 miles from shore, whichever is greater. The Marine Science Commission adopted the same delineation but indicated that an intermediate zone be established extending possibly as far as 100 miles from shore in which the coastal States would have exclusive access to resources but in which the royalty or rental payments would be made to an International Fund. It seems to me that there is no question in every scholar's mind that the line must be drawn and that immediate steps must be taken to redefine the shelf in more certain terms than it is now defined. In the interim the Commission's suggestion that no State, even if it should undertake exploitation beyond the line as eventually drawn, should do so with prejudice to such international jurisdiction, is a good one.

A final objective that seems to me vital to our national interest is to insure that the area that we are talking about must be reserved for peaceful purposes. If we are to permit the cold war or any hot war to invade the sea, we necessarily prohibit an inverse portion of the utilization of the sea for peaceful purposes. In short, the conclusions that apply to decontaminating the sea from the cold war are the same as those applied to outer space.

I am sorely conscious of another objective that we must necessarily adhere to in this connection and that is that we cannot seriously impair our national defense. I am most encouraged by the fact that both the Soviet Union and the United States have submitted draft treaties to the Eighteen Nation Disarmament Conference proposing that the bed of the sea not be used for weapons of mass destruction (United States proposal) or any military weapons (the Russian proposal).

While it may be necessary for our country to maintain purely defensive mechanisms to guard against impending sub-marine attack, I see no reason why such an objective cannot be assured and our national defense in this area preserved. We must, however, as the Commission stated, "not provide a new dimension for the nuclear arms race."

Our last objective should be to insure that a portion of the proceeds derived from the exploitation of the resources of the sea be devoted to the betterment of mankind as a whole. This, as I have said, is part of the accepted concepts of the present international political scene.

THE OCEAN REGIME OF THE REAL WORLD

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This Panel deals with the national interest in the ocean. Except for a narrow rim around its edges the ocean is international and free for use by all nations, subject to international law. Accordingly, the nature of this international milieu will affect materially, if not determine, the accomplishment of the national interest in the ocean.

It will be my purpose to examine some of the more widely mooted points said to require change in the governance of the use of the ocean in the light of new developments in the application of science and technology to the ocean's use, and in the light of the international political and juridical structure in which those applications are taking place, and will take place, in the near term.

Public speculation on these questions has been rife in the past few years. It will not be my purpose to trace in any detail the origins of this speculation, nor the activities of its promoters (although that would be a fascinating subject for a thesis in political science). I will only indicate some of the highlights along the recent trail for purposes of orientation.

In 1965 there was a White House Conference on the subject.¹ In 1966 the Seventeenth Report of the Commission to Study the Organization of Peace treated the issue of the seabed in considerable detail.² In 1967 Arvid Pardo, Ambassador of Malta to the United Nations, made far-reaching proposals on this subject to the First Committee of the General Assembly³ which led, in course, to

¹ The White House Conference on the Uses of the Sea held in 1965 is a convenient starting point to consider for these affairs in the United States because it served as a rallying point for a number of individuals and organizations concerned with these matters in this country. The UN Committee of the World Peace Through Law Center, the Commission to Study the Organization of Peace, Resources for the Future, and various other organizations and individuals connected with them had been active in this field for several years previously, and at least since 1957.

² Seventeenth Report of the Commission to Study the Organization of Peace, New Dimensions for the United Nations (Dobbs Ferry, N.Y.: Oceana Publications, 1966).

³ Ambassador Pardo spoke before the General Assembly in September, 1967, with sufficient eloquence to get this item on the agenda of the First Committee for 1967. He spoke extensively again on the subject before the First Committee on November 1, 1967 (UN Doc. A/C 1/PV.1515, pp. 2-68).

the establishment by the General Assembly of an Ad Hoc Committee to Study the Peaceful Uses of the Sea-bed and the Ocean Floor beyond the Limits of National Jurisdiction.⁴ In 1968 U.S. Senator Claiborne Pell proposed before the U.S. Senate a "Treaty on Principles Governing the Activities of States in the Exploration and Exploitation of Ocean Space."⁵ Later in the same year the United Nations Committee of the World Peace Through Law Center published a study, a Proposed Treaty Governing the Exploration and Use of the Ocean Bed.⁶ In October, 1968, there was published by the Center for the Study of Democratic Institutions, under the authorship of Elisabeth Mann Borgese, The Ocean Regime,⁷ incorporating a third form of such a treaty, "Draft Statute of the International Regime for the Peaceful Uses of the High Seas and the Sea-bed beyond the Limits of National Jurisdiction." In January, 1969, Senator Pell filed a revision of his former draft treaty in the U.S. Senate.⁸ In March, 1969, there was published Our Nation and the Sea, the Report of the Commission on Marine Science, Engineering and Resources, which contained recommendations on this subject.⁹ This has been followed by the publication of three volumes of Panel Reports.¹⁰ Also, in March, 1969, was published the Nineteenth Report of the Commission to Study the Organization of Peace, in which are incorporated far-reaching recommendations on this subject to the General Assembly of the United Nations.¹¹

⁴ UN Doc.A/Res/2340 (xxii), December 28, 1967.

⁵ S.Res.263, 90th Congress, 2nd Session, March 5, 1968.

⁶ Published as Pamphlet Series No. 10, World Peace Through Law Center (Geneva, Switzerland: 1968). [Hereinafter cited as the "Danzig Treaty," after the Chairman of the Drafting Committee - Aaron A. Danzig - which produced it.]

⁷ The Ocean Regime (Center Occasional Paper, Vol. 1, No. 5 [Santa Barbara, California: Center for the Study of Democratic Institutions, October, 1968]).

⁸ S.Res.33, 91st Congress, 1st Session, "Declaration of Legal Principles Governing Activities of States in the Exploration and Exploitation of Ocean Space," January 21, 1969.

⁹ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969).

¹⁰ Science and Environment (Panel Reports of the Commission on Marine Science, Engineering and Resources, Vol. 1 [Washington: U.S. Government Printing Office, 1969]); Industry and Technology (Panel Reports, op.cit., Vol. 2); Marine Resources and Legal-Political Arrangements for Their Development (Panel Reports, op.cit., Vol. 3).

¹¹ Nineteenth Report of the Commission to Study the Organization of Peace, The United Nations and the Bed of the Sea (New York: Commission to Study the Organization of Peace, 866 UN Plaza, 1969).

During these few years a very large literature on this subject has arisen which I will make no attempt to review. I have pointed out the above actions as examples from the work of a relatively small but vigorous group of individuals and private and public organizations, who seek to change international law and the organization of international affairs for a variety of purposes and are employing the use of the ocean as a vehicle for seeking this accomplishment. It will be my purpose only to discuss some of the main points that have arisen in the ensuing debates.

1. Lack of Regime for the Deep-Seabed

It is often implied, and sometimes stated, that there exists no regime of law to cover the exploitation of the minerals and other resources of the deep-seabed. This, of course, is untrue. There has been, as yet, no general division for juridical purposes in international law between the water column of the high seas, the air column above it, and the solid earth column below it. They remain maritime expanses that appertain to no one.

The high seas as defined in Article 1 of the Convention on the High Seas¹² means all parts of the sea that are not included in the territorial sea or in the internal waters of a State. The high seas are open to all nations, both coastal and non-coastal, and no State may validly purport to subject any part of them to its sovereignty (Article 2). Freedom to use the high seas under rules of international law shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the freedom of the high seas (Article 2).

To be specific, there is no reason why the United States cannot license a firm to mine anything on the deep-seabed anywhere under existing international law in the same manner that it licenses vessels wearing its flag specifically to engage in the mackerel trade. By such a license it can regulate the activity of that firm in those operations in any manner that accords with its municipal law, as it does the vessels of others of its firms licensed to do various other things on the high seas. It can do this without purporting, or implying, any claim to sovereignty or jurisdiction over the nationals of other States similarly engaged in the same geographic area.

Similarly, the United States can license any firm within its jurisdiction to mine in this fashion within a particular geographic area, by

¹² Convention on the High Seas, U.S.T.2312, T.I.A.S.5200, UN Doc.A/CONF.13/L.53 (effective September 30, 1962).

particular means, by particular amounts, by particular time intervals. With respect to firms within its jurisdiction it can grant these rights exclusively to it, or partially to several such firms, or allocate general rights to all such firms, as it chooses. It can assess whatever charges against such firms it chooses to do, and it can allocate funds so received entirely to its own treasury, or to the United Nations, or to a particular fund for the underprivileged, or for other purposes.

The problem is not in international law. If any problem exists it is in the absence of specific legislation in the United States Code, and this is subject to rectification by the U.S. Congress.

What I have said with respect to the United States, of course, is true of other nations.

2. Disputes Over the Use of Deep-Seabed Resources

Disputes over the use of deep-seabed resources falling within the purview of international law arise between sovereigns, not among their citizens or between the citizens of one sovereign and another sovereign. While citizens and firms are frequently the objects of international law, only sovereigns are its subjects. The citizen on the high seas operates under rights pertaining to the sovereign whose flag he wears, not under rights pertaining to him as an individual under international law.

There is a wide range of procedures available for the peaceful settlement of such disputes among sovereigns¹³ and they are in use steadily in the practice of nations. The normal way to settle such disputes is by ordinary diplomatic communication. Not infrequently this leads to an agreement between the sovereigns to limit the activities of their citizens on the high seas in a manner that is mutually agreeable and eliminates the dispute. This may be an agreement for a short period of time, say a year, open to renegotiation at the end of that time. There are a number of such agreements which have worked well over a considerable span of years. The agreement may last for a stated period of years, and many such agreements provide for an international commission appointed as among the nations party to the agreement to attend to these affairs, jointly in the interim, within terms laid down by the convention establishing it. By such agreement the allocation of the use of particular resources as between the citizens of the nations party to the agreement can be, and sometimes is, made.¹⁴

¹³ "Charter of the United Nations," Everyman's United Nations (New York: United Nations Department of Public Information, 1949).

¹⁴ "Treaties and Other International Agreements Containing Provisions on Commercial Fisheries, Marine Resources, Sport Fisheries, and Wildlife to Which the United States is a Party," 89th Congress, 1st Session, Committee on Commerce, January, 1965.

Other procedures include arbitration or referral to the International Court of Justice. Admittedly there can be situations arise where the interests of sovereigns are so incompatible that there is a refusal to reach agreement through these normal peaceful channels, or that it takes a number of years of intensive dispute before this is done. An example is provided by the dispute among the United States, Ecuador, Peru and Chile over the claim by the latter three to exclusive jurisdiction over the sea, the seabed, and their resources to a minimum distance of 200 marine miles from shore. The three claimant countries have repeatedly refused to join the United States in taking the case to the International Court of Justice.¹⁵ Peru and Ecuador from time to time seize a United States vessel under this claim. United States vessels have continued to operate in the disputed area. The United States has attempted to protect its citizens in exercising its rights in the disputed area not only by vigorous diplomatic activity but by general legislation designed to mitigate the economic effects on its vessels of seizure or molestation on the high seas under claims not recognized by the United States.

It needs to be pointed out that the Pell, Danzig, Borgese, or other proposed draft treaties alluded to above will not prevent or solve disputes of this nature. Treaties are not binding upon sovereigns under international law unless accepted by the particular sovereign. The International Court of Justice has recently once more laid out the limitations of such conventional law in its decision on the North Sea Continental Shelf Cases involving the Netherlands, the Federal Republic of Germany, and Denmark.¹⁶ The International Court of Justice does not have jurisdiction in such cases unless the particular sovereign has accepted its jurisdiction generally or will stipulate this for the particular case. The General Assembly of the United Nations cannot enact legislation (no matter what it is called) which is binding upon sovereigns unless the sovereign in question agrees that it is.

3. The Outer Edge of the Continental Shelf

A driving worry expressed repeatedly by the proponents of change noted above, is that there was going to be a mad "colonial" scramble by the nations of the world to extend their sovereignty out over the seabed in order to obtain exclusive jurisdiction over the rich resources lying there. This fear was successfully inserted in a speech by President Johnson.¹⁷ What needed to be done

¹⁵ "Santiago Negotiations on Fishery Conservation Problems, Santiago, Chile, September 14-October 5, 1955," Public Services Division, Department of State (Washington, D.C.: 1955).

¹⁶ North Sea Continental Shelf Cases (Federal Republic of Germany/Denmark/Netherlands), Vol. III, Court Decisions (The Hague, Netherlands: International Court of Justice, 1969).

¹⁷ "President's Remarks at the Commissioning of the New Research Ship, the 'Oceanographer,'" 2 Weekly Compilation of Presidential Documents, 1966, pp.930, 931.

rather quickly, they felt, to stop this was to prohibit expropriation of the seabed. To do this it was necessary to define what the present bounds of sovereign territoriality were so that what lay beyond national jurisdiction could be defined. This demanded a more precise definition of the outer boundary of the continental shelf.

There are several points in this complex idea that need to be dealt with. They include:

(a) As set out clearly by the International Court of Justice in its recent decision in the North Sea Cases, the continental shelf of a nation constitutes a natural prolongation of its land territory in and under the sea ipso facto and ab initio. It is so by inherent right. It is exclusive. It cannot be disposed of by others to others except by agreement of the sovereign.

(b) The doctrine of the continental shelf is a recent instance of encroachment on maritime expanses which, during the greater part of history, appertained to no one. The principle is applied that the land dominates the sea. The doctrine arose only since the Truman Proclamation of September, 1945. It follows that where the land no longer dominates the sea, the continental shelf ends and beyond are maritime expanses appertaining to no one. No nation may validly purport to subject any part of them to its sovereignty.

(c) Boundaries of nations do not require precise definition and often, even as to land boundaries, are not precisely defined for long periods of time. This does not detract from their existence.

(d) Neither the Conference of Plenipotentiaries which negotiated the Convention on the Continental Shelf in 1958, nor the International Law Commission which in 1956 drafted the concepts generally included therein,¹⁸ felt that either the practice of nations, knowledge of the resources and structure of the continental shelf, or methodology of profitable extraction of such resources was sufficiently clear to permit a useful definition of an outer boundary to the continental shelf that would be agreeable to the nations that was any

¹⁸ Report of the International Law Commission Covering the Work of Its Eighth Session, 23 April-4 July, 1956, Gen.Ass.Off.Rec., Eleventh Session, Supp. No. 9 (A/3159).

more precise than "the adjacent land to the depth of 200 meters or beyond that to where the depth of the superjacent waters admits of the harvesting of the natural resources of the said areas."

Knowledge of the seabed has advanced spectacularly in the ensuing decade and this is one of the most rapidly advancing fields of ocean research, but it is still highly fragmentary as respects the location of seabed resources that can be practically exploited. There is still no economic extraction of resources from the seabed where the depth of the water is much greater than 200 meters, and technology is not advancing those depths rapidly (this will be alluded to further below). As noted by the International Court of Justice in its decision on the North Sea Cases, the practice of nations in this field has not crystallized further than it was in 1958 to any marked degree. Accordingly, there does not appear to be any strong reason in current human activity respecting the seabed that did not exist in 1958 which requires, or makes beneficial, any more precise definition of the outer boundary to the continental shelf than was given in 1958.

There is no mad rush to colonize the deep-seabed. The claims in Latin America occurred before 1958, and are no more valid now than when made.¹⁹ As noted above, the International Court of Justice states that such rights as each nation holds in its continental shelf are inherent to it and do not require to be asserted by it to be valid. The obverse is equally true.

4. The Wealth of the Seabed

As normally happens with hoaxes, if you have the forbearance and strength to wait out their original thrust, the stories of the billions of dollars of wealth to be had each year in the reasonably near future from the seabed outside national jurisdiction are now bouncing back to haunt the tellers as unbiased economists and experts bring in their testimony and this is evaluated by competent bodies, including the Economic and Technical Sub-Committee of the General Assembly Committee on the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction.

The truth is that there are no billions of dollars worth of profit (excess of value over cost) to be had from the very deep-seabed.

¹⁹ B. MacChesney, International Law Situations and Documents, 1956 (Navpers 15031, Vol. II [Newport, Rhode Island: Naval War College, 1957]).

There are great quantities of manganese nodules on the deep-seabed that contain other metals as well, such as cobalt and nickel. There is no technology presently available by which they can be economically harvested and their component metals refined to sell in the market against the same metals from land deposits.²⁰ This applies so far even to shallow, large deposits discovered in the Great Lakes area and the substantial deposits rather well-known in moderate depths on the Blake Plateau. The one company actively working on developing the technology is investing some millions of dollars in doing so and does not anticipate the technology will be ready for full-scale testing before the mid-1970's. Neither it nor any other company is presently planning actual seabed mining activities for manganese nodules, although work is going on by several entities to delimit and classify deposits against the day the technology and markets are ready.

In view of the massive geographic scale on which these nodules appear to be distributed, the major amount of capital that will be required to mine them when the technology is available, and the abundance of land sources of the metals, there is no evidence whatever that disputes among nations arising from conflicts between their citizens while mining the seabed for manganese nodules beyond national jurisdiction will perturb the international scene to a detectable degree within the lifetime of those worried about this problem.

It is quite likely that there are petroleum deposits at several points under the deep-seabed, such as the Sigsbee Knolls of the Gulf of Mexico, north of the Cape Verde Islands, and in the Mediterranean. But it is well-known that there are extensive such deposits on the continental shelf in many parts of the world in much shallower waters that are cheaper to get at, and as geological exploration goes on there is continuous location of new deposits. The problem is not finding oil and gas, it is getting it out of the ground and to market at costs competitive with other sources of energy. Practical recovery from the continental shelf is now not going on much where the depth of water is greater than 400 feet. Everybody agrees that is continental shelf and within national jurisdiction. Costs go up sharply as depth of water increases beyond that, and technology is just as hard and actively at work lowering the cost per unit of extraction from tar-sands and oil-shales, shipping to market from land sources in the Arctic, and in developing the generation of competitive energy

²⁰ Much new and definitive information on the economics of seabed mining was set out in various papers and discussions at the Offshore Technology Conference held in Houston, Texas, April, 1969, and at the annual meeting of the Marine Technology Society, Miami, Florida, May, 1969, and will be available when the Proceedings of those two sessions are printed. Particularly pertinent are economic studies made by Prof. Walter J. Meade, University of California, Santa Barbara, papers presented by Mr. John Flipse, President, DeepSea Ventures, Inc., discussion comments by Willard Bascom, President, Ocean Science and Engineering, Inc., by representatives of Kennecott Copper Company, and other persons actually involved in these ventures and explorations.

from nuclear sources, as it is in getting petroleum out cheaper from under deeper water.²¹

If there is any one thing illustrated by the debates in the General Assembly on this subject over the past couple of years, neither developing nor industrialized countries (with the possible exception of the United States) have the slightest intention of allocating to the United Nations or any other entity any resources of the seabed which may be inherently its own either under customary international law as interpreted by the International Court of Justice, or by interpretation of the Convention on the Continental Shelf.²² Petroleum deposits on continental shelves now appear to be sufficiently more ubiquitous than they did in 1958, or even 1967, that the nations which may have workable deposits in reasonable depths offshore appear to be more numerous than those who do not.

Other minerals resources such as diamonds, phosphorite nodules, tin, gold, platinum, and other heavy metals, as well as practicably extractive sand and gravel, all appear to be quite exclusively things of the continental shelf even as narrowly defined, and, therefore, subject to national jurisdiction.

Thus \$6 billion per year revenue for the poor of the world and the support of international government free from strings imposed by national governments appeared suddenly in the oratory at the United Nations in the fall of 1967, but by the spring of 1969 it had disappeared without a shovel being turned or a dollar emerging. This is about the length of time required to explode the South Sea Bubble of the previous century. Some technologies do not advance as rapidly as others.

5. Increasing the Use of Marine Resources

It is one of the frequently advanced reasons for need to radically revise the governance of the use of the sea that the disposal of social surplus in the world between the rich and the poor needs to be done in a more equitable manner. No reasonable person doubts the validity of that thesis. It has been the prime social and economic problem of world society since the cultivation of two-eared wheat began in the Middle East perhaps ten thousand years ago. It is only the relevance of the use of marine resources to this thesis that is questionable.

²¹ Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, 1969).

²² Report of the Ad Hoc Committee to Study the Peaceful Uses of the Sea-bed and the Ocean Floor beyond the Limits of National Jurisdiction, UN General Assembly, 23rd Session, A/7230 (1968).

The reason why marine resources are not more used than they are at present is primarily because competitive products can be obtained from land sources and got to market cheaper. The obverse of that statement is that if marine resources are to be used to a greater extent than at present the cost of getting them out of the ocean, processing for marketing, and distributing them to market must be made cheaper. This applies equally to fish and shellfish, manganese nodules, phosphate nodules, petroleum, tin, gold, diamonds and platinum (as well as sand and gravel).

The people (or organizations) who perpetrated the hoax on Ambassador Pardo that there would soon be \$6 billion of new revenue available per year with which to support the United Nations, or to divide out among the developing nations, or to fill other good purposes, could not have been so economically naive as to have believed any such nonsense, and their motives are not clear to me. By their activity they have damaged the support of much good work by United Nations specialized agencies that has been aimed productively at assisting the developing nations to a greater use of the ocean. I refer to the work of the United Nations Development Program, FAO, UNESCO, WMO, ECOSOC, ECAFE, IBRD, Asian Development Bank, and African Development Bank.²³ The reason they have damaged this support is that there is a sufficiently strong reaction against their fanciful schemes to internationalize the ocean in the name of the United Nations or a new international body that these other quite useful, and in some cases long standing, activities of the United Nations agencies are beginning to be seen in national legislatures (whence originate all funds supporting the United Nations and its specialized agencies) as a sinister plot by internationalists to destroy the foundation of sovereign national government. This does not sit much better with socialist than with capitalist, or mixed, national governments and casts an added aura of doubt about the United Nations and its bodies, which was not needed.

The Pell Treaty calls for the establishment of a Licensing Authority; the Danzig Treaty, for a Specialized Agency, Authority, or Ocean Agency; the Borgese Treaty for an elaborate Ocean Government of Executive, Legislative, and Judicial character; the Eichelberger (Commission to Study the Organization of Peace) recommendations include the establishment of an International Authority for the Sea; the Commission recommendations include those for an International Registry and an International Fund. Each contemplates a considerable new machinery of government in the international field, not to grow with need out of established international machinery, but as new creations to perform new duties not now being carried out.

None of these persons or organizations appear to have attempted to calculate the amount of new money that will be needed to run the new

²³"Marine Science and Technology: Survey and Proposals," United Nations Economic and Social Council, Forty-fifth Session, Report of the Secretary-General, E/4487, 24 April, 1968 (New York: United Nations, 1968).

machinery. They have rather naively assumed that it will come from the normal national sources now supporting international activities, or from the sea by taxing newly the use of the resources of the sea.

If it is going to come out of national treasuries by traditional means it appears obvious that other useful activities of the United Nations will have to be curtailed, because national legislative bodies in all parts of the world are becoming increasingly reluctant to provide added funds to the United Nations and its specialized agencies.

If it is going to come as new revenue from taxes on new ocean-based industry two things may be said:

(a) these will be taxes on the operations of national companies which will not come into national treasuries, and the number of nations who are likely to vote for such a thing in the General Assembly are not many; and

(b) these will be added financial burdens on new industry in the ocean, further decreasing its competitive ability against land industry, and thus delaying further the initiation of new use of ocean resources.

Because of the presumed (but not evident) great mineral wealth of the seabed all of these schemes are aimed first, and most heavily, at mineral wealth but all of them either directly or indirectly assume functions respecting living resources that can be summarized as follows:

(a) Petroleum resources have been, to date, the spectacular providers of new income from the sea to governments, chiefly arising from bids for rights to drill on the United States continental shelf. Practical extraction of oil from the seabed is now limited to somewhat less than water depths of 200 meters. Drilling and extraction under greater depths is technologically feasible now but not economically feasible. The economics of the oil industry are too complex for an outsider to fathom, but the fact that production is not moving deeper backs up the statements by oil people that not only have economic levels been reached, but that the oil companies presently using seabed resources have not got that production, even, to a profitable level.

The people who informed Ambassador Pardo about the billions of dollars of profit available for picking up on the seabed appear to have reasoned from this syllogism: The United States has collected a few billion dollars from its petroleum people for rights to drill on its continental shelf; there is petroleum and other resources beyond the

200 meter isobath or 50 miles from land (whichever is greater) limit; therefore, the revenue which an international agency could collect for rights to drill or mine out beyond that limit could run into many billions of dollars per year net profit.

This syllogism conveniently overlooks some vital facts, among which are:

(1) The United States petroleum business is protected by tax allowances and quota provisions in this enormous market to the extent that crude sells for about twice the world price (roughly \$3.00 versus \$1.50 per barrel). This enables it to pay the United States government these phenomenal costs for the right to drill on its outer continental shelf. These screw-ball economics do not obtain for other petroleum production outside the U.S. customs area, and are not necessarily a permanent condition here.²⁴

(2) The cost of drilling production wells for petroleum goes up exponentially with depth of water²⁵ and that is why production lags so far behind exploration as to water depth. New technology presently in sight, but not yet applied, does not mitigate this problem much. Cost goes up with depth of water. At the same time, technology in the recovery of petroleum from oil-shales and tar-sands advances in the direction of bringing cost per unit of production down on that source. Additionally, the technology and economics of producing energy more cheaply from nuclear fuels moves forward slowly but steadily and massively.

(3) It is impractical to exploit oil off the coast of a country without having the permission and good will of that country, no matter what the legal situation is. The main cause is not the fear of harassment but is the necessity for logistic support. An oil firm company can

²⁴ Walter J. Meade, "The System of Government Subsidies to the Oil Industry," paper presented before the U.S. Senate Sub-Committee on Anti-Trust and Monopoly, March 11, 1969.

²⁵ While these statements are given concrete backing by the report of the National Petroleum Council (supra, n. 21) they were set out in greater detail by Dr. F. Gilman Blake, Chevron Research Corporation, in the course of panel discussions at this meeting and appear in these Proceedings on pp. 479-80.

afford to pay to one governmental body for permission to operate, but not to two.²⁶

(4) Whether one considers the Convention on the Continental Shelf, or the decision of the International Court of Justice in the North Sea Cases, or the report of the National Petroleum Council, or the report of the National Marine Commission, or the proposals referred to herein as the Pell, Danzig, Borgese, Auerbach, and Eichelberger recommendations, the continental shelves of most countries in the world are now terminated at a depth more or less greater than 200 meters. Thus the economics of producing oil from the sea floor has to improve enough to at least double the depth from which recovery is possible before a problem will arise under the narrowest width of the shelf presently contemplated. This looks to be a long time off. Even then the nations can license their own firms to operate beyond their national jurisdiction under existing international law.

(5) A scanning of the General Assembly debates does not indicate a willingness of nations who have the possibility of petroleum deposits near their coasts on the shelf, as broadly defined by the National Petroleum Council, to turn over their putative rights to any international body. Such nations would appear to make up a majority of United Nations members, or very close thereto, which makes the possibility of General Assembly action ratifying such a policy unlikely. If the General Assembly did take such action it would not apply to an unwilling sovereign. Thus the amount of revenue such an international body could expect from such sources in the foreseeable future would certainly be far short of its own costs of operation, let alone any excess to devote to good works. The syllogism stated above appears to have no basis of reality.

(6) In the reports of the prophets of change referred to above much is made of the phrases "use of their resources in the interest of mankind," "for the benefit and interest of all mankind," and "the common heritage of mankind." While these are what are called "O.K." words in the argot of the day, what they have meant heretofore in international law is that resources of the high seas belong to

²⁶ Blake, ibid.

him who first reduces them to his possession, and they were the common heritage of mankind in the sense that anyone competent to harvest them was free to do so within the usages of international law and the practice of nations.

(b) Harvestable phosphate nodules, heavy metals, sand and gravel, diamonds, and such like, are, so far as known, on the continental shelf within national jurisdiction and not available for international revenue-raising without the consent of the sovereign. Even at present it is not economical to harvest many of these shallow-water resources. To put added taxes on deeper deposits which may be outside national jurisdiction (and at present unlocated) would delay further the beginning of their harvesting. No revenue is in sight from these sources for an international agency.

(c) Manganese nodules, and the economics of harvesting and marketing their components, have been studied intensively and recently. Everyone concerned agrees that with existing technology these cannot be harvested profitably. They are clearly abundant beyond the limits of national sovereignty. To add new revenue-raising burdens to their harvesting will clearly slow down further the beginning of their harvest.

(d) Living resources are the most valuable present crop had from the ocean and, in fact, the annual crop of them is valued higher than that of all other resources presently harvested from the ocean put together (including petroleum from the continental shelf).²⁷ Furthermore, they are harvested broadly outside the limits of national sovereignty.

The current efforts of national governments and international agencies in respect of living resource harvest from the ocean are uniformly directed toward lowering the cost per unit of production of fish and shellfish from the ocean, and substantial governmental funds (at least a half billion dollars per year in toto) are used for this purpose. The reason is to increase the yield of protein food from the sea. The means used are research to provide conservation, to explore for new resources, to perfect technology, and quite frequently to

²⁷ P. M. Fye, A. E. Maxwell, K. O. Emery, B. H. Ketchum, Uses of the Sea, ed. E. A. Gullion (Englewood Cliffs, New Jersey: Prentice-Hall, Inc. for the American Assembly, 1968). FAO gives the value of the world catch of fish and shellfish, at the fisherman's level, as about \$9 billion in 1966 (personal communication from Roy Jackson). It has increased to about \$10 billion in 1968.

subsidize fishermen to increase their ability to harvest. This results in an increase in production of from 6 to 8 per cent. Resources are available to permit a substantial annual yield of food from the sea somewhere between four and forty times present levels.²⁸ The difference between four and forty is chiefly in economic estimates and not in natural history estimates.²⁹

The need for animal protein in the world is such that the nations are not going to reverse their present activities in this direction by permitting a raising of costs of production to support a new machinery of government which will be of doubtful utility.

One could go on criticizing the suggestions of Pell, Danzig, Borge, Eichelberger, and the Marine Science Commission and others in a negative manner for some time and in considerable detail. Their proposals invite such extensive negative criticism because they are not built on the real and extensive practice of nations in these matters, and the substantial progress in the increased use of the sea being made along these lines. To legislate for space, or for Antarctica, where there is not much history of human activity, or many resources available for use, is one thing; to revolutionize the governance of the ocean where there has been a long history of human utilization, and where there are many additional resources for use, is another. To revolutionize the relationship of nations among themselves, and to support the substitution of international government for international cooperation among national governments on the sole excuse that better governance is needed for the ocean is patently impossible. The reed is too slender to support so large a bloom.

Yet everybody dealing seriously with the ocean realizes that there is need for much additional international cooperation respecting the use of the ocean, and a steady improvement in the governance of that use as it grows more intensive. Accordingly, I propose to discuss a few of these main problems that exist in the real world and suggest some approaches to their solution. There will be no surprises by way of suggested solutions.

1. Freedom of Commerce

The key problem respecting the ocean is to keep free the flow of commerce among nations over, through and on the ocean so that this can be exercised by all nations with reasonable regard to the interests of other nations in their exercise of the freedom of the seas.

²⁸ M. B. Schaefer, "The Potential Harvest of the Sea," Trans. Amer. Fish. Soc., 1965.

²⁹ W. M. Chapman, "Food from the Ocean," Proceedings Fourteenth Annual Meeting, Agricultural Research Institute, NAS/NRC, Washington, D.C., 1965.

Few, if any, nations are entirely self-supporting within their boundaries and those who are nearest to being so self-supporting are among the poorest. The very real hope that now exists in the world for the extinction of poverty and the liberal provision of needs and desires for existence to all is dependent absolutely upon the flow of ocean commerce. Land trade routes are not able to handle the level of commerce among nations required to support the present human population of the world at present economic levels, much less larger human populations at improved social and economic levels. To the extent that ocean commerce is retarded or prevented from growth, the economic situation of the human population will be degraded, or the population will shrink, or both (depending upon the severity of interference with commerce).

2. International Straits and Narrows

The key problem in keeping ocean commerce open is at the choke points where the land narrows the sea-passage. Under the three-mile rule for the territorial sea the present channels of commerce grew. Under a 12-mile rule for the territorial sea many of these straits and passages disappear as channels of traffic of an international character and come under national sovereignty. Under a 50-mile rule for the territorial sea most international straits would disappear. Under a 200-mile rule for the territorial sea the major existing channels of sea commerce would mostly pass through territorial waters at some point or another.

Although customary international law permits of the innocent passage of ocean commerce through the territorial sea, the granting of that privilege by a sovereign is a quite different thing in practice than a sovereign exercising a right pertaining to him under international law. The temptation of the sovereign owning the territory through which a trade channel passes is to interfere with that passage to his own advantage.³⁰ This has been evidenced repeatedly through history. Also the situation in times of war changes the power of both the belligerent and non-belligerent sovereign, under customary international law, materially.

To the extent that the territorial sea is broadened the free flow of commerce among nations, over, under, and on the sea is threatened.

The real problem here, however, is that the 1958 Convention did not clearly provide for warships and military aircraft to transit in innocent passage international straits or those that had formerly been international. A new lot of naval strategists wish to reopen the law of the sea again to attend to

³⁰ While controversies over international straits and passages are numerous in history (see Heinzen, n. 36), the recent controversies respecting the Suez Canal, the Panama Canal, the Gulf of Aqaba, the Straits of Malacca, the Cuban incident, the great tension in South Arabia, serve to show that these same forces and inclinations by sovereigns are equally alive today.

this. They haven't got enough votes on their side to elect a dog-catcher, much less get such a measure adopted by a two-thirds majority of a new conference of plenipotentiaries on the law of the sea. By the time they will have found this out, in mid-conference, we will all be worse off than if they had not brought up the subject.

3. Marginal Seas

Another part of this sea commerce problem is the attempt by Russia to limit the full international character of marginal seas.³¹ The attempt is in progress with respect to the Barents Sea, the White Sea, the Baltic Sea, the Chuckchi Sea, the Ohkotsk Sea, the Black Sea, and presumably eventually with the Yellow Sea, East China Sea, South China Sea, Red Sea, and Mediterranean. The Canadian desire in respect of the Gulf of St. Lawrence, Hudson's Bay, and the Northwest Passages are not comforting on this aspect. The Indonesian and Phillipino contentions in respect to the archipelago envelope theory are also still around.

4. The Flow of Military Power

It is nasty to talk about military power because, like some other necessary human activities, this is supposed to be treated in private. The difficulty is that free commerce on, over, and under the sea has never existed in the absence of military power to enforce that freedom, in the same way that freedom to peacefully use the streets of cities, and the highways of land, has never existed for any considerable period of time in any particular place in the absence of police force. We all hope, and believe, that the millenium has come with the United Nations Charter and that this is all dead history. There is nothing in the practice of nations, or of human beings generally, since 1945 that gives any credence whatever to such optimism.

Military force is national. International military force is inconsequential and could not fight its way out of a paper bag. There is no reason to think that situation will improve. It has actually degraded in the past decade. Unless military force pledged to protect international law can flow where commerce flows, commerce is unlikely to flow there indefinitely. Broadening the territorial sea, making international straits and narrows into national straits and narrows, and modifying the international character of marginal seas are all measures directed toward limiting first the flow of military power, and only secondarily the flow of commerce. But the two are inseparable, and the latter cannot long exist without the former.

³¹ P. D. Barabolya, A. S. Bakhov, L. A. Ivanashchenko, D. N. Kolesnik, V. D. Logunov, S. V. Molodtsov, and Ye. N. Nasinovskiy, Manual of International Maritime Law (Moscow, USSR: Military Publishing House of the Ministry of Defense of the USSR, 1966).

5. Military Security

A major selling point of the people interested in revolutionary change in the law of the sea has been the desire to demilitarize the ocean. It has very large public appeal because everybody wishes to decrease the possibility of war and the arms budget. The net effect of this gambit to date, however, has been only to give the Russians a small public relations ploy to make in the Eighteen-Nation Disarmament Committee.

It is well-known that a major factor in the present strategic balance of power in the world is the opacity of the ocean to most of the electromagnetic wave spectrum and the short-term defense advantage this has given the United States, with its nuclear powered submarines equipped with ICBM missiles. It is equally well-known that the United States has been long employed in improving its capability to make transparent the ocean, particularly in the audible range of the spectrum. The first steps in this process, as is well-known, has been the deployment of listening devices broadly over the deep-seabed as well as over the continental shelf.³² Other steps are in progress.

It would be ridiculously foolish for the United States to terminate or lessen this effort to eliminate the hiding capability of weapons systems within the ocean, and no sensible person or nation in favor of maintaining world order is in favor of it.

Aside from this opacity feature of the ocean, and some light additional pollution risk, the use of the continental shelf and the deep-seabed for the deployment of weapons systems is no more wicked than their deployment elsewhere. The purpose of weapons systems, whether on the seabed, in the ocean, on the ocean, on land, in the atmosphere, or in space is to kill people and destroy property to the net advantage of the possessor of the weapons system. Where it is deployed is not of much consequence to the peace of the world unless it is in the hands of a possessor wishing to change world order by force and gives him sufficient advantage to lure him into the attempt.

All of this is appropriately a part of the general disarmament problem, and the general world peace-keeping problem, so intimately that it cannot be dealt with practically and separately therefrom as an ocean problem.

6. The Living Resources Competition

Most of the actual, as contrasted with the fanciful or future, interaction among nations over the use of the ocean arises from friction among them

³² Robert A. Frosch, "Military Uses of the Ocean," Papers Presented at Second Conference on Law, Organization and Security in the Use of the Ocean, Columbus, Ohio, October 5-7, 1967 (Columbus: Mershon Center for Education in National Security, Ohio State University, 1968).

and their citizens over the harvesting of living resources from the sea. This has been the case for the past three hundred years and more, and is likely to be for the next three hundred years.

The old and long-term problem initiating fishery disputes is competition for the use of the resource in the high seas. No general formula has been capable of being devised yet to settle this major cause of friction among nations and it is unlikely that one will be so long as human beings remain what they are and are governed by human sovereigns. The basic causes are cupidity, mistrust, and jealousy. The lack of general formulation to solve this problem is not for lack of trying. More diplomatic effort has been put into the attempt over the years than into most international activities. No such formula could be devised at the 1958 and 1960 Conferences on the Law of the Sea, for instance, and in the end the success of those two conferences turned on that aspect.

The only satisfactory way to settle a fishery dispute of this nature is for the nations whose citizens are involved to negotiate out an agreement, or agree to have this done for them by an arbitral tribunal or the International Court of Justice. All of these systems have been successfully employed in the recent past. The numerous fishery agreements³³ negotiated annually or frequently among Russia, United States, Canada, Poland, Japan, Australia, Norway, Iceland, and England, in different combinations, are proof that the system is a useful one, as are the several major arbitrations of the nineteenth century, and the Anglo-Norwegian Fishery Case before the International Court of Justice after World War II.

As an example of why this works the following anecdote is related. I met a Russian colleague of mine in Rome a year or so ago and congratulated him on the successful negotiations recently completed between U.S.S.R. and U.S. over the fishery for king crab in the Northeast Pacific Ocean. He smiled wryly and said, as follows: "Before leaving for Washington the Russian delegation was called in to be personally instructed by Mr. Kosygin. Mr. Kosygin said he wanted us to understand that if and when Russia went to war with the United States it would not be over crabs."

Until sovereign national governments, or the high seas, are done away with there is unlikely to be any way to prevent disputes among them over fisheries lying in the high seas. The disputes will be settled by peaceful means or by force.

7. Living Resource Conservation

The conservation of living resources is a different matter. It is agreed among the nations that "conservation of the living resources of the high

³³ Convention on Fishing and Conservation of the Living Resources of the High Seas, 1 U.S.T. 138, T.I.A.S. No. 5969, 559 U.N.T.S. 285 (effective March 20, 1966).

seas" means the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products; and that all nations have the duty to adopt, or to cooperate with other nations in adopting, such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas.³⁴ That Convention goes on to provide a suitable international mechanism for the settlement of disputes arising out of fishery conservation problems. It is in force. Furthermore its principles are in use even as among nations which for one reason or another have not yet ratified it (as, for instance, the Russian-Japanese fishery arrangements in the Northwest Pacific).

There is a wide variety among the twenty-three international fishery bodies and commissions currently dealing with fishery conservation problems in the world, and a body of experience in such matters extending over the past sixty years.³⁵ I suggest that in this body of experience and practice are examples that will be more practically useful among nations dealing with joint problems arising from harvesting the minerals of the deep-seabed than in any formulation put forward in the Pell, Danzig, Eichelberger, Borgese, and Marine Science Commission proposals.

SUMMARY

In my view, the people who have seized upon the ocean as a vehicle for reforming the social, economic, and diplomatic conduct of the human race have done, and are doing, great damage to the cause of improving the use of the ocean as a means for bettering mankind.

They have held forth, to the poor nations and the uninformed, promises of great wealth from the ocean that does not exist. The expensive international machinery they have proposed, if put in train, would use up more money than it would take in and this would be subtracted from the financial support of the good works now done by the United Nations and its family of specialized agencies.

They have held forth promises of peace and good will that would result from making militarily neutral the seabed while well knowing that in the arsenals of the world are weapons of several types stored in sufficient volume to wipe out the human race several times over, with delivery systems in the hands of more than one nation, and that sweeping the seabed clean would contribute inconsequentially to the balance of power, or the peace, of the world.

³⁴ Ibid.

³⁵ Analytical Compendium of International Sea Fishery Bodies (Rome, Italy: FAO, 1969), in press.

They have attempted by clumsy subterfuge and quickly detected indirection to substitute international government for international cooperation by sovereign national governments, and by so doing have set rich against poor, strong against weak, and developing against industrialized to the end that progress in achieving international cooperation among governments and peoples has been slowed down.

They have noted the lack of a regime for the deep-seabed when one fully suitable to present needs is available, and they have demanded an urgent definition for the outer boundary of the continental shelf more precise than the vague one deliberately adopted by the comity of nations in 1958, on the basis of rapidly deepening technological needs that do not exist.

With their alarms and excursions they have excited even more vividly the normal greed of the ignorant, and with their pseudo-science and existentialist economics have confused the national legislatures who provide the funds for international assistance and cooperation as to the difference between mutual assistance through international channels and international government, with the result that sources of funds for the former, always hard to get, are becoming even more difficult to extract from national budgets.

By their actions they have set back the International Decade of Ocean Exploration and the Long Range Expanded Program of Ocean Research by some years at best, and with it damaged seriously the possibility of actually making the ocean more useful to man until the confusion they have introduced about the ocean and its affairs can be washed away by the rising tide of desire by all to know and use the ocean more wisely.

If the amateurs, dilettantes and reformers who have fastened upon the ocean as a vehicle to make humans less human, and more saintly, could be caused to switch their attention from the ocean to the moon, or Mars, or Venus, or near-by space, the cost of the space program to both Russia and the United States would have been money well spent.

CONCLUSIONS

By way of conclusion I make the following recommendations for action by the United States government:

1. Hold fast to the contention that the breadth of the territorial sea is three miles. There is no better protection for small nations than freedom for their commerce to use the sea with the minimum possible interference from coastal or other nations, and this rule will prevail as they experience that truth.³⁶

³⁶ Arthur H. Dean, "Second Geneva Conference on the Law of the Sea: The Fight for Freedom of the Seas," 54 Am. Jour. Int. Law, 751 (October, 1960).

It was true when Thomas Jefferson, as the Secretary of State of a very weak and new nation, set it down in 1794. It was true when Elizabeth I, as the sovereign of a very small nation, which turned out not to be so weak, set it down nearly 200 years before that.³⁷ It will be even more true for small and weak nations 100 years from now.

2. Keep open international straits and marginal seas to the flow of peaceful commerce and the military force required to keep the flow free from unreasonable impediments. Tests of strength will be necessary from time to time to accomplish this, as it was near Matsu Island, in the Gulf of Tonkin, and during the Cuban missile crisis. From time to time forbearance for a period of time may be the better part of valor, as in the attempted passage of U.S. Coast Guard vessels north of Russia, overflights past Ecuador and Peru, and the use of the Red Sea. But over the long run ocean trade routes must be kept open to preserve the peace, even if it takes war to do it, as it has in the past.

3. Cease agitating for a precise definition to the outer boundary of the continental shelf. Agitation for a revision of the Convention on the Continental Shelf will, if successful, lead inevitably to another general Conference of Plenipotentiaries on the Law of the Sea. In the present unstable political situation of the world it is unlikely that decision would be reached in this field as satisfactory to United States general interest as existing customary and conventional international law. There is no need arising from new technology for a more precise definition to the outer boundary to the continental shelf that is more intense now than it was in 1958, and there is even less likelihood of a more satisfactory such boundary being agreed to than the one in the Convention on the Continental Shelf. Agitation for new boundaries for the continental shelf brings increased pressure on the breadth of the territorial sea, and the accompanying international straits and marginal seas problems.

4. Adopt such domestic legislation as is required to permit the licensing of mining and well drilling by U.S. firms in the seabed beyond national sovereignty, and to implement the four conventions arising from the 1958 Conference, to which the United States is a party. There is no reason why the United States should not take advantage of its, or any other, technology to mine the deep-seabed when that technology develops. There is no conflict likely to arise out of such mining in the foreseeable future that cannot be handled successfully in the settlement of fishery disputes. There is no known resource to be mined on the deep-seabed whose mining is retarded by lack of unique use rights to the resource in a particular geographic area. Statements to the contrary reflect a psychological attitude toward property ownership by businessmen accustomed to land operations, and their bankers, and are not warranted by presently-known conditions at sea.

³⁷ B. G. Heinzen, "The Three-Mile Limit: Preserving the Freedom of the Seas," 11 Stanford Law Rev., pp. 597-664 (1959).

5. Move forward on a broad front in the scientific investigation of the atmosphere, the ocean, its boundaries and its contents by plowing important new money into this activity. This should involve at least \$100 million of new money on average per year for the next decade. The general plans for doing this have been set out by the National Academy of Sciences-National Academy of Engineering for the domestic phase,³⁸ and by the Joint Working Party of ACMRR/SCOR/WMO for the international phase.³⁹ What is needed now is new money.

6. Strengthen the civilian establishment in the United States Executive by the creation of a body resembling the National Oceanic and Atmospheric Agency proposed by the Marine Science Commission. Outside the United States government it is generally agreed that this is the strongest step forward the United States could take in marine affairs. It is the several warring factions in the United States Executive, each of whom wants a bigger share of the ocean appropriation dollar, who oppose this action.⁴⁰

7. Strengthen the international establishment for ocean research and technology by supporting the action now afoot among the specialized agencies of the United Nations to build the Intergovernmental Oceanographic Commission into an ocean agency useful to all of them. Eventually there will need to be a World Oceanic Agency to handle the scientific and technological aspects of expanded use of the ocean. So long as the political agitation in the General Assembly, fomented heretofore by the United States, remains so strong the possibility of getting an international scientific and technology agency established in this field appears to be remote. The best interim alternate available that can be presently achieved appears to be the strengthening of the Intergovernmental Oceanographic Commission.⁴¹

8. Strengthen with adequate funds and national support the World Weather Watch System and the Global Atmospheric Research Program of the World

³⁸ An Oceanic Quest: The International Decade of Ocean Exploration (Washington, D.C.: NAS/NRC, 1969).

³⁹ Global Ocean Research, Report of a Joint Working Party of the Advisory Committee on Marine Resources Research, the Scientific Committee on Oceanic Research and the World Meteorological Organization, Ponza and Rome, April 29-May 7, 1969 (La Jolla, California: Scripps Institution of Oceanography, June 1, 1969).

⁴⁰ Statement of Congressman Bob Wilson before the Sub-Committee on Oceanography, House Committee on Merchant Marine and Fisheries, June, 1969 (in press).

⁴¹ The Directors General of FAO, UNESCO, and WMO entered into formal agreement late in 1968 to establish a joint interagency committee to ensure cooperation among their agencies through IOC.

Meteorological Organization and the companion Integrated Global Ocean Station System and Global Ocean Research Program of the Intergovernmental Oceanographic Commission. In these cooperative international activities lies the possibility of understanding the air-sea environment adequately to materially improve the economic and social conditions of mankind as a whole.⁴²

9. Strengthen with adequate funds and national support the Department of Fisheries of the Food and Agricultural Organization of the United Nations and its Committee on Fisheries. These are the bodies through which assistance is actually (rather than fancifully) being given to the developing countries for improving their production of food from the sea, and through which the monitoring of the world ocean to see where overfishing problems may be developing, and the framing of means to prevent them, is actually going forward.⁴³

10. Broaden the role of the Office of the Special Assistant to the Secretary of State for Fisheries and Wildlife into an Office of Ocean Affairs in the Department of State. This is the office that actually has the successful experience over the years in negotiating agreements and treaties with other nations respecting ocean use, and the handling of such problems on the practical diplomatic level.

If these ten recommendations were followed through on vigorously by the United States government we would be in a much better condition respecting the use of the sea than we are now, or than we would likely be if we plugged ahead promoting the concepts included in the Pell, Danzig, Borghese, Eichelberger, or Marine Science Commission approaches to the subject.

⁴² Report of First Session of Executive Committee Panel on Meteorological Aspects of Ocean Affairs (Geneva, Switzerland: World Meteorological Organization, 1969).

⁴³ Work of FAO and Related Organizations Concerning Marine Science and its Applications, (Fisheries Technical Paper No. 74 [Rome, Italy: FAO, 1968]).

DISCUSSION

Chapman: Before the discussion period starts, I must make a note of the conditions under which the Chairman, Professor Burke, is operating. The Chairman of yesterday afternoon's session said - quite correctly - with respect to Professor Crutchfield, that his presence with us represented a great personal sacrifice on his part. I have been observing Professor Burke intently during the whole of the time for the last twenty-four hours and I can assure you that it is with great personal sacrifice that he now leads the discussion. In order to entice him to do so I have had to give in to the extent that he will make a few introductory remarks.

Burke: I don't want to hold up the chance to take a swing at these people, but I would like to remark at the beginning that I was especially pleased to hear Mr. Danzig's emphasis on the national security and world peace aspects of the question of the shelf limit and the regime beyond, because it seemed to me that during our two days of discussion on these issues we made very little reference to those and I would hope that we could find out a little more about what they are supposed to mean. Perhaps this afternoon somebody can contribute something on that. It does not seem to me to be completely obvious how they bear on these particular issues.

I think the major differences that have emerged in the talks this afternoon is in the timing or speed of evolution. I don't really detect an awfully big difference in the goal of helping the poor in the world; it seems to me that we are all quite agreed on that. But there seems to be a difference in how fast we move in anticipating developments. This is one of the reasons that I suggested earlier last week in Miami that we ought to give some thought to isolating these issues if we can, so that they can be dealt with without the kind of trade-offs that Professor Brownlie mentioned earlier in the week. If we do get into negotiations which involve trade-offs of fishing rights, we may find that we lose a considerable amount in pursuing the goal of a rational legal framework for ocean mineral development. And we have made some progress in isolating some of the issues so that they can be dealt with apart from the general issue of the regime of the deep-sea and the limit on the shelf. As we mentioned this morning, the issue of scientific research is being partially, at least, dealt with in the Intergovernmental Oceanographic Commission. The issue of arms control has gotten off to a pretty fast start in the ENDC and that has been moved out and, of course, it has been quite deliberately moved out, of the context of the General Assembly. I think those are favorable signs because I share the fear that Dr. Chapman has emphasized a number of times, that if we take up one issue we may end up having to deal with the whole ball of wax again as we did in 1958, and the problems are now even more complicated than they were then; I think that we would get further along if we did devote some study at least to how these issues can be dealt with without too much log rolling and trade-offs.

Basiuk: Mr. Chairman, I would like to ask a question and then I would like to make a brief comment based on the answer to the question. First, the question,

and I would like to direct it to President Morse: The title of this Panel is Ocean Strategy for the United States. Why should we have such a thing as ocean strategy for the United States and, if we must have an ocean strategy, how do we define it?

Morse: Well, I will answer that very briefly. The point of view I took was simply that strategy is some kind of a pattern that is intended to fulfill certain objectives. I think we agree that there must be objectives, although whether they are separable from national objectives is another matter, and the point of view I took was simply that whether we like it or not we do things at sea and there are implications of doing them.

Basiuk: I think we agree on certain basic assumptions underlying the so-called "ocean strategy." I define such a strategy as a comprehensive design for a systematic utilization of the ocean in the national interest of the United States. This design must have one important characteristic: the utilization of the ocean in such a way that the various components of the American national interest mutually support and complement each other. These components are economic, military, and political - here I include the many elements of the political interest such as world peace that Professor Burke and Mr. Danzig spoke about, world stability, and others. Thus, if one reason for an ocean strategy is that we utilize the oceans in a systematic and effective way, there is also another important reason, viz., the acceptability of the exploitation of the oceans as a high priority goal of national policy. In the past, the United States was fortunate in having adequate resources to develop the entire spectrum of the then available technologies and this was an important factor in the rise of the United States on the global arena. Sciences and technologies, however, are proliferating so rapidly that our resources are no longer adequate to cover the entire spectrum; we shall be able to develop, and capitalize upon only a part of potentially available technology. Therefore, the nation will have to establish a rational system of priorities for allocation of resources in order to determine which technologies we should develop and which not. The place of oceanology on the scale of national priorities will largely depend on our ability to develop an effective ocean strategy. If we design an ocean strategy with its various ocean-related interests complementing and reinforcing each other, it will be attractive to the nation and we shall make ocean development a reality. If not, ocean development will end up pretty low on the totem pole of national priorities and there will be slow progress, if any. Unfortunately, this is not adequately understood by the various interests in ocean development; there is more discord and pulling in various directions by the various groups than an effort to reconcile interests and to present a mutually-supporting strategy attractive to the nation as a whole. On the conceptual level, there is no institution, academic or governmental, which is currently concerned with the development of a comprehensive ocean strategy for the United States. This deficiency needs to be remedied and very soon.

Blake: First of all, I would like to add my words to Dr. Chapman's in complimenting Mr. Danzig on his eloquent appeal to our hearts, rather than that

gravel-voiced appeal to our heads. Mr. Danzig quoted me quite correctly. I did say, and I still believe, that the position of the line of demarcation between coastal State and international jurisdiction is not terribly important to the oil man, as an oil man, so long as he can still conduct his business in the proper way that he wishes to conduct it. But that proviso is a very important one, as I am sure you understand. I do not wish Mr. Danzig's endorsement of my remarks to leave you with the thought that I, in turn, endorse his request for a very narrow coastal zone jurisdiction. I haven't really made up my mind yet where that line ought to be, but I do not endorse his appeal for a narrow jurisdiction for the very reason that he mentioned himself, that I need to be able to deal with whatever jurisdictions I may have to do business under.

Now, on Monday, I mentioned that if I am operating off the coast of some nation, then for economic, engineering, and logistic reasons I also have to operate on the coast of that nation; I have to have storage facilities there, and so on. It has been our experience, somewhat limited so far to be sure, but our experience so far indicates that it is much easier to do business with the local coastal jurisdiction, provided that that local coastal jurisdiction gets a sufficient share of the loot, rather than some remote administration - be it the state of California, the United States government, or whatever. Mr. Danzig mentioned, for example, that it should be easier for me to do business with a rational international jurisdiction than it would be with some whimsical sheik. If I were operating a manganese nodule operation a thousand miles from the nearest coastline, or 1,100 miles from the next nearest coastline, or 1,200 miles from the next nearest coastline beyond that, I would have a choice of three different coastlines to operate from. There is not that much difference. But if I am working on the shelf or the slope only a few miles from the coast, I am going to have to be able to deal with that whimsical sheik as well as with the international organization, and I believe I am going to find it much easier to deal with that whimsical sheik if he gets the loot rather than some remote organization off in New York.

Danzig: First of all, I would strike your name from the list of endorsers and put you in the list of maybes. As you know, Dr. Blake, I still have a tremendous amount of confidence in your common sense, and if you are doing business a few miles offshore under the Commission's Report you will still have to do business with that whimsical sheik and I suggest that you bring Cadillacs.

Blake: We do.

Herrington: Mr. Chairman, I would like to say that during the last twenty years of my professional life I spent much of my time studying human behavior on both the national and international scale. My remarks are based on my study of the various proposals in relation to human behavior. I found that institutions designed to work on the assumption that man will behave in an unhuman fashion have a difficult time surviving, and although we can hope that man will behave like an angel, institutions based on that assumption rarely work very well. I would think that the coastal States in very few cases would accept a proposal

to limit their jurisdiction to 200 meters. Now it might be that when you add that intermediate zone and persuade them that this is an intermediate stage between their jurisdiction to 200 meters and jurisdiction to 2,500 meters - they might be sold on that and I think that is what the intermediate zone will be. I think they will have such great control over activities in this zone that over the years they will come to have full jurisdiction. This might be sold internationally.

Now another problem is enforcement. Suppose you have a majority vote for this proposal. The world has no way of enforcing majority votes. I would point out that at the Geneva Conference in 1960, the proposal that the territorial sea should be six miles at the maximum and the fisheries zone twelve miles at the maximum, came so close to approval that if one abstention had voted "Yes" instead of abstaining it would have had a two-thirds majority. Yet, in spite of that strong world support for a relatively narrow zone this has had no influence on curtailing the claims of certain States to a zone much greater than this. As someone remarked earlier, the world at present does not seem to favor the use of force to enforce any majority opinion. Therefore, the majority must try persuasion and this has not been very effective. I agree completely with Dr. Chapman that getting a majority agreement will not resolve the kind of problems that now face us in some serious situations. I believe that the big problems we face internationally are to work out some effective mechanism for decision-making and mechanism for enforcement.

I don't see how this proposal is going to solve these two problems. If you can solve these problems then perhaps you can make something like this work. Also, I am inclined to agree with Dr. Chapman that for the foreseeable future the returns from this source, rather than an income, will be a financial drain. What I have learned from talking to many knowledgeable people over the last two years convinces me more and more that this will be the situation. If you set up an institution like this now the world must be prepared to finance it for some time to come.

Barr: I, too, want to compliment Mr. Danzig for his eloquent humanism. It is on that point that I would like to suggest that in making our case we may be making promises that may not be kept. He referred to the sizable value of the lease sale in the Santa Barbara Channel and I am sure that he knows, as we all do, that the value of leases depends, among other things, on what is known about the property or what can be reasonably inferred. About the time of the Santa Barbara lease sales, leases on oil shale lands in Colorado were offered. The return bids were few in number and low. The resource base was fairly well-known, the technology certainly well-advanced, but with no real assurance of commercial viability. So, therefore, I suggest to Mr. Danzig that in making our case we be careful about making promises that cannot be kept. The point I am making is that it may be several decades before leases at substantial depths offshore will provide rentals on the order of those in the Santa Barbara Channel. I hope at the meeting this time next year that I will be able to swallow my words.

Danzig: First of all I will promise you I will make no promises. I do think that caution is required but I, on the other end of the spectrum, certainly am not going to take the position, knowing that the United States has already realized \$4 billion from rental income from exploitation of the shelf running only to a depth of 300 or 400 feet, that there is nothing beyond that depth. I don't claim to be a very knowledgeable geologist. My guess, however, is that under the sea we will find just about what we found under the land and, if so, since the sea occupies 70 per cent of the globe, we have quite a lot to look forward to; but I will take note of your cautionary remarks, Mr. Barr, and I will make no promises.

Brittin: Unlike Bill Herrington, who has studied human behavior for the last twenty years, I have spent the last twenty years studying the behavior of Wib Chapman, Bill Herrington, and Don McKernan.

Reference has been made in the last few days to what has been identified as the Craven effect or the Craven hypothesis, the central theme of which is that when you create a control or a jurisdictional feature the natural tendency is for that to expand. I have another effect that I call the "kicked dog" effect. I would like to raise it here because I believe it is a factor that merits our attention. The effect, in its essentials, is simply this - if you kick a dog the dog might run away; on the other hand, it might turn around and bite you in return. In looking at the kicked dog effect as it applies to the law of the sea, it is manifest to me that the essential elements of the entirety of the law of the sea are bound together in a single fabric, it is interwoven and it is fragile, and when you do something with one major element of the law of the sea you will get effects elsewhere. In effect, you have mentioned one this morning yourself, Dr. Burke, when you spoke in terms of the insertion of the research requirements in the Continental Shelf Convention. You cited it as an example of the Craven effect but it is also representative of the kicked dog effect because by its application it has served as a catalyst for a growing problem for the conduct of research, something that really wasn't expected when the United States fought to have that language incorporated in the Convention.

Let me give you another example: three years ago the United States extended its fisheries jurisdiction out to twelve miles. Now, I am not saying that was good or bad, but since that time there have been some twenty countries who have extended their jurisdiction to twelve miles. The interesting thing about these countries who extended their jurisdiction seaward was that the majority of them moved their jurisdiction as a form of territorial sea rather than fisheries jurisdiction. I don't think it was the intent of the United States when we made that move to have the territorial sea expanded to twelve miles by other countries.

When we get to the question of the seabed itself what we are talking about here is an entirely new segment or regime dealing with the seas. There is no question that there is a relationship between what the breadth of the continental shelf should be and what the eventual-breadth of the territorial sea will be. They are inescapably interrelated. Dr. Chapman in his comment said that it

might well be true that wealth in large quantity will not be present on the deep-seabed; if, in fact, he is correct - and I don't know whether he is correct or not - and we structure a world organization to accommodate the exploitation or exploration of these resources and they are not there, I can see a period of frustration coming in, because we are now certainly in a period of rising expectations. With this frustration it is possible that the world community might then look to what other resources might be available. And when we look to the seas the other resources that are available are, of course, the living resources. Thus, one of the questions that we must consider is whether a structure or a regime that we establish for the deep-seabed is compatible with the regimes for the oceans. Is it what we want for the oceans themselves? For the living resources? This effect might possibly be remote but it is a possibility that must be considered. Thus, as a conservative, I think that one thing that has to be done is for us to move quite slowly; obviously we must move ahead but we must move slowly until we can identify and can evaluate what these new elements related to the seabeds will do to the entire fabric of the sea. Let us not be the one to kick the dog.

O'Connor: Neither Dr. Chapman nor Mr. Danzig have dealt with certain problems which are likely to arise in the near future and I would like to get some reaction to these. Dr. Chapman's analysis of the existing law of the deep-ocean floor resources assures us that exclusive rights will not be necessary to secure protection against competitors for a variety of reasons and that, indeed, there is adequate ground for national regulation. But isn't the real problem in this area more likely to be a demand by the entrepreneur to be secure from the coastal nation reaching out if the boundary of the shelf is uncertain? Suppose there is exploitation at 500, 1,000, or 2,000 meters in the next few years, what protection would the entrepreneur have relative to coastal nations and, if he does not have adequate protection now, what steps would you recommend?

Mr. Danzig suggests a very narrow shelf - the 200-meter isobath or fifty miles distance from shore - but he does not tell us what he would suggest regarding the interim period. If exploitation exceeding the 200-meter isobath continues (and we already have such exploitation), what provisions would you make for the continuance or non-continuance of these entrepreneurial expectations?

Danzig: I will answer the second question first, that is, what do you do in the interim. Well, the first thing I would like to say is that I would hope there would be no interim and that we would move forward and establish an authority as rapidly as possible because, as Mrs. Gunnar Myrdal, of Sweden, warned in the United Nations in the debate before the Political Committee (incidentally it was a gem of a speech to listen to), while we sit here talking the boys are going to be out there shoveling; and regardless of what Dr. Chapman says, people are going to go out exploiting. So, it is important to establish an organization immediately. If an organization is not forthcoming immediately, then I think the Commission Report handles this problem very well. First of all, it says you can go on and continue to exploit without prejudice to a line that may

ultimately be drawn and the Commission Report permits exploitation in an intermediate zone as far as a hundred miles at sea. By the time that exploitation limit is reached an organization in all probability will have been formed.

Chapman: I will take the first question, which I understood to arise from the presumed demand by entrepreneurs on the high seas to be secure from interruption of their operations by governments from the coastal area adjacent thereto or reasonably so. So far as I know, there are two sorts of mining operations foreseeably practical on the deep-seabed. One of them is oil. I think my friend, Dr. Blake, will back me up on the fact that in the foreseeable future we are not going to put down any sort of oil recovery apparatus to 2,500 fathoms or deeper. This is not because technology cannot solve the problems involved but because it will just simply be prohibitively expensive to do this relative to costs of other sources of comparable energy and raw material. The second sort of operation is some sort of dredging or collecting operation from skimming things off the surface of the seabed or not very deep therein. So far as I know this will be nothing other than a floating operation, perhaps centered around a very narrow geographic area, but not a permanent installation and with no dwellings on the deep-seabed and so forth. I have trouble differentiating such floating operations from tuna vessels.

We keep hearing so much about mining operations being big and fishing operations being small and improvident, yet we in the tuna industry out of San Diego have put in \$50 million in new vessels in the last eighteen months and they are still being built. Each vessel costs about \$1,800,000 now. There are at least fifty or sixty of these off Peru and Ecuador at this moment operating with the full knowledge that the armed might of Ecuador and Peru may descend upon them at any moment, and that they have nothing protecting them but the shield of the United States. They are operating under more onerous political circumstances than any other aquatic operation with a dredge hanging down from it is likely to encounter in the far stretches of the oceans for some time. I just am not very much worried about the hypothetical manganese nodule dredges when we have more practical problems on top of us now which we appear to be in the process of solving. Also, I have talked with Mr. Flipse, as you have, and he says with respect to their present operation there is nothing in the present legal situation which is preventing them from going ahead and doing what they are planning to do. He doesn't see the impediment ahead of them which would prevent them from doing so.

One of the reasons why Ambassador Herrington and Ambassador McKernan and I come to a situation of this nature from somewhat the same framework of thought, is that we all three have had the same job serving as Chairman of United States delegations hammering out treaties which our own constituents, as well as the other sovereigns with which we were dealing, did not very much like. Sovereigns, like ordinary people, would rather quarrel with each other than reach agreements. All human beings are essentially miserable people to deal with. I say this after having dealt with a great many. We three have had

the hard experience of getting nations to come together in agreement on difficult subjects. We have been fairly successful, all three of us, but it has been a miserable experience.

I want to point out that one of the procedures used in such a situation is first to sort out the things that you are in agreement on, and get them out of the way so you don't have to argue about those any more. Then you pick out the things that you are pretty nearly in agreement on and maybe you can settle those. Then you get down to the tough ones last. That is the procedure that negotiators have to use in this racket.

There are four very important elements of this discussion on which Mr. Danzig and I are in full agreement. The first is the desirability of narrow territorial limits. I like them even narrower than he has suggested. I still think the three-mile limit would be the proper one and that departures seaward from that have all been errors that are going to get us into more difficulties rather than less. I am not pigheaded about this. If the extensions are modest they can be accepted. So long as they don't create international disorder that is fine with me. I don't know of any limit that would be better than the three-mile limit, but at least I agree with Mr. Danzig completely on the desirability of narrow territorial limits for sovereign nations.

Secondly, I agree with the general humanitarian rationale brought up by Mr. Danzig and I do so only as an ordinary taxpayer of the United States. I am perfectly agreeable and desirous of having a greater amount of the taxes I pay in the United States used for diversion to the assistance of underdeveloped nations and people. I don't think that it is likely that there will be much money for those purposes arising out of ocean operations on the high seas or on the continental slope. I have no objection whatever, and strongly support, a very large increase in the United States' contribution to international affairs from the taxes that I pay and from yours, too.

Thirdly, I am as much a supporter of the United Nations and its various activities as you are, Mr. Danzig. I threw over a perfectly good scientific career about twenty years ago because I got messed up in humanitarian and international affairs. I have not been a bit disappointed in having done so. You talk around about doing this and that and the other thing but once in a while you make a little progress in these things. I worked with the General Assembly of the United Nations considerably in the period from 1954 to 1957-58, and with the specialized agencies in recent years, and I am going to keep right on doing so and support them just as hard as I can and seek stronger U.S. government support of them because I know these organizations are essential in keeping a reasonable area of peace in the world.

Fourthly, I think there is no dispute between us at all that the settlement of disputes among sovereign nations must be conducted by peaceful means.

I don't know how to do that all the time but I think that is what we should all of us strive for and that is what Herrington, McKernan and I have been working at in this generation in our little old field and with some success.

When you go to differences then I think one of the things is that I have a very solid fear of decay in the public order in the ocean. Secondly, I have a deathly fear of a conference of plenipotentiaries on the law of the sea, having lived through two of them. Thirdly, and I think this is the critical one, I am perfectly willing to abide by the flag nation approach to handling activities on the high seas until some acute need comes up for changing it, whereas I think you would prefer internationalization. I think we can thus limit our area of differences and have great areas of commonality.

Knauss: I wanted to ask a question on an entirely different subject. I would address this to President Morse. I agree very much with your analysis of the military situation and particularly with the use of Polaris submarines as what they are good for and what they are not good for. As you say, we have an obvious advantage with our Polaris submarine fleet at this particular moment, but this is a short-term advantage and we are rapidly losing it as the U.S.S.R. submarine capability increases. We are also working very hard to make the ocean less opaque to submarines so we can keep track of them better and I presume sooner or later we will succeed. To do this, of course, requires putting things on the ocean bottom or in other places to listen. Have you ever thought of the possibility of whether or not it would be more or less stabilizing in terms of escalation of military technology or otherwise if we kept the ocean opaque to nuclear submarines? That is, let them all be in there, from all nations, but accept it as a stand-off that nobody knows where the other nations' submarines are. What happens in the next generation if we have nuclear submarines and we can keep track of them perfectly well all over the oceans? Would it be stabilizing or destabilizing to have the ocean transparent?

Morse: Well, we are not going to make it transparent. I do not know how to answer the question; and I think the Navy has always been schizophrenic on this point. It often depends on whose press release you read. On the one hand, the Navy says that the Polaris submarines are invulnerable; on the other hand, it says (and this often depends on which Congressional committee it is testifying before) that they are solving the anti-submarine problem. It is internally contradictory but that is the nature of such affairs. I don't know how to answer it. I honestly feel that in the long run one has to make the option away from ignorance and darkness and so I think there has to be an assumption that it would be to everyone's advantage if the ocean were not opaque. I have no other way to answer it. I think the ocean though, as you know, is never going to be very opaque however you do it and it is not going to be very small.

Johnson: I have heard the term "exploitation" repeated several times since the morning sessions began. I just wonder if the panel could help us out with a little better view because this term implies selfish going out and taking of

resources without any concern for the environment. My question then for the panel is: are we going to go in for aggrandizement of the resources, taking them in this way, or what is our concern about the quality of the environment in which we are working?

Danzig: You raise an extremely vital point and one with which as far as the proposed draft treaty drawn by my committee is concerned is dealt with at great length. It is inconceivable that man should be able to go out and exploit the sea without regard for the possible effects on the ecology of the sea and on pollution of the environment. I would say that not only is my committee cognizant of this but in the debates that I have heard before the United Nations they almost want to give priority to that issue and over all other issues, so I do think it is an extremely important element. Incidentally, one of the most interesting books I have ever read on this subject is by Wesley Marx, The Frail Ocean, in which he points out how very easily the ecology of the ocean can be upset.

Chapman: It turns out there is a fifth major point on which we are in full agreement. I point out that UNESCO through IOC, IMCO, FAO, IAEA, WHO, and WMO are busily at work setting up the means by which the scientific aspects of these problems can be elucidated. There are two aspects: the political one of the regulation preventing pollution or damaging the environment, and the second one of what do you do about it when you have decided you are going to do something about it. It is not so simple and so my side of the United Nations structure is hard at work on the scientific and technological aspects of it and I hope Mr. Danzig will keep busy on the political end of it.

Burke: On this environmental quality or pollution issue there was a story in yesterday's New York Times that might, it seems to me, have been misleading in the reference to "obsolete nerve gas," 27,000 tons of it, that might still be disposed of in the ocean. The nerve gas isn't obsolete, it is the delivery system. The nerve gas is quite active I understand and would be if it were dumped in the oceans.

Blake: This time I want to speak about something I know something about, instead of international politics. That is, the economics and technology of oil production. Mr. Barr, of the Bureau of Mines, mentioned a little while ago that at a recent auction of oil shale lands in Colorado, there were essentially no bidders. I can tell you why, and that is that the cost of crude produced by that method is some 30 per cent, I think, greater than the cost of conventional crude. We figure things close. If the cost of a certain crude, therefore, goes up some figure - say 20 or 30 per cent - we aren't interested in that source of crude. The cost of crude from the continental shelf is pretty marginal right now, believe you me. The cost for the conventional type of platform for producing crude from the shelf goes up exponentially as the water gets deeper. You get an economy of scale in some things, but in offshore oil production you get a dis-economy of scale. A platform for 600 feet of water might very well cost \$20 million, whereas a platform in the same general location - I am thinking of

the Santa Barbara Channel - for 200 feet of water might be \$2 or \$3 million. In other words, the cost goes up faster than the depth of the water. Now I won't give you the actual figures because they are confidential, but let us say that the economic limit today, and by any foreseeable technology of the platform type, is such that we make zero profit on oil produced from a platform in 600 feet of water (and let me add hastily there is no such platform today). We will not go one foot beyond 600 feet in that case. I say this as a representative of the company that drilled the first exploratory well in water deeper than 600 feet, and which was a partner of the company that drilled the first exploratory drill in 1,300 feet of water. Both of these wells, however, are inside the fifty-mile limit that the Marine Science Commission recommends for coastal State jurisdiction, so there isn't any question of whether or not these might be in the intermediate zone despite being in water deeper than 200 meters.

My point is that somewhere in the neighborhood of this 200-meter limit there is also by the foreseeable technology of today an economic limit beyond which we will not go. There is, of course, always a possibility of a technological breakthrough, such as the invention of an ocean bottom completion method which will be cheaper than platforms beyond 600 feet. I am sure this will come eventually, but this isn't going to carry us a great deal deeper. My point is simply that the great bonus riches that governments have derived from the oil industry in the shallow shelf cannot by any stretch of the imagination be thought to go within the immediately foreseeable future very much beyond where we are today, in 300 or 400 feet of water.

Danzig: First, I want to say that after hearing all the issues on which Dr. Chapman and I are agreed we have decided to merge. However, he is a bit bigger than I am and I may get swallowed up.

Now, Dr. Blake, you said before that I appealed possibly to your heart and not to your head, but I think that you answered your own question. The oil men have heads on them and let us not discredit human ingenuity. The Commission Report has pointed out, and so has the NPC, that man is an ingenious animal and if there is oil out there he is going to devise economic means to get at it; and I have happy news for you, the Commission Report says that if your technology is not good enough they recommend that the United States subsidize research in improving pure technology. So you see even you are going to get something out of it.

Blake: May I point out that the oil industry expenditure for marine technology is something like a thousand times as great as that of the U.S. government?

Danzig: You are going to get there before they do.

Bevan: I would like to just mention one topic and leave it. This is something we have not talked about, although I think Mr. Danzig made some reference to it, and that is the population explosion. In my own view, I am not sure that

the time bomb has not already gone off; but I would like to mention that as a biologist I can say that if we have a rising rate of population we can control that population by only one or two methods - we change the birth rate or we change the death rate. In looking at the population problem we must focus on this very important point. I am sure I can get into an argument with Dr. Chapman - in his better days he also was a practitioner of population biology and I am sure he can remember all the theory - but I would like to say that this is something that needs our attention and point out that we have not addressed ourselves to it today.

Sullivan: I would like to ask Mr. Danzig with reference to the Commission's Epilogue, what great discovery has been made since 1958 which now gives us the factual knowledge on which to make decisions on sea bottom boundaries and regimes that we did not have then?

Danzig: You are not referring to technical knowledge now, you are referring to some better political judgment that we have today than we had back in 1958? To that I answer that I have no way of guaranteeing that we will do a better job in 1969 in the political disposition of this matter than we did in 1958, but that isn't going to stop me from trying.

Incidentally, regarding the last gentleman's remarks that in his better days Dr. Chapman was a population biologist, this was quite true. He has six children.

Chapman: Furthermore, I am paying bonuses to my daughters and daughters-in-law to have grandchildren.

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Langeraar

Rear Admiral W. Langeraar
Chairman
Intergovernmental Oceanographic Commission
The Hague, Netherlands

This is the very first time in my life that I have been invited to deliver a banquet address and I must confess that I accepted the invitation to do so with some trepidation. The more so as it is better to start a new experience in relatively inconspicuous surroundings and not in the University of Rhode Island and, particularly, not in its Law of the Sea Institute, let alone during its banquet. But notwithstanding all this I accepted the invitation and accepted it with much pleasure, because apart from feeling disturbed I also felt very much honored that the Chairman of the Intergovernmental Oceanographic Commission was chosen for this important address. This in my view proves that the work of the Commission so far has received some attention of your Institute if not from time to time its approval.

But let there be no misunderstanding between us. I am not an authority in any of the fields I may touch upon tonight. I am a simple career naval officer and, as such, belong to that rare species of seagoing men regarded by the Merchant Navy as hardly qualified to go to sea, by the marine scientific community as not being scientific at all and by legal experts as the representative of a government body that makes its own laws. On the other hand, the less hampered you are by factual knowledge, the easier it is to talk and I, therefore, ask your indulgence if I talk too much.

Over the last two months I have received a wealth of information about the sea, its problems, its owner, its floor, its bed, its shelf, its regime, its use, its resources and its limits. Politically, economically, juridically, scientifically and technologically the ocean and seas play a more prominent part than ever before and it seems as if seawater overnight has become the most powerful explosive. But not only the water and its living resources, also the ocean floor and its non-living matter contain explosive elements that may blow up in our face unless we handle them with extreme care. It may well be expected that the bottom of the ocean will present us with a much more interesting picture than the one we will behold looking at the moon's behind.

The Fourth Annual Summer Conference of your Institute on "National Policy Recommendations" has gone into quite a number of the problems that confront us today, and, I am afraid, will confront us for many days to come. The four main items of your deliberations: (1) The Deep Seabed, (2) The Continental Shelf, (3) International Fisheries and (4) Science and International Organizations, represent a fair outline of the polemical provinces that require to be brought under law and order. This will prove to be a phenomenal task not always yielding satisfactory results. But we all have experienced that it is not

necessary to expect much to make a start, nor is success a prerequisite for perseverance. Moreover, there is an old Arabian proverb that says: "It is better to light a small candle than to curse the darkness."

The oceans and their living and mineral resources are the common interest of all mankind; those multitudes that inhabit our earth today and that are turning toward the oceans for food, minerals, fresh water and recreation in ever-increasing numbers. It is an awe-inspiring thought that most of the inhabitants of this planet are still to be born and that it is our task to do our utmost to see to it that future generations will not stand at the shores of an empty sea, polluted beyond recovery, cursing their forefathers who were unable to take the necessary decisions when there still was time to decide, to act and to prevent. Unless we are very cautious we may be left with little more than the realization that we failed miserably, failed either to see the writing on the wall or to read it and act accordingly when there still was time.

Now, what are those signs, what is that writing we should see and read, what is there to decide and act and prevent? Let me give you a very few examples. Those of you who attended the third day of this Conference, devoted to International Fisheries, certainly will not be unaware of our failure to reach effective agreements to protect - and at this moment to save - the blue, the sperm, and the other whales. We have been hunting these great mammals of the sea with ever-increasing effectiveness and sophisticated equipment, not being able to read the danger signs of overfishing, not seeing the warning signals of stock depletion, or, while seeing and reading, not being able to ward off the disastrous results of our actions by timely counteraction.

You cannot be unaware of the fact that in the Caribbean area certain types of turtles are brought to near-extinction because they are slaughtered indiscriminately, not to be used as food for the hungry, but only because fishermen need the liver of these turtles and with these livers they can catch sharks of which the fins are to be used in shark-fin soup. Some of you may think this unbelievable but such stark and utter waste of living creatures goes on until this day and sometimes accompanied by irrevocable damage inflicted upon species of animals.

Three days ago Germany warned the Netherlands that a large pocket of highly poisonous water was coming down the Rhine River. The origin of this water was unknown, nor was its substance. Until today this water has been flowing through my country, gradually diluting the poison, but with it floated hundreds of tons of dead fish and all along the Rhine border swimming pools were closed, cattle removed from the near-by meadows, ships navigating on the river forbidden to wash decks, while all towns getting their supply of fresh water from the Rhine (after filtering) had to close their pipelines and switch to their reserve basins. After a day of sample taking and laboratory work it was found that the substance was a nerve-poison pesticide. German and Dutch authorities are still trying to find out who was responsible for this.

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I will not go on quoting examples, it might become an interminable list. As more nuclear-powered electricity generating stations come into being and as new processes are adopted, as more oil is going to be extracted through undersea wells and is going to be transported over the sea in ever-growing ships, as more animal protein is required and obtained through more effective catching methods of living marine resources, as more seashore recreation is needed while at the same time more industrial waste is to be disposed of, both the geographical extent and the cooperative intensity of our internationally combined measures to prevent and to regulate will have to increase - will have to increase formidably. I say this because our perspective, our ultimate goal, is an earth that it is a pleasure to behold and on which it is good to live, not only for us, but for ever and ever. Let us combine our forces, pool our scientific manpower, work together while there still is time, lest we will be worked out later, fighting a lost cause.

What we need today more than ever before is cooperation, and not only international cooperation. Last year when I addressed the Committee on Fisheries I said that the awesome extent and fabulous wealth of the oceans has made the organization of our ocean affairs an enormously complex matter. According to a very conservative estimate there is in the neighborhood of at least fifty organizations in which the necessity to cooperate internationally has been channeled globally or regionally, on an individual, international or intergovernmental base, ranging from pure scientific research through surveys and exploration, to development and exploitation, conservation and prevention.

This means that the number of international bodies channeling all types of cooperation in marine activities, reaches the same order of magnitude as the number of independent nations, and many of us have recognized that this means that the problems of international cooperation have been replaced - at least partially - by the new problem of inter-agency cooperation. This latter problem is more difficult to solve as an intergovernmental agency has as its governing body groups of nations. One of the main problems this presents is the fact that internal coordination within one particular government is not always perfect so that representatives of a nation in one intergovernmental agency need not necessarily have the same viewpoint or instructions as other representatives of that same nation will have attending the meeting of a different intergovernmental agency. In short, viewpoints of nations often depend on the meeting in which they are expressed. Fully satisfactory inter-agency cooperation, therefore, goes hand in hand with national internal coordination.

However, inter-agency cooperation, not unlike international cooperation or cooperation between individuals, depends on other factors also. We all know that the main motivation for cooperation lies in the expectation of the cooperating parties to be able to achieve in unison what would be denied them when acting separately. When, however, the greater profits as a result of cooperation will not go directly or only partially to the individual partners, but mainly to the larger community to which these partners belong, cooperation already becomes more difficult to establish - and it tends to become more and more

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difficult as the cooperation necessary to attain the greater good for the larger community takes on the character of a sacrifice for the individual partner.

It is not difficult to convince all and sundry of the necessity of cooperation as long as one has a water-tight case proving that the spoil exceeds the toil, but - as I said elsewhere - opposition will stiffen appreciably when it becomes clear that part or all of the profits of cooperation remain outside the sphere of the cooperating partners, in other words when the pain exceeds the gain. In short, cooperation means the loss of part of one's freedom of action, part of one's autonomy, it will cost money, manpower and material and from a purely national or agency point of view the advantages may be questionable, even if the benefits for a greater community are recognized. We are not unable to see, but often are unable to act outside the sphere of our national or agency interests.

This will be one of the main problems to solve. How are we going to cooperate, nationally or agency-wise with the primary goal to act outside the sphere of our immediate interests? Are we willing and able to accept the lesser evil in order to attain the greater good, even if the lesser evil is ours and the greater good is primarily for the benefit of others? Are we able to rise above part of our vested rights, willing to sacrifice some of it as a prerequisite, not for a leap in the dark, but for any leap forward in perfect unison with those who strive for the solution of the same types of problems? The challenge here lies in the necessity that we, persons, communities, nations, agencies, will have to change our preferences. We will have to accept willingly preferential viewpoints - and those are not necessarily the ones we were brought up with - that will make unrestricted cooperation possible and fruitful and thereby will make it possible to live, work and study peacefully together in this world that grows more technical decade after decade.

Recently new problems have been added to the already existing ones. The exploitation of mineral resources outside the area of what is geologically known as the continental shelf comes nearer and nearer and with it come a number of new problems. The Continental Shelf Convention being what it is, open-ended towards the ocean, gives little guidance with respect to the seaward limitation of national jurisdiction. This uncertainty has been highlighted by the United Nations General Assembly Resolution with regard to the Peaceful Uses of the Sea-bed and the Ocean Floor beyond the Limits of National Jurisdiction. Fortunately we need not concern ourselves with finding an answer to the question of what is peaceful or not-peaceful, as this bucket has been passed on to the Eighteen Nation Disarmament Committee in Geneva.

The limits of national jurisdiction, however, is quite another problem. Those interested in exploitation of mineral resources on the continental shelf and slope think that the present wording of the Continental Shelf Convention is quite convenient where it is said in Article 1 that the shelf is to be regarded as the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or,

beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas. This wording seen against the judgment delivered by the International Court of Justice on February 20, 1969, in the North Sea Continental Shelf Cases, where it is said inter-alia "that delimitation was to be effected by agreement in accordance with equitable principles and taking account of all relevant circumstances, in such a way as to leave as much as possible to each Party all those parts of the continental shelf that constitute a natural prolongation of its land territory." This judgment seems to provide the rule indicating that the limits of national jurisdiction lie nearer to the depth contour of 2,000 meters than to that of 200 meters. But what with one thing and the other, these limits still remain undefined.

It seems, however, that a consensus of opinion is forming with regard to the observation that there exists an area of the seabed and ocean floor which lies beyond the limits of national jurisdiction, whatever those limits may be. Also there is a majority opinion that this area should remain outside national limits. This means that before this part of the seabed can be reached some form of jurisdiction should be established to safeguard the interests of all nations, including the landlocked. Whatever this form of jurisdiction will be, it should be governed by a set of principles or rules of a legal and technical nature, conceived to guarantee the orderly exploration and exploitation of the deep-sea resources and to safeguard the interests of all other users of the free seas.

In my view it would be worthwhile to consider the possibility of agreeing provisionally on a set of rules to be applied to that part of the ocean floor of which it can be said with certainty that it lies beyond the limits of any national jurisdiction; for instance, that part of the ocean floor that lies more than 200 nautical miles to seaward from the depth contour of 200 meters. Such an approach would have the advantage that it would not be necessary to wait until a future United Nations Conference and Convention would have succeeded in determining the outer limit of national jurisdiction over the seabed and ocean floor. Even if we recognize that most of the exploration and exploitation will be carried out going gradually farther away from the shore and into deeper water, though this does not apply to all types of resources, it would be worthwhile to have a regime already agreed upon for the deep-sea, which should be extended to the limits of national jurisdiction as soon as these are defined.

Also the international organization that would be responsible for the administration of the deep-seabed and the application of the agreed set of rules, should be considered with much care. From what we have heard during debates in the United Nations it becomes clear that unless the closest attention be given to the terms of reference of such an organization, nothing at all is going to be agreed upon.

Such an organization should have to deal with governments only and not with any type of entrepreneur. Fees for licenses to be paid by governments to

the organization should not be based on a royalty system but on annual rentals without, of course, trying to influence the contracts made between any one particular government and its sub-contractor. The organization should not be allowed to handle the money so collected but should leave that to a body outside the organization, whether this be the World Bank or any other. The political influence of the organization should be kept as small as possible, e.g., by not requiring the organization to make any qualitative decisions. Such decisions should be made by scientific bodies outside the organization. Even if the organization should be given the right or even the obligation to establish rules to which States would have to adhere so as to prevent or reduce damage to living resources, the environment or social structures - to prevent pollution or wastes, or to provide general services such as navigational aids, weather information, safety and rescue devices - supervision over the observance of these rules would be vested in a body outside the organization. For the allocation of licenses over certain parts of the seabed the system of competitive bidding should be ruled out and the adjacency principle should be adhered to where possible. The object of all this should be the granting of exclusive rights to governments of States to explore and exploit in certain areas. This would eliminate to a certain extent the difference between developed and developing nations, as it is not the nations that are the bearers of technical know-how, but private enterprise that can be hired by any government able to guarantee the necessary exclusivity.

I will not go on in this direction. Those of you who are interested in the matter might read what I wrote about it. But I recognize that you all have had your full measure of these problems and should be allowed to digest it all. You will all agree that what I said of the new set of preferences needed for fruitful cooperation more than anywhere else applies here, where we will have to cooperate in drawing up a new regime for underwater territories to be reached before long by mankind for the first time since this world was created. This regime, together with the establishment of an international organization to administer it will require the utmost from all concerned regarding the will to persevere and the strength to proceed in the face of misfortune and mistrust; in short it will require cooperation of the first water.

Our future, indeed, lies in close and understanding cooperation and mutual trustful assistance, especially where the "terra incognita," the sea floor, is concerned. To build up this future to the best of our ability be our aim and solemn vow, it being a reassuring thought, though, that in the last instance this future lies in the hands of Him of whom is said in Psalm 77: "Thy way is in the sea, and they path in the great waters, and thy footsteps are not known."

A FRAMEWORK TOWARDS A SEABED REGIME

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The present regime of the seabed should prove adequate for the near future - at least ten to twenty years. However, since the process of agreement and decision is rather slow, the ultimate problem warrants early discussion and planning. While no changes are immediately required, someday new rules likely will be needed. For many years all significant exploitive activity will be confined to the geological continental shelf, or at least to depths of less than about 1,000 meters, with only minor experimental exploitation in deeper waters.

Of the numerous proposals for new "laws of the seabed" made during the past decade some deal only with the continental shelf, some only with the deep-sea regions, while others are for the entire overall seabed. Nearly all insist that the need is urgent if we are to prevent anarchy and unnecessary conflicts. Most are conceived with an idealistic approach in the best interests of a particular country. Invariably they consider that the entire deep-seabed must be governed by the same single set of rules with no regard for any special characteristics of specific areas. Generally, a specific limit, depth or distance is set for national sovereignty and the remainder of the seabed is placed under some sort of centrally administered international regime. Most approaches ignore the realities of geography and human nature.

The 1958 Convention on the Continental Shelf was adopted to standardize and codify customary law and supplement it with conventional law. No sooner had it been adopted than critics began to appear. The primary criticism was directed against its definition of a legal shelf: "referring to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said area." It is claimed (1) that the definition is ambiguous, (2) that the delimitation is indefinite, and (3) that too much is given to the coastal State. This, it is claimed, the Convention is urgently in need of revision.

Actually, the Convention definition does not "give" anything to the coastal States. It merely confirms accepted practice that the resources on the seabed of the shelf belong to the adjacent State. This ownership has always been exercised to the depths at which exploitation was possible. Now that science and technology have increased the practical depth for exploitation the

* The views expressed in this paper are those of the author. They should not be interpreted as reflecting the views of the Center for Naval Analyses or the official opinion or policy of the Department of the Navy.

width of ownership has naturally expanded. The arguments that these resources should not belong to the coastal State but are the "heritage of all mankind" are only as valid as a claim to similar heritage for the minerals under the continents themselves.

It is true that the definition does not form a precise boundary, but one is not really needed at this time. As new techniques are developed the "adjacent" shelf will be exploited to greater depths. Perhaps the major fault in the definition is the inclusion of the "200-meter" depth. This, to some, appears to establish a boundary. It is argued that coastal States might use the "exploitable" clause to extend these claims to mid-ocean. Although this would violate the adjacency criteria, perhaps some agreement as to the maximum extent of coastal State control would be in order. This delimitation need not be precise nor need it be a permanent boundary. I could state merely that beyond a certain depth, or distance, no coastal State could assert sovereign rights over seabed resources. However, for such a boundary to be effective it must be acceptable to the majority of coastal States and for some this means that the boundary must extend, at least, to the practical limits for exploitation. Thus, it must extend to a minimum depth of at least 1,000 meters and perhaps beyond.

Some of the schemes for continental shelf delimitation would include a distance criteria. This idea is commendable although proposed for the wrong reason. It is argued that a distance criteria would give something to the States with no significant shelf. It gives them nothing if depths are greater than the exploitable range. On the other hand, a distance criteria has merit from its apparent security aspects. It would keep others from prospecting in close proximity.

Almost at the same time as these complaints, others came forward with the opinion that there was an urgent need for a regime of the deep-seabed to complement the continental shelf doctrine. Most of the rationale for the urgency was based on the false premise that soon there would be exploitation of ocean resources in such quantities as to rival the old gold rush days. Exploiters would be so prevalent that, unless stringent rules were in effect, there would be anarchy under the oceans. At the same time was presented the theory that the wealth of the oceans belongs to everyone and thus the exploiters should be taxed by an international body for their activity. Neither idea has any validity. Deep-ocean seabed exploitation for many years will be conducted on an experimental basis by a very few operators. Such projects require vast capital and there will be few that will risk it. There is such a low probability of a profit that any international tax on such ventures would likely delay them indefinitely. Looking ahead several years there may be a need for some standards of conduct for ocean exploitation. These should promote, however, rather than hinder operations. Thus, while it may be advantageous to have some sort of registration service to prevent poaching, and while rules for exploitation may be required to prevent interference with other activities, there should be no royalty as such or exploitation may never begin.

All of the deep-seabed regimes examined consider a single "world ocean," with all regions treated alike. This, again, ignores reality and human nature. It is completely unrealistic to believe that any international regime would be accepted for the Black Sea, the Sea of Okhotsk, or even for the Red Sea. The littoral nations surrounding these seas, and many others, believe, with ample justification, that they have a special interest in the area. Only regional arrangements can be effective or acceptable for such areas.

As was initially stated, for the seabed regime to be effective it must first be acceptable to the coastal nations. Unless there is a strong world government no regime is enforceable against local opposition. For a continental shelf regime to be acceptable, it must acknowledge the control by the coastal State of all shelf resources. For a deep-sea regime to be acceptable it must promote, rather than hinder, exploitation and must recognize regional priorities.

The present accepted regime will be workable for many years. However, since there has been so much agitation concerning ambiguities and indefiniteness, it may be in order to adopt more exact rules. For this purpose I submit the following as a broad framework on which to build a precise set of rules to govern the exploitation of the resources of the seabed and subsoil of both the continental shelf and the deep-seabed.

FRAMEWORK FOR A SEABED REGIME

(1) "Sovereign rights" over the resources of the seabed and subsoil of the continental shelf shall be exclusive with the coastal State in accordance with the 1958 Geneva Convention on the Continental Shelf. However, these rights shall extend to seaward no farther than the outer limits of the continental margin (the base of the slope).

(This definition purposely does not establish a precise boundary. However, it eliminates the possibility that claims could be extended to mid-ocean. At a later date, when needed and when more knowledge is gained, a precise boundary could be defined to separate the shelf region from the deep-sea region.)

(2) Exploitation of the resources of the seabed and subsoil beyond the continental margin (or later precise boundary), but within 100 miles of the coastline shall be under the jurisdiction and control of the adjacent coastal State, however no sovereign rights shall pertain to this area.

(This will preserve the security of areas adjacent to a coastal State even though in deep water.)

(3) Exploitation of the resources of the seabed and subsoil of small semi-enclosed seas, beyond the limits stated above, shall be under the control and jurisdiction of the adjacent coastal States in accordance with regional agreements. The seas to be included in this category shall be determined by general agreement.

(This acknowledges the special characteristics of particular regions. Seas to be included could be as extensive as the Mediterranean and Caribbean seas.)

(4) Right of access for exploitation of the resources of the seabed and subsoil of the remaining areas shall be open to all. Guidelines for conservation of resources and orderly development, which provide for exclusive exploitation of limited areas, shall be determined by general agreement of States. No sovereignty shall be claimed by any State or other body. An international registry system shall be established to guarantee exclusive occupancy for exploitation with filing fees only sufficient to cover costs.

The above points are designed as a beginning framework, not as a final regime. Many points would require closer definition before any agreement could be reached and there is ample time to consider all views before any new regime is needed.

THE UNITED STATES, CHILE, ECUADOR AND PERU:
SOME REFLECTIONS ON THE 1969 REPORT OF THE
COMMISSION ON MARINE SCIENCE,
ENGINEERING AND RESOURCES

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Perhaps one of the greatest difficulties facing the United States government in utilizing and developing the ocean for the benefit of this nation and of the international community, is the knotty issue of the rights of the coastal State, and the seaward claims of such States. Although the United States has moved toward international accord on the uses of the high seas with such powerful fishing nations as Japan and the Soviet Union, it has been unable to reach even an enduring tacit understanding with Chile, Ecuador and Peru on the uses of international waters beyond the twelve-mile limit.

The difficulties between the United States and the CEP nations dates back to the Truman Proclamations of 1945. After Mexico, Argentina, and Chile had issued declarations misinterpreting prior United States proclamations, Peru, in August, 1947, issued a President Decree No. 781, which claimed a territorial sea and exclusive fishery zone of 200 miles. On July 2, 1948, the United States government protested Peru's unilateral action and noted how the actions between it and the government of Peru differed with regard to the uses of the high seas, the property of all nations.

The Latin American nations bordering the Pacific advanced unique reasons for their extended claims which they based on a new scientific theory concerning fishing and other industries: the "bioma theory." This theory, originally advanced by Peru in 1947, is still its basic ideology in 1969. The "bioma" theory is based on the premise that there are ecological relationships off its coasts. On June 4, 1969, Carlos Gibson L., Financial Minister of the Peruvian Embassy in Washington, D.C., wrote that

our position is that for ecological reasons it is in the vital interest that the fisheries rights of Peru be protected for at least 200 miles; among other reasons for this viewpoint is that as a result of the studies that we have made, we are fearful that any overfishing could profoundly affect the natural cycle of the fish in the seas destroying their existence, which cannot be permitted, as they are vital for feeding our people.¹

¹ Letter from Carlos Gibson L., Financial Minister, Commercial Department, Embassy of Peru, Washington, D.C., June 4, 1969.

West coast Latin American nations not only championed the above theory, they believed furthermore that many small organisms, including plankton, sardines, sprats, menhaden and anchovy, lived near the shore and appeared at

certain times and places for the purpose of feeding and in so doing provide food for the larger pelagic fish... the larvae of these feed on the plankton in the water above the continental shelf, which are generally more productive than that of off-shore waters.²

(In 1969, Peru is particularly anxious over the continued productivity of the anchovy living off Peru which supply the greatest fishing complex in the world. Anchovy are also the basis for the important guano industry. The United States does not fish for anchovy; it fishes for tuna.) However, Dr. Milner B. Schaefer disavowed their hypothesis and wrote in 1967:

The statement to the effect that the fish and other sea life in most places are heavily dependent on the waters above the continental shelf is not generally true. Many rich fishing areas of the sea have no connection with the shelf, such as the high seas fisheries off Peru, and the fisheries along the equatorial zone in the Pacific and Atlantic Oceans, which are dependent on upwelling phenomena having nothing to do with the shelf.³

In 1952, Peru joined with Ecuador and Chile in creating a Maritime Zone of a 200-mile territorial sea, based on the ecological premise described above. The United States has continually denied that the CEP premise is indeed scientific. To the present, no agreement has been worked out between the United States and the CEP nations on fishing, nor on the nature of fishery conditions off their coasts.

In light of United States previous reaction to the "bioma theory" and the leaning of Peru on ecological relationships in a particular maritime area, it is interesting to note that the 1969 Report of the Commission on Marine Science, Engineering and Resources is itself concerned with the importance of ecological phenomena as they relate to strengthening current international fishery conservation organization. The Report states that many of the existing conventions of which the United States is already a member emphasize species regulation. It continues that "species regulation tends to shift fishing pressure to other species or to restrict development of underutilized fish in the same

² Barry B. L. Auguste, The Continental Shelf (Geneva: Librairie E. Droz, 1969), p. 35.

³ Letter from Dr. Milner B. Schaefer, Director, Institute of Marine Resources, University of California, La Jolla, July 11, 1967.

area."⁴ Because of this fact the Commission Report recommends that "the geographical area subject to international fisheries management be large enough to permit regulation on the basis of ecological units rather than of species and, when necessary, include the territorial seas. Fisheries commissions should be authorized to manage ecological units whenever they conclude that the additional gains from such management are likely to outweigh the increased cost of undertaking it."⁵ [emphasis added]

It thus appears that the CEP block and the United States fishery experts both respect the ecology of fishery zones, not only particular species found therein. The position of the Commission's Report, therefore, does not appear to be in complete contradiction to that of Chile, Ecuador and Peru. Thus, concern with ecology might become one channel of international understanding. This issue may in the future serve as a starting point on the twisted path toward resolution of delicate and vexing fishery problems.

⁴ Our Nation and the Sea. A Plan for National Action (Washington: U.S. Government Printing Office, 1969), p. 111.

⁵ Ibid.

THE MALTA PLAN AND THE UNITED NATIONS

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On August 18, 1967, Ambassador Arvid Pardo, of Malta, submitted to the twenty-second session of the General Assembly of the United Nations a proposal calling for the reservation of the seabed and ocean floor beyond present national limits for peaceful purposes and "the use of their resources in the interest of mankind." He further proposed an international agency, apart from but related to the United Nations, to assume jurisdiction, regulate and supervise the international portion of the seabed and ocean floor as a trustee for all countries.¹

How has the Malta proposal fared in the United Nations over the past two years? What progress has been made in formulating an agreed international regime for the underseas domains beyond the continental shelf?

The discussion in the United Nations on the subject of the seabed is to the deliberations in the foreign offices of nations as is the tip of an iceberg to the massive submerged section; that is to say, it is the only visible portion of the cold decision-making process of the community of nations.²

The Member States have predictably embraced or resisted the Malta proposal according to short-term national interests, but the likely outcome is an extension of the national areas of the continental shelf coupled with an international agency for the deep-ocean bottom having limited powers of administration rather than disposition.

On the positive side, national representatives have worked diligently and seriously. They have produced a solid comprehensive report that throws the issues into sharp relief, have formed a new United Nations Committee, and are embarked on a work program that may yet fashion a new legal regime for the ocean-bottom, foster international cooperative research and lead to new agreements in the field of disarmament, pollution control and multiple oceanic uses.

¹ UN Doc. A/6695.

² The domestic discussion in the United States has, however, been fairly open. See, Our Nation and the Sea. A Plan for Action (Washington: U.S. Government Printing Office, 1969), pp. 174-90 [hereinafter referred to as Commission Report]; Senate Hearing before Committee on Foreign Relations on SJ Res. 111, 172 and 186; Interim Report on the United Nations and the Issue of Deep-Ocean Resources, Subcommittee on International Organizations and Movements, Committee on Foreign Affairs, House Report No. 999, 90th Congress, 1st Sess., Report by same Subcommittee, "The Oceans: A Challenging New Frontier," House Report No. 1957, 90th Congress, 2nd Sess.

In the United Nations First Committee discussion in November, 1967,³ Ambassador Pardo's challenge was met with a somewhat masked response. Twenty-four of the forty-seven missions participating in the debate may be said to have offered varying degrees of support to Malta, while fourteen missions cast a jaundiced eye at the proposal, and nine were neutral - all told a majority in favor. But the proposal ran into heavy tides of caution and reserve set in motion by the influential maritime powers, Russia and the United States among them, echoed by the northern European tier of nations, with the notable exception of Sweden.⁴ The United States failed to comment directly on the heart of the Malta plan, an international agency, while its stress on traditional cooperation, free national uses and counsels of delay cast a mild shadow of doubt hiding deeper hostility. Russia, characteristically negative where international organization is concerned, in 1967 opposed even the formation of the ad hoc committee on the oceans. The developing nations, particularly those of mid-east Africa and Asia, approved an international agency and advocated a freeze on further national claims to underwater areas. Some South American nations - Chile, Honduras, and Peru - used the debate to reiterate their claims to a 200-mile national epicontinental zone, while supporting an international agency.

On December 28, 1967, at the conclusion of debate, the General Assembly created a 35-nation Ad Hoc Committee to Study the Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction. The Ad Hoc Committee was requested to prepare a study surveying present and past activities of the UN and other bodies bearing on the seabed, to give an account of the scientific, technical, economic, legal aspects of the item, and

(c) An indication regarding practical means to promote cooperation in the exploration, conservation and uses of the seabed and the ocean floor and the subsoil thereof, as contemplated in the title of this item, and of their resources having regard to the views expressed and the suggestions put forward during the consideration of this item at the twenty-second session of the General Assembly.⁵

At the same time, the General Assembly requested the Secretary-General to seek the views of the Member States on the subject and to provide certain studies and documentation.

³ UN Docs. A/C.1/PV 1515-1530. The views of the Member States at the 22nd session are summarized topically in UN Docs. A/AC.135/12.

⁴ Compliments are due Mrs. Gunnar Myrdal, the Swedish spokesman, who said, "The oceans themselves, no one denies, are the joint property of mankind, like the air we breathe. It is inconceivable that, having inserted a brief, somewhat cryptic phrase in a convention, States could have intended to allow the parcelling up of the seabed underneath the oceans." A/C.1/PV 1527, pp. 48-50.

⁵ A/Res 2340 (XXIII).

The documentation by the UN Secretariat, some of it previously underway for ECOSOC, was prompt in arriving. In February, 1968, a two-part report on Resources of the Sea was supplied, the first part dealing with mineral resources, the second part dealing with food resources. A summary of the two documents completed the package.⁶

The Secretary-General reported that substantial mineral resources, particularly petroleum, awaited development beyond the continental shelf, but that this activity was dependent on greater engineering capability and precise knowledge of the characteristics of the sea floor and its resources. Almost nothing was known of deposits beneath the continental rise.⁷

The suggested international authority would fix fees and royalties, designate the use of proceeds, and control orderly operations. Equally urgent in the Secretary's opinion, was a decision at the international level to fix the outer limit of the continental shelf, "which as presently defined is so imprecise as to leave virtually open the important question of where the exclusive rights of riparian countries cease to apply."

The report summarized alternatives for the solution of the boundary problem as follows: inaction or delay; the national lake concept; the national flag solution; and an international regime.⁸ Other data followed⁹ and in 1968 the Ad Hoc Committee held three sessions. The first two took place at UN Headquarters in New York, March 18-27 and June 17-19. The third session was held at Rio de Janeiro, Brazil, August 19-30.

At the outset, the Ad Hoc Committee established two working groups, a Legal Working Group and an Economic and Technical Working Group. The full Committee was chaired by Mr. Hamilton Shirley Amerasinghe, Ceylon, and its Rapporteur was Victor J. Gauci, Malta.

⁶ UN Docs. E/4449, E/4449 Add. 1 and E/4449 Add. 2.

⁷ This conclusion coincides with that contained in the report of the National Petroleum Council, Petroleum Resources Under the Ocean Floor (Washington, 1969), p. 3. Note, however, that oil-bearing salt domes have been discovered 400 miles west of Senegal, Africa, in water three miles deep. (New York Times, May 13, 1969, p. 29, col. 1.)

⁸ Supra, n., pp. 91-94.

⁹ Among documents are a Report on the Effect of Mineral Exploitation on Superjacent Waters, A/AC.135/15, June 11, 1968, an up-to-date survey in summary form of national legislation relating to the seabed, ocean floor and soil beyond present national jurisdiction, A/AC.135/11 and A/AC.135/11 Add. 1; a very useful collection of the pertinent articles of existing treaties, both multilateral and bilateral, having a bearing on seabed and ocean floor, A/AC.135/10 Rev. 1, and a paper on possible military uses of the seabed and ocean floor, A/AC.135/28.

In addition to the documents provided by the Secretariat, individual governments submitted their views in replies to inquiries from the Secretariat. These views are reflected in both the proposals and oral positions of the delegations at the 23rd session of the Assembly's First Committee.

The work of the Ad Hoc Committee and its two working groups began to take definite form when two types of definitive proposals were submitted by various nations and groups of nations. A number of draft resolutions were submitted for discussion and action by the General Assembly.¹⁰ At the same time statements of principles,¹¹ looking toward a final declaration of legal principles by the General Assembly and, in turn, incorporation in a new multilateral treaty for the ocean bottom were submitted by some delegations or combinations of delegations. Both the individual draft resolutions and statements of principles contained, as might be expected, similar or duplicating material in many cases. The General Assembly at its 23rd session finally adopted one Resolution consisting of four parts. It adopted no statement of principles at that session but kept them under further consideration by the new Sea-bed Committee.

As to resolutions, the U.S.S.R. submitted a resolution requesting the Eighteen Nation Disarmament Committee (ENDC) to consider the question of prohibiting the use for military purposes of the seabed and ocean floor beyond the limits of territorial waters.¹² On the same matter, the U.S. would have called on the ENDC to define the "factors vital to a workable, verifiable, and effective international agreement which would prevent the use of this new environment for the emplacement of weapons of mass destruction."¹³

Tanzania submitted two identical amendments,¹⁴ one directed to the U.S. and one to Russian disarmament resolutions, the effect of which would have barred the seabed beyond present national jurisdiction to all military uses, including nuclear submarines, fortifications and military bases.

All the above "peaceful uses" drafts have been outdated since draft treaties were introduced in the ENDC this year by the U.S. and U.S.S.R.

¹⁰ Those that survived the Legal working group deliberations are collected in A/AC.138/7, March 7, 1969.

¹¹ Similar to the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, GA Res. 1962 (XVIII), December 13, 1963.

¹² A/AC.135/20.

¹³ A/AC.135/24.

¹⁴ A/AC.135/26 and A/AC.135/27.

On other matters a draft handed up by India¹⁵ emphasized the "benefit and interests of mankind" and contained a proposed ban on national appropriation, calling on the United Nations "to provide direction" to international activities on the seabed.

The United States submitted two resolutions in addition to its peaceful uses proposal. One,¹⁶ addressed exclusively to the "deep-ocean floor" rather than seabed and subsoil¹⁷ would have, among other things, contained a disclaimer of national sovereignty or sovereign rights over any part of the ocean floor, but coupled this with a principle asserting non-discrimination in availability of the deep-ocean floor for exploration and exploitation and use by all States under international law. As in space, the sum of this proposal would have been to open up the ocean bottom to enclaves of national control without a formal claim of sovereignty.

The U.S. would establish "internationally agreed arrangements"¹⁸ for exploiting the seabed, with guidelines one may summarize as follows: orderly development of resources reflecting the interest of the international community; establishment of incentives; dedication of a portion of resource value to international community purposes, and accommodation of the ocean floor to multiple uses.

The U.S. resolution advocated as well an internationally agreed precise boundary for the deep-ocean floor with the proviso that exploitation prior to fixing the boundary would not prejudice its location regardless of whether the coastal State considers the exploitation to have taken place on its continental shelf. The U.S. thus effectively opposed a freeze on activities advocated by a few nations¹⁹ while at the same time moving toward a line of demarcation, which is not liked at this time by the South American bloc.

A number of other U.S. principles were adaptations of the familiar space treaty tenets of information dissemination, encouragement of cooperative

¹⁵ A/AC.135/21.

¹⁶ A/AC.135/25.

¹⁷ Though this might be ordinarily taken as an indication that the U.S. desires to extend national rights to the entire continental margin, the U.S. explained the term "deep-ocean floor" to be used for the sake of conciseness and meant "the area of the seabed and ocean floor underlying the high seas beyond the limits of national jurisdiction," an area subject to future precise definition. UN Doc. A/7320, p. 15.

¹⁸ See Commission Report, op.cit.

¹⁹ A/AC.135/12, pp. 26-27.

scientific activities, pollution consultations and safeguards, and rescue in case of seabed accident, emergency and distress.

A third resolution sponsored by the U.S. and twelve other powers²⁰ called for all nations to embark on an International Decade of Ocean Exploration and to formulate national and international scientific programs and activities. The Intergovernmental Oceanographic Commission would be the coordinating body for the programs. This resolution won the final sanction of the General Assembly.

Belgium submitted a working paper containing a draft resolution establishing a permanent UN Committee for the Sea-bed to study and make recommendations on the rules to promote international cooperation and, in particular, the legal principles to govern exploration and exploitation. The Belgian resolution was eventually co-sponsored by some sixty-four nations and formed the basis for the final setting up of the permanent committee.²¹

Iceland added a draft resolution asking for appropriate safeguards against the dangers of pollution arising from seabed exploitation, and called for studies in this field.²² Some forty nations attached themselves to the Icelandic resolution.

With respect to declarations of legal principles, two sets of such principles rose into view. One was a Draft Declaration of General Principles, submitted by fifteen States from Africa, Asia, and Latin America,²³ and it assumed great importance in later deliberations under the informal designation, "A" Principles.

A second tier of principles, the Draft Statement of Agreed Principles, which came to be known as "B" Principles, came into deliberations of the Ad Hoc Committee although not originally submitted as a separate document. The "B" Principles, Western-Supported, may be said to be in part opposable to the "A" Principles.²⁴

²⁰ A/C.1/L.429 Rev. 1.

²¹ UN Doc.A/7230, pp. 57-59, later A/C.1/L425 Rev. 1.

²² Id., pp. 59-60, later A/C.1/L431.

²³ A/AC.135/36, A/7230, pp. 62-64.

²⁴ A few of the principles were derived from the U.S. draft A/AC.135/25 and some from the Indian proposal, A/AC.135/21.

The Ad Hoc Committee deliberations terminated on August 30, 1968, in Rio de Janeiro without reaching final "agreement to find an acceptable formulation which would command unanimous support."²⁵ An important result of the consultations was the informative Report of the Ad Hoc Committee.²⁶ This report describes the work of the Ad Hoc Committee in relation to the Resolution which created it²⁷ and in relation to the activities of its working groups.

The Report is valuable for the summing up of different views on a number of topics so that it gives a compendium of the chief concerns of the delegations and the factual basis on which their views were formed.

Perhaps the most significant point of agreement recorded in the Report of the Ad Hoc Committee was consensual recognition of the existence of an area of the seabed and ocean floor underlying the high seas beyond the limits of national jurisdiction.²⁸

The Economic and Technical Working Group, under Chairmanship of Roger Denorme, of Belgium, brought up-to-date the terminology of topographical descriptions, and the practical prospects for ocean bed exploitation as to particular minerals in terms of their existence and economic feasibility of extraction. As to the main thrust of the Malta proposal, the international organization aspect, various possible regimes were tentatively mentioned. An international regime under the auspices of the United Nations was recommended by some delegations; others referred to a new agency within or having a relationship to the UN system. Still other delegations "opposed the creation of any agency with administrative powers," stressing instead research and exploration of resources on the basis of cooperation through IOC. This point of view drew attention to "possible disadvantages of large bureaucratic institutions" - lengthy delays that would slow down return on invested capital, inefficient spending on administrative machinery, and diversion of funds earmarked for marine research. In fact, it was held that such machinery would hinder development of inter-State marine cooperation. The Report added, however, that this point of view was strongly controverted by many delegations and that prevailing opinion²⁹ thought it ripe to mull an international regime for the benefit of mankind. An interesting view, added by Italy, is that needed private capital and technology

²⁵ UN Doc. A/7230, p. 17, par. 88. The compromise formulation was achieved only in part by the First Committee at the 23rd session when the General Assembly promulgated Resolution 2467 (XXIII) on December 21, 1968.

²⁶ A Res. 7230.

²⁷ A Res. 2340 (XXII).

²⁸ Id., p. 17, par. 86.

²⁹ Id., pp. 35-37.

presupposed an international company set up by the World Bank or other organization.³⁰

The Legal Working Group, chaired by Mr. Leopoldo Benitez, of Argentina, discussed six main questions: the legal status of the international seabed and ocean floor, reservation for peaceful purposes, use of resources in the interests of mankind, freedom of scientific research and exploration, regard to interests of others, and the question of pollution and other hazards. Since the different views are reflected in the two sets of proposals (A and B) and in the debates in the First Committee, it is not appropriate here to go further into the report of the Legal Working Group, despite its intrinsic value.

The two contesting views as to international action on the seabed were reflected, as mentioned above, in the Draft Declaration of General Principles ("A" Principles) and the Draft Statement of Agreed Principles ("B" Principles).

The Draft Statement of Western sponsorship consisted of seven concise principles paraphrased as follows:

- (1) Acknowledgement that there is an area of the seabed which lies beyond the limits of national jurisdiction.
- (2) There should be agreement on a precise boundary for this area, taking into account present international law.
- (3) "There should be agreed as soon as practicable, an international regime governing exploitation of the resources of this area."
- (4) No State may claim or exercise sovereign rights over the area beyond national jurisdiction and no part of it is subject to national appropriation by claim of sovereignty, by use or occupation, or by any other means.
- (5) Exploration of the seabed for the benefit and in the interests of mankind, taking into account the special needs of the developing countries.
- (6) Use of seabed for peaceful purposes exclusively.
- (7) Conduct of activities under international law and the UN Charter, and non-infringement on freedoms of the high seas.

In many particulars there was common ground between the Draft Declaration ("A" Principles) and the Draft Statement ("B" Principles).

³⁰ A/AC.135/WG2/SR.12-15, p. 21.

Both the acknowledgement of an area of the seabed beyond national control and the prohibition of national appropriation were covered appreciably by a statement that:

The sea-bed and ocean floor and the subsoil thereof,...are the common heritage of mankind and no State may claim or exercise sovereignty over any part of the area...."

There was no affirmative statement in the Draft Declaration ("A" Principles) that a precise boundary between the national and non-national area should be fixed. This is not surprising in view of Latin American reluctance to deal with the boundary question at this stage. The declaration itself is based, however, on the fact that there is an area beyond national jurisdiction. Whether, as in the case of space, the Committee will pronounce the boundary question not urgent or, due to the prospective tangible territorial gains to coastal nations, will ultimately recommend the demarcation of this line, is a matter for the future.

The Draft Declaration ("A" Principles) differed from the Draft Statement ("B" Principles) chiefly in the elaboration given to the question of an international regime.

While the Draft Statement ("B" Principles) contented itself with espousing an international regime governing seabed resource exploitation, the Draft Declaration ("A" Principles) said that the exploration and use of the seabed and subsoil, as well as the resources should be carried on in accordance with the principles and purposes of the Charter of the United Nations:

...and an international regime to be established with the purpose of contributing to the maintenance of international peace and security, the respect for the territorial integrity of States and the interests of coastal States, and the promotion of economic development, particularly that of developing countries, whether coastal or land-locked.

Further, the international regime would consider the best way to apply the benefits derived from seabed exploration, use and exploitation, "through suitable international machinery, for the economic, social, scientific and technological progress of the developing countries.

Both sets of principles refer to an international regime. A regime is a structure of control and could include an arrangement from a claims registry unit as suggested by the National Petroleum Council in the United States³¹ to an ocean agency as proposed by the United Nations Committee of the World Peace

³¹ Petroleum Resources Under the Ocean Floor, op.cit., p. 78.

Through Law Center.³² The Draft Declaration ("A" Principles) proposes an international regime whose character may be glimpsed albeit dimly, through the verbalisms employed. A regime that contributes to peace and security may regulate military uses. The mention of the "interests of coastal States" may indicate some weighting of decisional power where continental shelves of particular coastal States are concerned. Conceivably it might countenance an "intermediate zone" where the coastal nation might have preferential and even exclusive rights as proposed by the National Commission on Marine Science, Engineering and Resources. The language dealing with the application of benefits to developing countries might be construed to mean that revenue from such regime would be devoted exclusively or at least predominantly to the needs of have-not nations. The Draft Agreement ("B" Principles) contemplated the benefit of "all mankind" and merely "took account" of the special needs of the developing countries.

The Draft Declaration ("A" Principles) enumerated certain guidelines for ocean floor activities, some of which were coextensive with the treaty obligations in the four Geneva conventions. These were: avoidance of interference with navigation, fishing and laying and maintenance of submarine cables and pipelines; consultation with coastal States to avoid harm to their interests; avoidance of injury to economic interests of developing countries; adoption of safety measures; avoidance of pollution; avoidance of damage to plant and animal life; liability for damage in ocean bed activities.

Open scientific investigation on the seabed, the fostering of international cooperation, dissemination of results and provision of technical assistance were also touched on in general terms.

The importance of the two drafts is that they present two approaches - sometimes overlapping and sometimes divergent - which represent the views of different blocs on future legal regimes of the seabed. Discussions in the 23rd session of the General Assembly in 1968 and events in 1969 have demonstrated this.

The attention of the First Committee was focused on the seabed from October 29-31 and November 1-9, 1968. One of the important questions was should the General Assembly adopt during the 23rd session a set of general principles relating to this issue. The problem cut across the ranks of third-world "liberals" and the big power "conservatives."³³ The numerically stronger opinion

³² Proposed Treaty Governing the Exploration and Use of the Ocean Bed, Pamphlet Series No. 10 (World Peace Through Law Center, 1968).

³³ Delegations in favor of a set of principles in the past session were Afghanistan, Austria, Belgium, Cameroon, Canada, Ceylon, China (Taiwan), Colombia, Cyprus, France, Ghana, India, Jamaica, Japan, Kenya, Liberia, Libya, Malta, Mexico, Netherlands, New Zealand, Norway, Pakistan, Rwanda, Sierra Leone, Sweden, Turkey, UAR, United Kingdom, U.S., and Yugoslavia.

supported an immediate declaration of principles, or at least a minimum set of non-controversial, necessary principles.³⁴ Other delegations, irrespective of "liberal" or "conservative" orientation, felt it premature to adopt a declaration of principles without further study;³⁵ and that, in any case, unanimity was a prerequisite to any such declaration.³⁶

It was evident in the progress of First Committee discussion that a process of depolarization was under way with respect to the "A" and "B" Principles. Several States - Argentina, Chile, Cyprus, Ghana, Peru, and Yugoslavia - explicitly supported the "A" proposals while others - Australia, Canada, New Zealand, United Kingdom and the United States - specifically endorsed the "B" proposals. A number of nations liked both sets of principles. On the other hand, some "B" proponents conceded the merit of some "A" proposals and at least one "A" supporter evinced a willingness to contract the scope of "A" principles. Both sets of proposals were criticized by a few nations for generality or not susceptible of redirection to practical agreement.³⁷ The delegate of Trinidad and Tobago said:

Many of the objectives in the proposals for declarations by the General Assembly have unfortunately, in our opinion, found expression in formulae which are at one and the same time too wide to be effective and too flexible to escape the possibility of ambiguity and conflict.³⁸

In the First Committee in November, 1968, thirty-two nations favored the adoption by the General Assembly at that session of a statement of principles; and six felt adoption at that time would be premature. The Soviet bloc especially opposed its adoption at the 23rd session, while the United States, most of Western Europe, the Middle East and Far East were for adoption. Joining Russia, Byelorussian SSR, and Bulgaria in opposition were Australia, Ireland and Italy.³⁹ Due to the lack of unanimity, a statement of principles was not adopted.

A number of nations gave notice that they would rely on the full extent of their rights of existing law, that is, the Convention on the Continental Shelf. This is a code way of saying that changes, particularly with respect to

³⁴ See, UN Doc.A/AC.138/7, March 6, 1969, pp. 15-21.

³⁵ Australia, Byelorussian SSR, Ecuador, U.S.S.R., id., pp. 18-19.

³⁶ Id., p. 1617.

³⁷ Id., pp. 22-23.

³⁸ UN Doc. A/AC.1/PV.1601, p. 71.

³⁹ UN Doc. A/AC.138/7, pp. 15-19.

a boundary line or an international regime should come slowly, if they should come at all.⁴⁰

The Secretariat's working paper on the proposals and views expressed at the 23rd session enumerated the following principles most frequently suggested or commented upon:

- (1) That there does exist an area of submerged land underlying the high seas beyond the limits of national jurisdiction. This was generally accepted.
- (2) That the area was a common heritage to mankind or common patrimony.

However, comments of some delegates indicate that common patrimony may be equivalent to a gold rush by all interested nations; that is, national rather than a "common" heritage.

- (3) That the limits of the area should be defined. This was generally agreed except for the Latin bloc (Argentina, Honduras, Ecuador) and South Africa which are in no hurry at this time to truncate the full geographic range of continental shelf resources. Probably the large powers feel that the boundary can be settled now on terms favoring expansion - but not one so wide as preferred by South America.
- (4) That no State might claim or exercise sovereignty over the area beyond national jurisdiction, and that the area is not subject to national appropriation. Several States, however, preferred to emphasize the obverse position, that sovereign rights could be claimed up to Shelf Convention criteria and that any future boundary definition was powerless to affect those rights.
- (5) That exploration and exploitation should be for peaceful purposes. Here the usual statements of NATO nations were made that peaceful uses did not exclude military uses.
- (6) That the exploration, use and exploitation must be carried out for the benefit and in the interest of all mankind. According to interest, some nations stressed the special needs of developing nations, and/or landlocked nations, others the coastal States. Indonesia and Phillipines emphasized the special circumstances of archipelagos.

⁴⁰ Id., p. 21.

- (7) That activities in the area should be carried out in accordance with the UN Charter and/or in accordance with international law, in the interests of peace, security and promotion of international cooperation.⁴¹
- (8) On the main points of an international regime, it should first be said that the Soviet bloc was violently opposed to any international regime which envisaged a supranational body.⁴² One reads with some amusement Mr. Mendelovich's strictures against common ownership - in this case common ownership of the seabed.

We have already said that attempts to create at this state of development of human society an international regime based on the principle of common ownership of the seabed, or any other environment, no matter how attractive they may seem - and we understand the sympathy expressed for these ideas by the delegations of some developing countries - could, if they were carried out in practice, lead to a complete breakdown of international cooperation or to actual control of the resources of the sea falling into the hands of large-scale imperialist monopolies, even if the forms of that common ownership and that international machinery outwardly seem to be most democratic. That is why we said that such an approach is Utopian in theory and dangerous in practice.⁴³

Earlier, Ambassador Mendelovich speaking of "the objective realities of the present day world," told why he thought control would lodge in monopolies. The world is divided into socialist States (where "everything belongs to the people"), the developing States, and the imperialist States:

No matter how democratic the forms of management or administration in that common ownership might be, no matter how sincere the motivations and desires of most States to see an equitable distribution of resources in such an undertaking, the principle points of command in such a system would inevitably be in the hands of the capitalist monopolies of certain imperialist Powers

⁴¹ For the above seven topics see A/AC.138/7, pp. 24-31.

⁴² Id., p. 34.

⁴³ A/C.1/PV.1603, pp. 27-31.

and the entire system, despite the pious wishes of its sponsors, would become just one more mechanism for the enrichment of rapacious monopolies and the execution of neo-colonialist policies.⁴⁴

Ambassador Mendelovich did not say how the control of oceanic resources would be kept from the hands of "imperialist monopolies" under national or other regimes in view of the technological proficiency of the international corporations. Nor did he explain how common ownership would lead to a complete breakdown of international cooperation.⁴⁵

The Soviet Ambassador did say the Soviet Union understood such ideas existed and was willing to discuss and examine the idea, and that his delegation was willing "to clarify our position, our negative position, towards that idea..."⁴⁶

Earlier, the Ukrainian SSR representative deprecated any "supranational or international ownership of the huge expanses of the sea bed," saying:

There are States in the world with different economic and social systems, different forms of ownership. There are socialist States, capitalist States and States building their national economies in a struggle against colonialism and neo-colonialism. In these conditions any attempt to administer a common ownership of the sea bed and to create supranational machinery to administer it would be completely unrealistic."

He then said that the "key posts" of such regime would fall into the hands of those interested in maximum profits - the capitalistic monopolies of some imperialist States. Poland, to the same effect, added that the principle of open bidding would widen the gap between developing and highly developed countries, and guarantee "the interests of mammoth national or pseudo-international concerns,"⁴⁷ and the Byelorussian SSR followed suit in opposition.⁴⁸

⁴⁴ A/C.1/PV 1592, p. 17.

⁴⁵ The point could be made that under certain voting circumstances a large number of small nations, acting as a bloc, but without effective technical contributions, might dominate the distribution of seabed resources at the expense of the capital contribution.

⁴⁶ Id., p. 31.

⁴⁷ A/C.1/PV 1596, p. 67.

⁴⁸ A/C.1/PV 1602, p. 53.

A great number of other nations supported an international regime. Nations so listed are: Australia, Brazil, Bolivia, Cameroon, Canada, Ceylon, Chile, China, Colombia, Cyprus, Finland, Honduras, Indonesia, Iraq, Jamaica, Kenya, Kuwait, Liberia, Libya, Malta, Netherlands, Pakistan, Sweden, Trinidad and Tobago, Turkey, United Kingdom, Venezuela and Yugoslavia.⁴⁹ Yugoslavia broke with the Eastern bloc calling for an international regime "based on regulation and security."⁵⁰

Among more prescient comments of proponents were those of Lybia, Cyprus, Trinidad and Tobago and Colombia whose comments may be taken as expressing the views of the developing nations outside the Latin bloc.

Lybia pointed to a clear divergence of views between the advanced and the developing countries - the "haves" and the "have nots"; a divergence that stems from the fact that the advanced nations are reluctant to accept restrictions on their freedom of action and on present and potential privileges, while the "have nots" are attempting to preserve their future role through international machinery under a legal regime under UN direction.⁵¹

Libya suggested that, in view of the detailed studies required of the problem, it would be appropriate at this stage to agree on the need to establish an international authority, leaving aside for the time being the details concerning powers, mandate, structure and competence of the proposed authority.⁵²

Cyprus reiterating its view that the UN needed independent sources of revenue to become an effective instrument for peace, said:

The historian of the future may perhaps record that one of the finest and most important actions taken by the United Nations in its first twenty-five years has been to accept the challenge of the last two frontiers - outer space and the seabed."⁵³

More specifically, Cyprus supported an international authority under U.S. supervision to issue licenses for exploration and exploitation. The revenue would be

⁴⁹ A/AC. 138/7, p. 32.

⁵⁰ A/C.1/PV 1593, p. 51.

⁵¹ A/C.1/PV 1597, pp. 28-30.

⁵² Id., p. 31.

⁵³ A/C.1/PV 1599, p. 11.

divided between a development fund for the developing peoples and a UN peace fund.⁵⁴

Colombia, after paying respect to the state of technology and the need for incentives and investment protection, suggested that the highly industrialized countries not lay too great emphasis on merely utilitarian aspects and short-term investments, which Colombia understood perfectly, but to consider the broader perspective of assisting marginal peoples to acquire technical training and to reap the benefits of such investments.⁵⁵

The delegate of Trinidad and Tobago unusually eloquent, spoke of the optimism darkened by the anxiety born of awareness of technological inferiority and that except for the United Nations the developing nations would be totally dependent on the big powers. Mr. F. D. Solomon, speaking for his delegation, rightly saw that:

The essence of the political problem has to do with ownership - ownership in all its manifestations: rights of control, rights of occupation, rights of exploration, rights of research and so on, and the cognate right to exclude others from control, from occupation, from exploitation and research. Ownership as a theoretical and as a practical concept is, we are very well aware, at the heart of the ideological confrontation between the communists and the capitalists. So that now that our attention has been directed to vast new areas of potential riches, we must anticipate that the question of ownership will once more threaten to precipitate a confrontation between the big Powers - not a comfortable prospect now that they are both armed to the degree where they are capable of destroying us all in order to prove a point.⁵⁶

Appreciating but rejecting the Soviet view, he added:

The problem before the world community is precisely the problem of reconciling, without recourse to the lawlessness of the jungle, the apparently irreconcilable ideological positions of the super-Powers; because the alternative to reconciliation and to the submission of both ideologies to regulation by a universally accepted regime, will be to engage

⁵⁴ Id., p. 16.

⁵⁵ A/C.1/PV 1600, p. 68.

⁵⁶ A/C.1/PV 1601, pp. 64-65.

in a new colonial contest beneath the sea, with a repetition, magnified this time a thousand-fold, of all the said consequences of the first one.⁵⁷

Mr. Solomon advocated a third conference of the law of the sea and a review of the Convention on the Continental Shelf.

Among the larger powers, Canada, which had not spoken in the First Committee in 1967, made the wise comment that the position of many countries would be influenced by the determination of the area in question. Therefore, the delimitation question was important. Canada while finding it difficult to develop specific views on the system to be imposed on the sea bottom, said she did not share the fears expressed by some delegations. This was because there is a wide range of possibilities under the heading international regime, "extending from mere registration of exploration and exploitation projects with some control registry...to a system which might, for example, be based in principle on the concept of ownership in trust - as distinct from actual or beneficial ownership."⁵⁸

Absent agreement on a viable agency to administer ocean bed resources as proprietor, Canada's words point the way to the probable outcome of the Malta plan, similar to the proposal of the Marine Science Commission. A somewhat weak solution, from the point of international organization.

The United States position is closer to the Russian position than to the position of the developing nations on the question of an international regime, and the delegation, operating behind the scenes, has chosen to stay in the forensic background. The International Decade of Ocean Exploration to start in 1970, was an American idea, to which the U.S. sought to channel attention. Ambassador Wiggins continued to stress the alleged paucity of knowledge of the extent of resources - "what is primarily needed at this time is not a rush to our drilling dredges and drilling rigs to dig up the ocean floor." He gave lip service to the Johnson dictum:

Certainly no nation need fear that this proposal will be the signal for an old-fashioned, first come-first served world-wide gold rush under the oceans.⁵⁹

The gold rush is likely to be "new-fashioned" rather than old-fashioned. The United States prefers the use of the term "agreed regime" or "internationally agreed arrangements" rather than the harsh sound of "international

⁵⁷ Id., pp. 69-70.

⁵⁸ A/C.1/PV 1599, pp. 33-35.

⁵⁹ A/C.1/PV 1601, p. 56.

regime."⁶⁰ The United States presentation was characterized by avoidance of all discussion of the parameters of international machinery, in contrast to the presentations of the developing nations.

Added to the docket of the First Committee were the following resolutions excluding those setting forth statements of principles:

- (1) The revised text of a 55-power draft sponsored by Belgium to set up a permanent seabed committee.⁶¹
- (2) An amendment by Kuwait and Venezuela to the Belgian resolution substituting in place of a committee mandate to study reservation of the seabed area for peaceful purposes an "international machinery" clause, as follows:

To examine the establishment of international machinery for the exploration and exploitation of the resources of this area, in accordance with the principles mentioned in the previous two sub-paragraphs, and the uses of these resources in the interests of mankind, and especially those of developing countries, including the land-locked countries.⁶²
- (3) A further amendment by Afghanistan making reference to the equal interests of the landlocked countries in the resources of the area.⁶³
- (4) The text of a 10-power draft sponsored by the U.S. to set up the International Decade of Ocean Exploration under the United Nations.⁶⁴
- (5) The text of a 29-power draft sponsored by Iceland to welcome the adoption by States of safeguards against pollution and a study of the problem.⁶⁵ The Icelandic draft was amended to

⁶⁰ A/C.1/PV 1590, p. 7.

⁶¹ A/C.1/L 425 Rev. 1.

⁶² A/C.1/L 426.

⁶³ A/C.1/L 427 and Corr. 1.

⁶⁴ A/C.1/L 429 and Rev. 1.

⁶⁵ A/C.1/L 431.

"welcome the adoption" of safeguards rather than "commend" the adoption and to connect this to a study of "possible future international agreements" rather than to a "possible future international regime."

- (6) A 3-power draft sponsored by Cyprus urging States "to give high priority to the question of clarifying the definition of the "continental shelf" in Article 1 of the Convention on the Continental Shelf" and "to refrain from claiming or exercising sovereign rights over any part of the seabed and the ocean floor and the subsoil thereof" pending clarification of the Shelf Convention and without prejudice to existing claims."⁶⁶

During consideration of the pending resolutions, the First Committee disposed in a formal way of the Afghanistan proposal dealing with landlocked countries. Belgium revised its proposal to add a preambular paragraph that the exploitation of the seabed should be carried out for the benefit of mankind "irrespective of the geographical location of States."⁶⁷

Kuwait and Venezuela subjected the true intentions of the major powers to a critical test by insisting that the Committee examine "international machinery" for exploration and exploitation of the seabed by way of amendment to the main Belgian resolution. It was to this turn of events that the Russian strictures already quoted were directed. Kuwait and Venezuela did not feel that the Belgian resolution was sufficiently explicit in indicating the "ways and means" by which the exploitation would take place. Mr. Denorme (Belgium), apprehensive lest the amendment scuttle his resolution, urgently appealed to the proposers to withdraw it.⁶⁸

To this request, Venezuela did not accede, though its spokesman softened the amendment, revising it so as to charge the proposed seabed Committee "(t)o examine the advisability of establishing in due time an appropriate international machinery" for exploration and exploitation rather than "(t)o examine the establishment of international machinery..."⁶⁹

Intervening, the Ceylonese delegate pointed out there should be no objection to a study of the problem and the presentation of recommendations. He

⁶⁶ A/C.1/L 432, Rev. 1 and Add. 1.

⁶⁷ See A/C.1/PV 1602, p. 7.

⁶⁸ A/C.1/PV 1602, pp. 11-16.

⁶⁹ Id., pp. 38-41.

urged the avoidance of an "attitude of obscurantism which rejects even examination of certain possibilities," asking what good it was to exclude ab initio a central administration without suggesting any alternative to distribute the wealth of the area. Nevertheless, he urged the withdrawal of the amendment to save the main resolution.

Tanzania, on the other hand, felt the amendments were apt, and suggested consultations among the Group of 77 - the developing countries of the First Committee, to harmonize their positions.⁷¹

These positions were not wholly reconciled. At the end, on December 21, 1968, the General Assembly adopted four resolutions combined in one document.⁷² The separate resolutions were labelled "A" through "D."

Resolution A was the Belgian-sponsored resolution establishing a standing Committee for the Sea-Bed composed of forty-two States. Originally the resolution would have instructed the Committee "to study the elaboration of a body of rules which would promote international cooperation in the use of the sea-bed...and, in particular, the legal principles which should govern the rights to explore and exploit the resources of this area; and the economic requirements which such a regime should satisfy in order to meet the needs of the international community."

Now the Committee is instructed "to study the elaboration of the legal principles and norms which would promote international cooperation in the exploration and use of the sea-bed...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." Perhaps the exhortative content has been expanded at the expense of rule concretization. There was no opposition to Resolution A. However, Byelorussia, Cambodia, Cuba, Equatorial Guinea, Hungary, Ukraine, and the U.S.S.R. abstained.

Resolution B, the Icelandic proposal on pollution safeguards and for a study of this topic by the Secretary General, was adopted unanimously.

The Kuwait-Venezuela amendment found its lodging place as Resolution C. In final form it reads:

Requests the Secretary-General to undertake a study on the question of establishing in due time appropriate international machinery for the promotion of the exploration and

⁷⁰ Id., p. 7.

⁷¹ Id., pp. 42-46.

⁷² A Res. 2467 A-D (XXIII)

exploitation of the resources of this area, and the use of these resources in the interests of mankind, irrespective of the geographical location of States, and taking into special consideration the interests and needs of the developing countries, and to submit a report thereon to the Committee on the Peaceful Uses of the Sea-bed and the Ocean Floor beyond the Limits of National Jurisdiction for consideration during one of its sessions in 1969.

The resolution now calls for the submission of a report in 1969.

Eighty-five nations voted for Resolution C. Its supporters comprised the Latin American and Afro-Asian group, assisted by all Scandinavia, Austria, Denmark, the Netherlands, Japan, Spain and Yugoslavia. The entire bloc of Eastern Communist States was opposed. Western Europe abstained. Israel and the UAR abstained. Great Britain abstained. South Africa abstained. Canada abstained. Cuba abstained. The United States abstained.

Resolution D, the International Decade of Ocean Exploration, was adopted without objection.

The United States and Russia oppose an international regime with substantive jurisdiction over the seabed for similar reasons but with somewhat different emphasis. Both nations are fundamentally nationalist (as are most nations), and both distrust supranational ventures. Russia's opposition is predominantly political, and springs from a deep-seated fear of being outvoted in any quasi-democratic arrangements. This fear is reinforced by the technological and financial superiority of the U.S. and Western Europe. The Soviets have not joined Intelsat for the same reasons. The U.S. stance is partly political but perhaps more economic. The government leaders and general population of the U.S. would prefer not to share decision-making power with a host of underdeveloped nations. Voting arrangements, as in the IAEA, might dispose of practical political objections but emotional ones would remain. Economically, oil and mineral interests feel safer under national regimes they know and can manipulate, and do not wish to fly toward evils they know not of.

The developing nations, egocentric enough where their own special interests are concerned, are world-minded in the general case. They are, one feels, unrealistic in expecting the developed nations having investment, ability and institutions to do the work, to cede the greater share of the rewards.

A correct solution lies in the concept of international machinery that will divide control and profit equitably between ability and need.

Profit to the developed nations would take a financial form, to the developing nations it would take both a participatory form and a financial form, but more of the former and less of the latter.

All the proposals on principles are under consideration by the standing Committee. These include the Indian, the U.S., the 14-power draft calling for an international regime, the "B" Principles draft, the Mexican draft on non-appropriation, the Cyprus draft, and the Malta draft.

In February, 1969, agreement was reached by members of the Committee on allocation of subjects among the main Committee, the Legal Subcommittee and the Economic and Technical Subcommittee. The main Committee saved for itself consideration on the report to be prepared by the Secretariat regarding international machinery, under 2467C, while the Legal Subcommittee was charged with dealing with the legal implications of this report and with⁷³ study of the legal principles and norms to promote international cooperation.

The Legal Subcommittee decided to consider at its Spring, 1969, session the study of elaboration of legal principles and norms. A distinction was made between legal principles and norms. It was decided to break up legal principles into categories conforming with the 1968 Ad Hoc Committee Report:⁷⁴ (1) legal status; (2) applicability of international law, including UN Charter; (3) reservation for peaceful purposes; (4) use of resources for the benefit of mankind; (5) freedom of scientific research and exploration; (6) regard for interest of other States; (7) questions of pollution and liability matters; and (8) other questions.⁷⁵

Indications are that the Economic and Technical Subcommittee will also deal with international organization aspects under "ways and means" or promoting exploitation, by studying possible regimes for the international seabed area.⁷⁶

On March 18, 1969, Malta submitted a draft resolution in which the General Assembly would fix a boundary line at 50 nautical miles from the nearest coast and 200 meters depth, disregarding rocks and islands without a permanent settled population. She also sounded a call to the Secretary-General to begin consultations and report in 1970 on convening an international conference to revise the Continental Shelf Convention and formulate legal norms for seabed exploration and use in the international area.⁷⁷ Future sessions may well elicit substantive proposals for international machinery for the ocean bottom, and should witness an intensification of the clash between the "haves" and the "have nots."

⁷³ A/AC.138/8.

⁷⁴ A/7320, pp. 44-50.

⁷⁵ A/AC.138/SC.1/3.

⁷⁶ A/AC.138/SC.2/3.

⁷⁷ A/AC.138/11.

APPLICATIONS OF MATHEMATICAL ECONOMICS
IN MARINE RESOURCES RESEARCHClifford S. Russell
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The subject of this paper might be approached from any of a number of directions depending on one's conception of "mathematical economics" and one's feeling for the types of applications which might fruitfully be cataloged. Our particular version is based on relatively narrow views of both issues. First, we stress the role of economists, whether employed by governments, universities, international commissions or non-profit research organizations, who are oriented to the solution of public problems through public institutions.¹ This choice largely reflects our feeling that the private sector needs no assistance in finding fruitful employment for mathematical economists in the solving of its own problems. (Witness the extensive use of economists and operations research types made by the large oil companies over almost two decades.) We certainly do not mean to imply by our emphasis that the challenging marine resources problems are all in this area of what we might call public economics. Second, we are interested in problems which have fundamental structural differences from those which have been attacked in landlocked situations. This leads us to concentrate on examples from fisheries research. Again, it is not our intention to imply that great challenges, particularly in applied, numerical research, do not exist in every other area of marine resources exploitation. We do feel, however, that in these other fields, the problems are most frequently those of the application of fairly well developed theoretical models to situations in which the technology is new and dramatic.² For example, there is no fundamental economic difference between the efficient regulation of oil exploration and exploitation on land and in 10,000 feet of water. The technology necessary to make the latter a real policy problem, however, is only now being developed.³

¹ We are contrasting "public" here with the individual firm or industry. Whether this public consist of the citizens of a State or country or of the entire world is a matter of quantitative, not qualitative difference.

² A recent study of an interesting marine problem, for example, revolves around the postwar revolution of shipbuilding technology. See "Optimization Studies for a Standardized Dry Bulk Carrier," prepared by Litton Systems, Inc., El Segundo, California, for the National Maritime Administration, May, 1969.

³ This is not to say, of course, that the legal and institutional problems are at all the same. The economics of international trade, aid and development are central to these legal questions, but again, the basic structures are not new.

Fisheries, on the other hand, provide a set of features which demands of the economist the development of somewhat different basic models from those he needs in analyzing resource problems such as oil exploitation, forestry and mining. More specifically, the world's marine fisheries are common property resources in that within the framework of existing technology and institutions they cannot practically be captured and exploited by one firm or nation; to this extent they share a common feature with oil fields. In addition, however, they are self-regenerating (within broad limits of catch and population size) and hence their exploitation does not involve simply the sharing of a fixed supply over some time horizon.⁴

Thus, our concern will be with applications of mathematical economics in fisheries research, and particularly in fisheries management research undertaken largely from the public point of view. For the sake of organizational neatness, we suggest three broad areas in which these applications might be grouped: the construction of abstract models; the estimation of the parameters of real-world functional relations; and the construction and solution of more or less complex and realistic models of actual management situations. We shall, as we go along, attempt to refer to existing examples of the kinds of contributions we have in mind and to specify sample problems for future research.

Abstract Models

At one level, the mathematical economist can contribute to marine research by the construction of highly abstract models of the situations faced in the world. These models will consist primarily of more or less generalized functions representing the various processes or influences of interest: e.g., demand for fish as related to prices, income, and so forth; regeneration of fish populations as related to existing population and catch; and capital cost of fishing boats and equipment as related to catch capacity.⁵ Minimum numerical specification is usually desirable in these models and, indeed, specification may well be limited to the signs of one or more partial derivatives. There is, of course, something of a trade-off here; the fewer numbers and signs we

⁴ See, for a slightly different characterization, Smith's analysis of the distinctions between several resource management problems, including fisheries: V. L. Smith, "The Economics of Production from Natural Resources," American Economic Review, June, 1968, pp. 409-32.

⁵ Examples of such abstract model-building include: H. S. Gordan, "The Economic Theory of a Common Property Resource: The Fishery," Journal of Political Economy, April, 1954, pp. 124-42; A. Scott, "The Fishery: The Objectives of Sole Ownership," Journal of Political Economy, April, 1955, pp. 116-24; V. L. Smith, "Economics of Production from Natural Resources," op.cit.; V. L. Smith, "On Models of Commercial Fishing," Journal of Political Economy, June, 1969, pp. 181-98; R. Turvey, "Optimization in Fishery Regulation," American Economic Review, March, 1964; J. P. Quirk and V. L. Smith, "Dynamic Economic Models of Fishing," unpublished mimeo.

specify, the more broadly applicable the results, but the more difficult the recognition of the model and its implications as a simplified image of the world.⁶

One significant advantage of abstract modelling is that formulation can be such as to take advantage of some very powerful analytical techniques, and the obtaining of results (i.e., deductions) need not rest on the availability of a large computer or a large computer time budget. Thus, for example, Quirk and Smith in their recent paper⁷ apply powerful results from the calculus of variations for the solution of sets of simultaneous differential equations, and are able to deduce results for dynamic models of a fishery.⁸ These results require only a few lines of algebra to write out in their general form, and they are straightforwardly translatable into standard phase diagrams giving a more complete picture of the response of each version of the model to different initial conditions. Obtaining a similar breadth of results from a set of closely specified fisheries models using dynamic programming (or other tool for intertemporal optimization) would have required a large amount of computer time and considerable patience in the interpretation of the voluminous printouts.⁹

The usefulness of the abstract-modelling approach in marine resources research (beyond this matter of relative efficiency) is analogous to the usefulness of theoretical physicists to the atomic energy program. Although there is generally no scope for experiment in the social science study of a field, abstract

⁶ At the extreme of generality, no specification, we are effectively doing pure mathematics; that is, we are manipulating symbols which have no "ties" to the world and while our theorems are necessarily "true," they have no particular relevance until specifications are imposed. At the other extreme are completely specified models of the sort we discuss below. The degree of abstraction is, of course, a continuum rather than a dichotomy and our division is adopted for ease in exposition.

⁷ J. P. Quirk and V. L. Smith, op.cit., n. 5.

⁸ These results apply to problems in which we wish to maximize the value of some function over a time period during which we have control over some of the variables affecting the function's value in each period and, most important, for which we know the relations describing the rate of change of the uncontrolled variables over time. The constraint set for this optimizing problem then includes a set of simultaneous differential equations which can be very difficult to deal with. The methods used by Smith and Quirk make the solution to certain such problems manageable.

⁹ This is not to say that the construction and solution of such models is easy. It takes considerable mathematical sophistication to apply these tools. But where such sophistication is available, it is probably efficient to substitute it for capital-intensive computer applications in initial explorations of a field of inquiry.

models may still produce implications which can be tested against historical data (natural experiments) to increase our understanding of the world. Thus, in so-called macro-economics, the Keynesian General Theory provoked tests of the "low-level equilibrium trap" based on the financial-market and national accounts data from the great depression. Just as abstract models may suggest what past natural experiments to explore, they may also guide us in the future collection of data. They may, indeed, perform two services in this regard; first, their very structures indicate what variables must be considered in describing (or acting to influence) the world. Second, it is often possible, through general methods of sensitivity analysis or through partially specified models to obtain information on the relative value of better data about each of the variables. Thus, if the model can be shown to be in general insensitive to the particular value taken on by a parameter α (say the degree to which there are economies of scale in fishing-boat building), then it will seem reasonable to put a lower priority on acquisition of data on α than for other parameters.¹⁰

An additional contribution from the construction of abstract marine-resource models is the understanding of some of the implications of proposed national or international policies. Models may be constructed to reflect alternative policy climates, and it may, for example, be possible to show that one fisheries management policy will result in highest net return to the world population, another in highest returns to the nation, and still another in the best results for some set of private firms.

In order to focus the rather general discussion above, two examples are suggested of problems which abstract models might fruitfully be designed to attack:

(1) The implications of making one-species-at-a-time fisheries agreements as opposed to overall regional or ecological system agreements. For example, under what conditions on the natural system are such one-at-a-time agreements optimal, or even better than the status quo? In general, research is needed into problems of second-best solutions and the extent to which marginal changes in the existing situation can really be shown to be improvements.

(2) The exploration of quota systems in fisheries management. In particular, the effects of timing and place of catch restrictions; of encouraging or prohibiting the establishment of markets in quotas; and of choosing one or

¹⁰ This statement oversimplified the problem, for the level of data-gathering effort will depend on cost per additional data unit and sensitivity of parameter estimate to additional data as well as on the sensitivity of the system of estimate itself.

another basis for initial quota establishment and subsequent adjustment (e.g., historical catch, auction bidding, or first-come, first-served).

Econometrics: Parameter Estimation

In order to pass from an abstract model to a practical, numerical one it is clearly necessary to specify the form of the relevant functions and to estimate the sizes of the parameters of those functions. This may be done, in some relatively simple cases, by relying on engineering analysis of processes.¹¹ But more frequently, the complexity of the process under study (as in the natural reproduction of fish populations) will imply the use of statistical techniques to pick out central tendencies and eliminate the "noise" from the set of individual observations on the variables of interest. One might, for example, wish to estimate the natural yield curve for fish using historical observations of actual off-take.

The basic techniques for the fitting of functions to sets of observations on two or more variables are widely known. There are, however, complications which arise in the use of these techniques to estimate economic relations, on the basis of data generated by the natural functioning of the market economy, and one may characterize econometrics as the study of and correction for these complications. Within the specific field of marine resources research, the function of the econometricians, then, is to examine critically the data, model specification and estimation techniques proposed for obtaining parameter estimates for, say, the demand function for a fish species in a particular market.¹²

What sorts of problems might be significant for such a demand-function study? First, because price and quantity sold are determined in a market by the interaction of supply and demand, the naive assumption that our set of observations characterizes a demand curve may be quite inaccurate.¹³ The points may, in fact, be the result of simultaneous shifts in both supply and demand, and by ignoring this interaction we introduce bias into our parameter estimates. But to take account of simultaneity may involve us in yet

¹¹ See, for example, the analysis of the thermal-electric generation process in Cootner and Löf, Water Demand for Steam Electric Generation (Washington: Resources for the Future, Inc., 1965).

¹² See, for example, F. W. Bell, "The Pope and the Demand for Fish," American Economic Review, December, 1968, pp. 1346-50.

¹³ See, H. Working, "What Do Statistical Demand Curves Show?" Quarterly Journal of Economics, February, 1927, pp. 212-35, and F. M. Fisher, The Identification Problem in Econometrics (New York: McGraw Hill, 1966).

another problem, that of "identification." The latter problem may be roughly described as the lack of sufficient independent influences on the supply and demand functions to permit the separation of the effects of their individual shifts on the observed price-quantity pair. Thus, in the example we are using, it will be helpful if there are certain influences from outside the market which impinge only on supply (e.g., the mean temperature of the water in the fishing area); and some only on demand (e.g., the change in the Catholic Church's requirement for meatless Fridays). Other concerns of the econometrician will include the evidence relevant to the inclusion or exclusion of variables based on the characteristics of the calculated "error terms," and the tendency of many (if not most) economic series to move up and down together over time. Improper exclusion of a necessary variable may result, again, in biased parameter estimates. Lack of independent variation in the observed series interferes with our ability to judge the accuracy of these estimates.

Since the hand of the econometrician will appear in any statistical analysis of economic or related series from the marine resources field, it does not seem worthwhile to attempt to list specific research projects as we have above. Rather, we may simply suggest broad types of estimation exercises for which econometric input may be valuable:

- (1) The estimation of demand functions for fisheries products. Here, problems of bias and identification arising from simultaneity are liable to be important.
- (2) The estimation of yield curves for natural fish populations. This is roughly the obverse of (1), since observed levels of off-take will constitute supplies to a market and will not necessarily reveal the "supply function" for fish, because of the concurrent impact of demand shifts. For example, an attempt to relate off-take to physical variables alone (to estimate a production function) may be misleading if the price in the relevant market is ignored. That is, off-take may fall because of a change in the physical setting and a reduction in the stock of fish, or because of changes in effort influenced by falling prices for fish, which in turn might reflect rising public concern over pesticide residuals.
- (3) The estimation of production functions for the exploitation of different fisheries by agents (firms or public bodies) of different nations. There are problems of bias due to simultaneity here when we can assume we are observing profit-maximizing, competitive firms.¹⁴ If, however, we cannot make this

¹⁴ See, for example, I. Hock, "Simultaneous Equation Bias in the Context of the Cobb-Douglas Production Function," Econometrica, October, 1958, pp. 566-78.

assumption (as we could not for Soviet enterprise) or if we wish to obtain an aggregate production function for several nations with different price structures, our difficulties may or may not be more severe.

Numerically Specified Models

The level at which mathematical economics can be most immediately relevant to policy makers is that of the construction of numerically specified models designed to describe actual situations as accurately as is feasible.¹⁵ One way of illustrating the input of the mathematical economist to such undertakings is to consider a number of alternative possible descriptions of a fishery and the uses to which each might be put. Our assumption here, as spelled out in our introductory remarks, is that the economist is concerned with the formulation and implementation of public management policies.

One alternative is, of course, simply to record the events in the fishery's life, such as annual landings by species, and perhaps by sex, length, weight, and type of catching equipment, and the price levels in the markets for the fishery's products. In addition, any exogenous influences such as the appearances or disappearance of predators or prey, the advent of pollution, or the occurrence of changes in related tastes or technology, could also be part of the story.¹⁶ This approach can be of positive value by bringing together much of the relevant, available information about the fishery. From such digests intelligent and experienced policy makers may be able to draw useful inferences about the effects of past policies and to make reasonable guesses about wise future courses of action. In general, of course, the record of any fishery will represent the net effect of the interplay of a number of factors, only one of which will be public policy. It will be extremely hard to separate out these influences merely by looking over the record of events. And there will be practically no scope for considering with any completeness the potential effects of a range of policy alternatives in order to judge among these alternatives.

Another approach is to attempt to estimate the biological relations underlying the behavior of the fishery, including the impact on fish population

¹⁵ The completeness and accuracy of the description provided by such a model will depend essentially on two things: the cost of increasing the accuracy by gathering and analyzing more data from the real world; and the use to which the model is to be put. We discuss the second influence below.

¹⁶ An example of such a descriptive piece, concentrating on the biological events, is Stanford H. Smith, "Species Succession and Fishery Exploitation in the Great Lakes," Journal of Fisheries Research Board of Canada, Vol. 25 (4), 1968, pp. 667-93.

of catches of various intensities.¹⁷ (We might refer to this as the physical model approach.) The obvious gain is in the understanding of the complicated interaction among fishing effort, the size of the fish stock, rates of recruitment to and mortality from that stock and the fishing catch per unit of effort. In particular, these models can serve as a useful basis for investigating the likely effects on future catches of proposed management policies. But the problem is that in order to make decisions about possible policies, we must have a way of valuing the various alternative sets of results. If, of course, one course of action produces superior physical results with equivalent physical effort, we have no valuation problem. Any set of relative values by species and time period will show this to be the best course. If, as is more likely, some paths produce larger catches in the near and others in the more distant future (or if some produce better catches of one, some of another species), we must have some information about the relative values of the several species in each of the periods. This, then, might be considered the first of the economist's tasks with respect to a numerical fishery model.

The provision of information on relative values involves specification and measurement of cost functions for fishing effort and demand functions for catches of the several species in each relevant time period. In the previous section we discussed briefly the contribution of econometrics to this task. We may also note that prior work with abstract models will often pave the way for this step of combining the physical and economic worlds. The next question, of course, is what do we have when we accomplish this combination? How can our new, larger model be put into the service of policy makers? One method is simply to run alternative management policies through the model of the fishery and compare the values of the resulting series of catches. So long as there is only a single policy instrument available (a single variable in the system over which the government or commission has control), this brute-force method may be acceptable. As soon, however, as there are four or five or more policy instruments, each with several possible levels of application (e.g., quotas for each species which can be set at any of half a dozen levels) some more efficient means must probably be found for choosing the "best" policy.¹⁸

¹⁷ See, for example, M. B. Schaefer, "Fishery Dynamics and Present Status of the Yellowfin Tuna Population of the Eastern Pacific Ocean," Inter-American Tropical Tuna Commission Bulletin, 12 (3), pp. 87-136.

¹⁸ What "best" means will vary with the objectives of the decision-making unit, but there is no reason why this must be restricted to values measured in actual markets or even to traditional "efficiency" benefits. It appears to be a widespread misconception that economists are obsessed with efficiency benefits to the exclusion of other considerations. This is not true but probably reflects the bias observed in the literature which, in turn, reflects the political difficulties in the way of getting agreement on other criteria.

This matter of efficient choice of the "best" policy is the second one to which the mathematical economist can contribute. The problem may generally be termed one of constrained optimization. That is, we are faced with a set of policy variables (\tilde{Y}), and a set of uncontrolled variables (\tilde{X} ; for example, the rates of growth of various fish species), and a set of i relations, $f_i(\tilde{X}, \tilde{Y}) = 0, i=1, \dots, I$ (for example, the physical description of fishery dynamics) connecting \tilde{X} and \tilde{Y} . We also assume that some of the X 's are valued in our "objective function" (the function which expresses the relative contribution of all relevant X 's to the attainment of the policy makers' objective, whether that be maximization of national efficiency benefits or maximization of the income distributed toward the fishermen of a particular area, or something else). Then the optimization problem is to find the value of the policy values \tilde{Y}^* which produces the highest value of the objective function while at the same time, and jointly with the \tilde{X} 's, satisfying the constraints, $f_i(\tilde{X}^*, \tilde{Y}^*) = 0$.

For the efficient solution of such practical planning models, four techniques or model types are readily distinguishable.

- (1) Linear Programming - in which the world is simplified to the extent that both the objective function and all the constraints may be written as linear functions of the relevant variables. The great advantage of this model type is the relative computational ease of solution. Even if the linearity restrictions seem undesirable for final analysis, linear programs may often be used fruitfully as screening tools in the preliminary analysis of very complex models.
- (2) Non-Linear Programs - in which the requirement of linearity is relaxed, allowing greater realism of description, but often at a significantly greater solution cost. The computational difficulties can be particularly difficult whenever (as is likely) the relations do not have the proper mathematical shape.¹⁹
- (3) Dynamic Programming - in which account is taken of intertemporal externalities: i.e., implications of present decisions for future periods. The technique is still limited in application to fairly small models because of the difficulty of taking account of the numerous strategy choices over time.
- (4) Simulation - in which the major effort is directed to building a descriptive mathematical model of the system of interest,

¹⁹ Practically speaking this problem arises, for example, when we are interested in cost minimization but the costs per unit of output fall with increasing output over the entire range of interest.

such that when certain values are assumed for the choice variables, the model will produce a response very close to that of the real system. (One or many time periods may be simulated.) Enormously complex systems may be simulated, without restrictions such as linearity or function "shape." This freedom is, however, gained at the expense of a simple, efficient solution technique. The exploration of a complex simulation model's "response surface" can be very costly of computing time, but short of such a search one can never be sure, because of the irregularity of this surface, that the optimal solution (itself found by locally relatively efficient techniques) is globally optimal.

The usefulness of the construction and solution of such models lies, as we have indicated, in their role as guides to specific public (national or international) policy. This role might ideally be played at the request of the decision-making body, before new policies are established. Since, however, policies are often suggested and become hardened by bureaucratic usage long before anyone is in a position to inform the procedure with a complex economic model, it will be true that these models will frequently find applications as the basis of criticism of the existing order.²⁰

Two specific problems within marine resources research to which this sort of "practical" model-building might be applied include:

(1) (as mentioned above) Optimizing models for a single fish species; for a region with several fish species; for a single nation's exclusive fishery or its part in an internationally managed fishery; for several nations in a regional fishery; and similar cases. Any such model would necessarily include demand estimates, cost functions for fishing effort and natural production functions for fish.

²⁰ Many practically oriented studies of marine resources (or related) systems have been undertaken, but do not fit neatly our description, few being explicitly mathematically oriented. See, for example: J. Crutchfield and A. Zellner, "Economic Aspects of the Pacific Halibut Fishery," Fishery Industrial Research Institute (Washington: Department of the Interior, 1962); J. Crutchfield and G. Pontecorvo, The Pacific Salmon Fishery (Baltimore: Johns Hopkins Press, 1969); F. W. Bell, "Economics of the New England Fishing Industry: The Role of Technological Change and Government Aid," The Boston Federal Reserve Bank (Boston, 1966); J. Serck-Hanssen, "A Programming Model for a Fishing Region in Norway," Regional Science Association Papers and Proceedings, Vol. 12, 1964, pp. 107-18; N. Oka, et al., "The Economic Effects of the Regulation of the Trawl Fisheries of Japan," Economic Effects of Fishery Regulations (FAO Fisheries Report No. 5 [Rome: FAO, 1962]); J. A. Crutchfield, et al., "An Economic Evaluation of Washington State Department of Fisheries' Controlled Natural-Rearing Program for Coho Salmon," State of Washington Department of Fisheries, August, 1965.

(2) Optimizing models for an anadromous fishery which would focus on the implications of environmental quality costs and recreational fishing benefits for the argument that the "host" State has purchased a special interest in the fishery by its "investment" in the species.

Concluding Comments

Given that there are problems of public economic policy in marine resources exploitation, mathematical economics, as we have defined the field, is in a position to make two broad contributions to research in the marine resources field. First, through the construction of abstract models and the use of analytical techniques they may be able to produce conclusions of great generality concerning broad policy alternatives for the present and future. Second, they are able to study complex real world systems, and to recommend specific actions (such as taxes, subsidies, quotas and levels of overall exploitative effort) to attain given public objectives. These recommendations will be based on numerically specified models and robust optimizing techniques. These two contributions are, in turn, linked by the guidance mathematical economists may provide to those who would estimate the functional forms and parameter sizes needed in passing from abstract to empirical models.

List of Conferees

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Alexander, Lewis M. - University of Rhode Island, Kingston, Rhode Island
Allen, Edward W. - Allen, DeGarmo & Leedy, Seattle, Washington
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Alperin, Irwin M. - Massachusetts Division of Marine Fisheries, Boston, Massachusetts
Anderson, Richard J. - Battelle Memorial Institute, Columbus, Ohio
Arnold, Victor L. - Marine Studies Center, Madison, Wisconsin
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Auerbach, Carl A. - Professor of Law, University of Minnesota, Minneapolis, Minnesota
Badgley, Peter C. - Office of Naval Research, Washington, D.C.
Barnett, L. M. H. - Permanent Mission of Jamaica to the United Nations, New York, New York
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Brittin, Peter - Washington, D.C.
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Carry, Charles R. - Tuna Research Foundation, Terminal Island, California
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List of Conferees

Clift, A. Denis - Committee on Marine Research Education & Facilities, Washington, D.C.

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Hayes, Edward B. - Lord, Bissell & Brook, Chicago, Illinois

Hedberg, Hollis D. - Princeton University, Princeton, New Jersey

List of Conferees

Henkin, Louis - School of Law, Columbia University, New York, New York
Herrington, Hon. William C. - Staffordville, Connecticut
Heselton, Capt. Leslie R., Jr. - Center for Naval Analyses, Arlington, Virginia
Highstreet, Harry A. - Geneva, New York
Hodgson, Robert D. - Department of State, Washington, D.C.
Hull, Edward S. - Ocean Science News, Washington, D.C.
Jacobson, Jon L. - School of Law, University of Oregon, Eugene, Oregon
Janis, Andrew - University of Palm Beach, Palm Beach, Florida
Jarett, Capt. Lawrence - U.S. Merchant Marine Academy, Kings Point, New York
Johnson, Milton - Environmental Science Services Administration, Rockville, Maryland
Jones, Mrs. Erin B. - School of Law, Southern Methodist University, Dallas, Texas
Joseph, George Jay - Jefferson Law Book Company, Silver Spring, Maryland
Joye, Judy - Oceans Magazine, New York, New York
Kask, J. L. - San Diego, California
Kelly, Ens. W. Palmer - U.S. Coast Guard, Washington, D.C.
Kikhia, Mansur - Permanent Mission of Libya to the United Nations, New York, New York
Kincaid, John - Embassy of South Africa, Washington, D.C.
Knauss, John A. - University of Rhode Island, Kingston, Rhode Island
Korneenko, Boris - First Secretary to the Ukrainian Soviet Socialist Republic Mission to the United Nations, New York, New York
Krause, Dale - University of Rhode Island, Kingston, Rhode Island
Kr oyer, Haraldur - Permanent Mission of Iceland to the United Nations, New York, New York
Krueger, Robert B. - Nossaman, Waters, Scott, Krueger and Riordan, Los Angeles, California
Knight, Gary H. - Louisiana State University Law School, Baton Rouge, Louisiana
Kuipers, Ronald L. - U.S. Government, Silver Spring, Maryland
Laing, Austen - British Trawlers' Federation, Hull, England
Langeraar, Rear Adm. W. - Chairman, Intergovernmental Oceanographic Commission, The Hague, Netherlands
Legault, L. - Department of External Affairs, Ottawa, Ontario, Canada
Lillich, R. B. - Naval War College, Newport, Rhode Island
Lockwood, Bert B. - Syracuse College of Law, Syracuse, New York
Lokken, Harold E. - Manager, Fishing Vessel Owners Association, Seattle, Washington
Longnecker, Oscar - Texas Shrimp Association, Brownsville, Texas
Mansfield, William H. III - National Council on Marine Resources and Engineering Development, Washington, D.C.
Marshall, Nelson - University of Rhode Island, Kingston, Rhode Island
McKernan, Hon. Donald L. - Special Assistant for Fisheries and Wildlife to the Secretary of State, Washington, D.C.
McKnight, Maxwell S. - National Petroleum Council, Washington, D.C.
Meacham, Charles H. - Office of the Governor, Juneau, Alaska

List of Conferees

Medico, Ernest - U.S. Bureau of Commercial Fisheries, Gloucester, Massachusetts
Milhaud, Susan C. - American Petroleum Institute, Washington, D.C.
Miller, Sam - Institute for Policy Studies, Washington, D.C.
Mills, Hal - Bishops University, Lennoxville, Quebec, Canada
Miron, George - Wyman, Bautzer, Finell, Rothman & Kuchel, Washington, D.C.
Mitchell, William - Johnson Research Association, Santa Barbara, California
Mladek, Jiri - Permanent Mission of Czechoslovak Socialist Republic to the
United Nations, New York, New York
Morse, Robert - President, Case Western Reserve University, Cleveland, Ohio
Mulvihill, Sheila - Office of the Sea Grant College Program, Washington, D.C.
Nanda, Ved P. - University of Denver Law School, Denver, Colorado
Neblett, William R. - National Shrimp Congress, Key West, Florida
Niblack, William R. - Humble Oil and Refining Company, Houston, Texas
Nordstrom, Robert D. - National Cannery Association, Washington, D.C.
Norton, Virgil - University of Rhode Island, Kingston, Rhode Island
O'Connor, Dennis - School of Law, University of Miami, Coral Gables, Florida
Olisemeka, I. C. - Permanent Mission of Nigeria to the United Nations, New
York, New York
Orlin, Hyman - Environmental Science Services Administration, Rockville, Mary-
land
Palmer, LCdr. William - Office of the Judge Advocate General, Department of
the Navy, Washington, D.C.
Parreno, Albert J. - Curtis, Mallet-Prevost, Colt and Mosle, New York, New
York
Pavicevic, Vladimir - Permanent Mission of the Socialist Federal Republic of
Yugoslavia to the United Nations, New York, New York
Pell, Senator Claiborne - U.S. Senate, Washington, D.C.
Pizinger, LCdr. Donald - Naval War College, Newport, Rhode Island
Pontecorvo, Giulio - Columbia University, New York, New York
Presley, Frederick D. - U.S. Coast Guard, Silver Spring, Maryland
Prohaska, Anton - Permanent Mission of Austria to the United Nations, New York,
New York
Pross, Thomas W., Jr. - U.S. Maritime Administration, Washington, D.C.
Pruitt, Evelyn L. - Office of Naval Research, Washington, D.C.
Rao, Pemmaraju Sreenivasa - Yale Law School, New Haven, Connecticut
Reading, Edward C. - Hydrospace Research Corporation, Rockville, Maryland
Reed, Michael W. - U.S. Coast Guard, Washington, D.C.
Ressa, Anthony T. - Bellevue, Washington
Robinson, J. Kip - U.S. Bureau of Commercial Fisheries, Washington, D.C.
Roedel, Philip M. - California Department of Fish and Game, Terminal Island,
California
Rossomondo, Frank, Jr. - U.S. Government, Rockville, Maryland
Russell, Clifford S. - Resources for the Future, Washington, D.C.
Schaefer, Frederick E. - Englewood, New Jersey
Schaefer, Milner B. - Institute of Marine Resources, Scripps Institution of
Oceanography, La Jolla, California
Schaefer, Edward - U.S. Bureau of Commercial Fisheries, Washington, D.C.

List of Conferees

Schechter, Rita D. - New York, New York
Schwass, Earl R. - Naval War College, Newport, Rhode Island
Schwinn, Donald E. - Kennecott Copper Corporation, New York, New York
Scott, Walter H., Jr. - Grumman A/C Energy Corporation, Bethpage, New York
Scott, Mrs. Walter H., Jr. - Centerport, New York
Seymour, John L. - Texas Tech University School of Law, Lubbock, Texas
Slouka, Zdenek J. - Columbia University, New York, New York
Smith, Carol M. - University of Palm Beach, Palm Beach, Florida
Smith, George P. III - State University of New York at Buffalo, Buffalo, New York
Snow, Samuel - Medway Marine Corporation, Providence, Rhode Island
Sohn, Louis B. - Commission to Study the Organization of Peace, New York, New York
Sokoloski, Adam A. - U.S. Bureau of Commercial Fisheries, Washington, D.C.
Solomon, P. V. J. - Trinidad and Tobago Mission to the United Nations, New York, New York
Sorensen, Philip - University of California, Santa Barbara, California
Stangholm, Bernt - Permanent Mission of Norway to the United Nations, New York, New York
Stepp, J. M. - Clemson University, Clemson, South Carolina
Strumor, Robert M. - Boston University School of Law, Boston, Massachusetts
Sullivan, Gerard E. - Woods Hole Oceanographic Institution, Woods Hole, Massachusetts
Sullivan, William L. - Department of State, Washington, D.C.
Taylor, Ronald A. - Yale University, New Haven, Connecticut
Teclaff, Ludwik A., - School of Law, Fordham University, New York, New York
Thacher, Peter S. - U.S. Mission to the United Nations, New York, New York
Thorgrimsson, Thor - Department of Energy, Mines and Resources, Ottawa, Ontario, Canada
Tirtaamidjaja, Nusjirwan - United Nations Institute for Training and Research, New York, New York
Veila, Charles V. - Permanent Mission of Malta to the United Nations, New York, New York
Vernon, Manfred C. - Western Washington State College, Bellingham, Washington
Vitzthum, Wolfgang G. - Center for the Study of Democratic Institutions, Santa Barbara, California
Wakefield, Lowell - Wakefield Fisheries, Port Wakefield, Alaska
Walker, Cdr. P. B. - Naval War College, Newport, Rhode Island
Warsing, Robert H. - Committee on Marine Research, Education and Facilities, Washington, D.C.
Wedin, John - Senate Commerce Committee, Washington, D.C.
Wilkes, Daniel S. - University of Rhode Island, Kingston, Rhode Island
Williams, Gardner A. - Basic Resources International, Falls Church, Virginia
Wolf, Atwood C., Jr. - Walker, Beale, Wainwright and Wolf, New York, New York
Wolfe, Gene - Office of the Chief of Naval Operations, U.S. Navy, Alexandria, Virginia

List of Conferees

Wolff, Thomas - University of Arizona, Tucson, Arizona
Young, Richard - Van Hornesville, New York
Zeiler, Michael - Ada, Ohio
Zeni, Capt. L. E. - Smithsonian Institution, Washington, D.C.

